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INFLUENCE OF INDIAN LANGUAGE BACKGROUND

ON READING AND SPEECH DEVELOPMENT

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CHAPTER I

INTRODUCTION

For many years attention has been given to providing educational experiences for Indian children. The primary responsibility for the educational programs has been under the direction of the Bureau of Indian Affairs. In recent years the Bureau of Indian Affairs has urged state governments to become concerned with the social and economic welfare of Indian tribes. Education has been generally accepted as an important tool with which to accomplish the purpose of leading Indian communities into closer participation in our society. The long range national objective was well stated years ago by President Thomas Jefferson, when, in one of his messages to Congress, he said:

> In truth, the ultimate point of rest and happiness for them [the Indians] is to let our settlements and theirs meet and blend together to intermix and become one people. Incorporating themselves with us as citizens of the United States is what the natural process of things will bring on; it is better to promote than retard it. It is better for them to be identified with us and preserved in the occupation of their lands than to be exposed to the dangers of being a separate people. (Young, 1967)

Havighurst (1957) of the University of Chicago states it this way:

> Thus the culture of the Indian child equips him well or poorly for education in American schools, depending on how well his culture matches that of the American society which surrounds him. . . . When his culture is quite different from that of the surrounding white community, as in the case of the Pueblo and Navajo Indians, or when his tribal culture has disintegrated and his group has not yet adjusted well to membership in the surrounding white culture, as was true in the 1940's of the Sioux, the Indian child may be expected to do rather poorly in schools that are run according to white standards.

In recent decades, attention began to focus on the problem of effectively educating Indian children emphasizing the lack of communication between Indian children and the school because of language barriers. Recognizing the special demands of Indian education, the Bureau of Indian Affairs carried on intensive training programs designed to provide insight into Indian cultures and languages. The problems inherent in the teaching and learning of English as a second language were analyzed and described against a background of instructions in linguistics. Dictionaries, descriptive grammar, and other materials were developed relating to specific Indian languages.

Many of the problems in teaching the Indian child English are due to his cultural background, for as the cultures differ, so do the languages. This is clearly pointed out in the word "brother," for which there is no word in Navajo. Because family relationships in this tribe

are much closer, there is one word for the older brother and another word for the younger brother. This is also true of the Creek language. There is chachaie (older brother) and chaiapose (younger brother).

The basis of understanding the spoken or written word is through the experiences of an individual. Interpretations are made according to the background of these experiences. Thus, the Indian child leaving his parents to enter school is greatly in need of meaningful activity before he is ready to be bilingual in its truest sense. Also, there are several important cultural differences between the "white American" way of life and the Indian systems of living. The American thinks of what is ahead; the Indian lives in the present. Americans measure time by clocks and calendars; time is not important in the Indian way of life. According to Reifel (1957), "Saving to us is a means of achieving economic development. To the nomadic Indian it is not deemed necessary." Earning a living by working has not been in the Indian system, particularly for the men. Mead (1932) remarked that Indians are given neither laurels nor thanks for work well-done. This attitude does not reflect hostility or ingratitude. It merely reflects the Indian view that medals or laurel wreaths are not given to people for doing what they ought to do.

The development of social skills is generally thought of as a responsibility of the home. The Indian

schools which do not assume this responsibility and give instruction in social customs, are not fulfilling their responsibility. Felton (1957) stated that Indian homes cannot teach skills foreign to their way of life, but can only provide for the development of skills which are common to their way of life. Indian children are in need of "white American" culture, too, because they will live in the white man's world most of the time.

American Indian pupils display varying degrees of fluency in spoken American English. While the Indian pupil may have no difficulty in communicating with other members of his native community, often he is unable to communicate effectively with members of the non-Indian world. He is bilingual when compared with his non-Indian peers and is likely to display communication deficiencies. Communication skills which include reading, writing, listening, and speaking are all closely linked together, and the basic linkage is the language symbol. In the American system of education, the central theme in the elementary classroom is reading. Therefore, if the American Indian is to receive maximum benefits from education, he must become more proficient in the language skills, especially those of speaking and reading.

This study represents an attempt to determine the relationships among reading ability, vocabulary, and speaking competence of bilingual-language environment groups, specifically Indian tribal groups.

CHAPTER II

REVIEW OF THE LITERATURE

The nature and function of language assume different perspectives as they are examined by different disciplines: the psychologist, the philosopher, the linguist, and the physiologist are each concerned with the different facets of the phenomenon of speech, but from the standpoint of the social scientist, language becomes an integral part of the culture of the people who speak it, or, for that matter, who use it in any of its several secondary forms (reading, writing, gestures, signals, and signs).

Whatever its form, language comprises a set of signals that serve the need in human society for the intercommunication of ideas and concepts. Young (1967) states:

> A system of language, with its characteristic patterns of expression, elements of phonology and structural features, comprises a complex set of distinctive habits. The sum total of the values, attitudes, concepts and mode of expression of a culture constitute the frame of reference within which its members conceive of, look upon, describe, react to, and explain the world in which they live and their relationships to it.

Children who come from homes where a non-English language is spoken may have little or no command of English, and may be unable to understand or speak English well enough to participate in many of the classroom activities.

At the present time in the American educational system, there are few tests, if any, devised to give an accurate measurement of mental age and intelligence of children who speak any language other than English. Before taking an intelligence test, the bilingual child should have acquired physical, emotional, mental, and social maturity and have experience and practice in oral and written expression in English. Sanchez (1934) concludes that a test is valid only to the extent that the items of the test are as common to each child tested as they were to the children upon whom the norms were based. Therefore, the assumption must be valid that a given child's background must be similar to those on whom the test was standardized, otherwise the results of the test are invalid. In studying causal factors of reading difficulties, Bond and Tinker (1967) found that children who come from homes where a non-English language is spoken tend to be language-handicapped children due to their inability to understand or speak English, yet they need not become reading disability cases if an appropriate teaching program is organized early in their school lives. But until this is achieved, many of these children will be at a disadvantage in reading activities.

Non-English speakers often have difficulty in articulating the phonetic interpretations of English and additional difficulty with the multitude of English homonyms. According to Berry and Eisenson (1956), the infant produces all the speech sounds of any language in his vocal play, but the mastery and voluntary control of sounds is another matter; some sounds are easy to control, others are more difficult.

Speech, reading and listening are primary. The child listens to his mother's words and comprehends some of them before he begins to speak, an event that usually occurs during the second year of life. The language learned in infancy has deep emotional roots. In bilingual children these roots are disrupted when they cannot use their native language at school. Reading is an integral part of the total language arts program and is a developmental process requiring the interpretation of written and printed symbols, and both reading and listening are means of receiving communication. Both require the interpretation of symbols, heard in one instance, seen in the other. Studies cited by Carney (1964) have shown that people spend 75 per cent of their communicative efforts in speaking and listening as compared with 25 per cent in writing and reading. Some people talk more than they listen; many talk more than they read.

There are many studies in the literature concerning the relationship between speech and reading. There appears to be a high incidence of functional speech problems among children who are referred for remedial reading, and many poor readers with defective articulation have problems of auditory discrimination. The sounds which pupils find most difficult in auditory discrimination are for the most part included among the sounds which give difficulty in articulation. Hefferman (1950) states, "The special recognition given to speech in the elementary school is based on the premise that speech is a social tool that is useful in childhood and adulthood."

Research (NEA Bulletin, 1962) shows that the various language arts skills are interrelated, but conclusions are usually in general or descriptive terms with little attempt to indicate causal relationships between given skills. Researchers usually agree that improvement in speaking appears to have a positive effect on all language skills, but appears to contribute especially to improvement in both oral and silent reading.

The Indian child when confronted with a problem attempts to explain the unfamiliar in terms of the familiar, whether the problem relates to the features of another culture generally, or to those of another language. He tries to identify a new speech sound by relating it to some phoneme with which he is familiar in his own language;

and he is so tightly bound by the peculiar set of habits attached to his own culture and language that he allows himself to assume it is correct. To illustrate, both English and Spanish use a phoneme of the type represented graphically by the letter x. It is represented in the English word, "Mexican" (meksican) and in the Spanish word, Mexicano (mehicano). Thus the written symbol does not represent the same sound in the two languages.

Young (1967) compared English and Navajo, and found certain striking areas of divergence in morphology. Although this is not a point-by-point comparison, important differences include:

Navajo

1. Vowel length distinguishes meaning.
2. Vowels occur in a nasal as well as oral series: a feature which also distinguishes meaning.
3. Use of inherent tone to distinguish meaning.
4. Limited use of consonantal clusters, with none occurring in syllable final position.
5. Only eleven simple consonantal phonemes occur as syllable finals.
6. A simple vowel system only.
7. Fifteen or more phonemes that do not occur in the phonology of English.

English

1. Stress accent distinguishes meaning.

2. Sentence pitch distinguishes meaning.

3. Wide variety of consonantal clusters in syllable or word final position.

4. Nearly all simple consonantal phonemes may occur as syllable or word finals.

5. A simple and a compound vowel system.

6. The use of six consonantal phonemes that do not occur in the sound system of Navajo (v, f, dh, th, r and ng), and which have no proximate correspondents in the Navajo system.

In studying the above findings it can readily be seen that the Navajo child who has had little or no opportunity to acquire a knowledge of the English language will have difficulty in learning the basic language arts skills of speaking and reading.

One of the main problems associated with bilingualism is that of articulation, and articulation problems have been mentioned frequently as a cause of reading disability. It has been assumed that reading and articulation, both being language-related functions, are somewhat interdependent and that a deficiency in one tends to be associated with a deficiency in the other. The possibility of a relationship between reading and articulation has been approached experimentally from both aspects of educators and speech pathologists. Van Riper (1964) states:

> Whether we deal with reading or speaking skills and disabilities, we find ourselves always confronted with the formulation, transmission or reception of language symbols. We might consider some of the parallels and relationships between

> the disabilities of speech and reading. Both appear to be produced by multiple rather than single causes. . . . A certain degree of maturation is required for the mastery of both reading and speaking skills. The average child, for example, does not attain complete mastery of the s, l, r, and the th sounds or their blends until the age of eight years. . . . In this regard the speech pathologist shudders a bit when he looks at the usual first primers because they seem expressly loaded with these late maturing sounds. "Look" and "see" and "say" and "run, Sally, run," probably fix and perpetuate errors which otherwise would be outgrown.

Monroe (1932) was one of the first to discuss speech as a causal factor in reading disability or, at least, as a factor associated with reading disability. She analyzed the speech defects of 415 reading-defect cases to see how they compared with the 101 controls. The comparison also involved 5,000 problem children brought to the Institute for Juvenile Research (she found that her reading-defect cases had many more speech defects than the controls). The results are given in Table 1. Monroe further stated that inaccurate articulation may directly affect reading by presenting a confusion of sounds of words to be associated with the printed symbol. The child may develop confusions in reading in both mechanics and comprehension which would not have been present if his articulation were accurate.

Bond and Tinker (1967) agree that:

> The reading difficulties of children who come from homes where a foreign language is spoken, tend to be due to their inability to understand or speak English. The procedures ordinarily used in teaching beginning reading in our schools assume that each child has already learned to understand and speak the language.

TABLE 1

SPEECH DEFECTS OF CONTROLS AND READING-DEFECT CASES

Defect	Reading-Defect Cases N=415	Controls N=101	Institute for Juvenile Research Cases	
			White Boys N=2, 853	White Girls N=1, 739
Stammering or stuttering	9%	1%	4%	2%
Articulatory defect: Infantile speech. . . . Lisping . . . . . Mispronounciations, etc.	18%	7%	12%	11%
TOTAL	27%	8%	16%	13%

*Monroe, Marian, Children Who Cannot Read, University of Chicago Press: Chicago, 1932, p. 92.

Everhart (1953), in researching reading and articulation, found some tendency for boys with normal articulation to have higher reading achievement than boys with functional articulatory difficulties.

Robinson (1946) made a particularly searching investigation of possible causes of reading disability, including speech defects, and a careful analysis of previous investigations which led her to conclude, "On the basis of the evidence available, articulatory defects may be conceded to be important in oral reading but of little significance in silent reading."

If a child is born into a bilingual environment, his vocabulary may be below average for his age for either language or for a combination of both languages. M. W. Smith (1949), in studying the vocabularies of bilingual children (approximately three to six years of age) of Chinese ancestry in Hawaii, found, in both English and Chinese, the children had below-average vocabularies for children of their ages. Further research data (Eisenson and Ogilvie, 1963) strongly suggest that for an appreciable number of children the effect of bilingual exposure beginning at an age before a single language is established is to cause some degree of impairment in overall language proficiency.

Weaver, Furber, and Everhart (1960), on the basis of data obtained from administering a speech articulation

test and a Gates Reading Readiness Test, conclude that reading readiness and acquisition of adequate speech are to some extent related, although the proportion of variance common to reading readiness measures and articulation measures is quite small.

Articulatory defects may influence a child's ability to read aloud orally and silently. The child's concern about these errors may well reduce his ability to concentrate on his reading to the detriment of his comprehension. The child's articulatory defect may disturb the rate of reading, interfere with his phrasing, and thus cause difficulty. Artley (1948), in reviewing the literature on factors presumed to be associated with reading and speech difficulties, concluded that speech defects may be the cause of reading defects, the result of reading defects, or that both defects may result from some common factor. Eames (1950) did not stress a direct causal relationship between speech and reading deficiency but rather the possibility that other basic skills such as auditory discrimination and sound discrimination are fundamental in both reading and speech, and if deficient, retard both.

Many poor readers with defective articulation have problems of auditory discrimination. The sounds which are most difficult in auditory discrimination are often the same sounds which create difficulties in articulation. Many of the letters representing these sound substitutions

have been noted by reading teachers as "reading reversals." Sonenberg and Glass (1965) have found:

> The similarity between the sounds which present problems of articulation, as well as problems in auditory discrimination, and finally the letters symbolically representing these sounds, which often appear as reading reversals, poses the possibility that all these problems are in fact one and the same problem.

A child's speech or writing indicates understandings that he has gained from reading and listening, and improvement in speaking appears to have a positive effect on all language skills, especially to improvement in reading -- silent as well as oral.

The relationship between reading and speaking is apparent though not always clearly defined; the relationship between reading, vocabulary, and speaking can readily be seen. As Seegers (1939) states, "The child's ability to read, to speak, to write, and to think are inevitably conditioned by his vocabulary." Strang, McCullough and Traxler (1967) state that in its relation to reading and intelligence, vocabulary knowledge has been found to be second only to reasoning.

Speech and listening comprehension are related to vocabulary. Errors are often made in word meaning because of the auditory similarity of two words. Thus, bilingual pupils often find it easier to read materials when they have learned to speak correctly. A home where poor English, or no English, is spoken is detrimental to English language

development. If children have become accustomed to different speech sounds, different idioms, and different sentence patterns from those they hear in the classroom, they may make errors in spelling and reading comprehension as well as in pronunciation. It would be of great value to the teacher of reading to know specific characteristics of their speech patterns when working with children from a non-English background.

Many children from non-English speaking homes have not had the opportunity during preschool years to acquire the vocabulary and speech patterns of English prerequisite to learning English. It is during these years that a child has the greatest capacity for imitating sounds accurately. Certain sounds in English may be absent from the child's native language. For example, there is no th in the Choctaw language (Appendix B), therefore, the child substitutes d for th in Choctaw.

Comprehension of what one reads is closely related to comprehension of what one hears. Before understanding, there must be a minimum level of competency in the language. Thus, vocabulary is also closely related to comprehension. Lack of vocabulary skill creates problems for the non-English speaking child. It is also difficult for the non-English speaking child to translate concepts from one language to another because concepts express basic philosophy and values of a culture.

Harris (1965) in research dealing with the development of vocabulary lists a listening vocabulary which is developed earlier than a speaking vocabulary, and remains larger than the speaking or writing vocabulary. Gradually a new meaningful vocabulary in reading and writing is acquired. A child's total meaningful vocabulary is the sum of all the words which he can understand or use correctly, whether in listening, speaking, reading, or writing.

A child's first reading vocabulary should be composed of words which are meaningful; as the child progresses in reading, new words and ideas are introduced. The Indian child has the task of having to learn new meanings at the same time he is learning to recognize new words. For him the lack of practice in English is an important cause of vocabulary weakness. Words have meaning to a child only when they are related to things he experiences or knows about. A child from a non-English speaking home is ignorant of many things that are commonplace to the average child, and he does not have the basis for understanding words which refer to those things. Such a child is handicapped in his language development because he does not have practice in hearing and using English.

There have been many studies of childrens' vocabularies at different grade levels, especially in the preschool stages of development. Smith (1926) says that typical children coming from English speaking homes

ordinarily have a speaking vocabulary of at least 2,500 words about the time they enter school. McCarthy (1946) has summarized many studies of vocabulary growth. Perhaps the best-known of these studies is that of Madorah E. Smith who found the following sizes for total vocabularies: "1 year, 3 words; 1½ years, 22 words; 2 years, 272 words; 3 years, 896 words; 4 years, 1,540 words; 5 years, 2,072 words; and 6 years, 2,562 words."

In comparing the average vocabulary of 2,500 words of the six-year-old English-speaking child and the limited vocabulary of the non-English speaking child, one can readily see why in many parts of this country today there are large numbers of retarded readers who come from non-English speaking homes. They are handicapped by their lack of knowledge of the English language. Stemmler (1966) states that in Texas approximately 80 per cent of all beginning first graders from a non-English speaking background fail the first grade because of their inability to read.

Strang (1963), in considering children with non-English speaking backgrounds, believes that the attitudes and values of particular bilingual groups may determine whether they accept or reject instructional material that is prepared for them. For example, with Indian pupils a story that emphasizes the Indian's traditional non-competitive attitude and his absorption with the present moment might evoke a favorable response whereas an emphasis on

the opposite value might arouse an antagonism that would interfere with learning. The principle of reward for correct responses would have far less motivation with an Indian child who traditionally does not seek prestige, than with a child whose ethnic tradition encourages self-seeking.

There are approximately twenty-two million children and sub-teens in the United States for whom English is the second language. For many of them the inability to speak, read, and write English creates an educational handicap. For example, most English speaking children can count to ten by the time they enter school at the age of six years. However, the Indian child entering an English speaking school at the age of six years can count to ten also, but in his tribal language (Appendix A). The following Creek words are listed in the Creek First Reader by Robertson and Winslett (1963):

English	Creek
one	hvmken
two	hokkolen
three	tatcenen
four	osten
five	cahepen
six	epaken
seven	kulvpaken
eight	cenvpaken

(English)	(Creek)
nine	ostvpaken
ten	palen

To the Creek child such words as Hen-ka (yes), Ce-me (you), and Mo-men (and) are more meaningful than their English counterpart. Heintlos (good), humpikos (bad), and Vni (I) are words (Historical Magazine, 1966) which the Seminole child understands because they are part of his language experience. Thus, a child who fails to learn English as a second language may have a strong emotional attachment to his native language and may resist having it displaced by a second language. Language is an integral part of a people's culture. It is the way the heritage is transmitted. It is the means by which the attitudes and feelings are made known.

In a literate society, facility in speaking and reading the language of that society is imperative if social distances are to be decreased and if goals are to be achieved. The necessary skills in speaking and reading parallel one another: articulation and vocabulary lay the foundation for such skills.

This survey of the literature reveals strong support among authorities concerning the relationship between reading and speaking and between reading deficiency and speech deficiency; and indicates that remedial methods should be correlated. This study attempts to add evidence

to the interrelationships among speaking, reading, and vocabulary, and to show to some extent how the non-English speaking child in an English-speaking community is penalized educationally.

CHAPTER III

THE PROBLEM

The purpose of this study was to determine if relationships and differences exist among speaking competence, reading ability, and vocabulary range of bilingual-language environment groups.

The Hypothesis

Research studies have suggested relationships among speaking competency, reading ability, and vocabulary range, and that these three areas present difficulties to individuals within bilingual-language environments. The present investigation, therefore, has sought to amplify the research concerning these differences and relationships in a bilingual-language group with a sampling of Indian children, in order to ascertain their abilities in speaking and reading. Speaking competency was measured by the Templin-Darley Tests of Articulation; reading ability was measured by the Gilmore Oral Reading Test and the California Achievement Test (sub-test reading); and vocabulary range was measured by the Peabody Picture Vocabulary Test and the

Stanford-Binet Intelligence Scale (sub-test vocabulary).

In accordance with the problem of this study the following hypotheses were formulated; each hypothesis was tested at the .05 level of significance.

Ho_1: In Group I, there is no significant relationship between speaking competence as measured by the Templin-Darley Tests of Articulation and vocabulary as measured by the Peabody Picture Vocabulary Test.

Ho_2: In Group I, there is no significant relationship between speaking competence as measured by the Templin-Darley Tests of Articulation and vocabulary as measured by the Stanford-Binet Intelligence Scale (sub-test vocabulary).

Ho_3: In Group I, there is no significant relationship between speaking competence as measured by the Templin-Darley Tests of Articulation and reading ability as measured by the Gilmore Oral Reading Test.

Ho_4: In Group I, there is no significant relationship between speaking competence as measured by the Templin-Darley Tests of Articulation and reading ability as measured by the California Achievement Tests (sub-test reading).

Ho_5: In Group I, there is no significant relationship between vocabulary as measured by the Peabody Picture Vocabulary Test and vocabulary as measured by the Stanford-Binet Intelligence Scale (sub-test vocabulary).

Ho_6: In Group I, there is no significant relationship between vocabulary as measured by the Peabody Picture

Vocabulary Test and reading ability as measured by the Gilmore Oral Reading Test.

Ho_7: In Group I, there is no significant relationship between vocabulary as measured by the Peabody Picture Vocabulary Test and reading ability as measured by the California Achievement Tests (sub-test reading).

Ho_8: In Group I, there is no significant relationship between vocabulary as measured by the Stanford-Binet Intelligence Scale (sub-test reading) and reading ability as measured by the Gilmore Oral Reading Test.

Ho_9: In Group I, there is no significant relationship between vocabulary as measured by the Stanford-Binet Intelligence Scale (sub-test reading) and reading ability as measured by the California Achievement Tests (sub-test reading).

Ho_{10}: In Group I, there is no significant relationship between reading ability as measured by the Gilmore Oral Reading Test and the California Achievement Tests (sub-test reading).

Ho_{11}: In Group II, there is no significant relationship between speaking competence as measured by the Templin-Darley Tests of Articulation and vocabulary as measured by the Peabody Picture Vocabulary Test.

Ho_{12}: In Group II, there is no significant relationship between speaking competence as measured by the Templin-Darley Tests of Articulation and vocabulary as

measured by Stanford-Binet Intelligence Scale (sub-test vocabulary).

Ho_{13}: In Group II, there is no significant relationship between speaking competence as measured by the Templin-Darley Tests of Articulation and reading ability as measured by the Gilmore Oral Reading Test.

Ho_{14}: In Group II, there is no significant relationship between speaking competence as measured by the Templin-Darley Tests of Articulation and reading ability as measured by the California Achievement Tests (sub-test reading).

Ho_{15}: In Group II, there is no significant relationship between vocabulary as measured by the Peabody Picture Vocabulary Test and vocabulary as measured by the Stanford-Binet Intelligence Scale (sub-test vocabulary).

Ho_{16}: In Group II, there is no significant relationship between vocabulary as measured by the Peabody Picture Vocabulary Test and reading ability as measured by the Gilmore Oral Reading Test.

Ho_{17}: In Group II, there is no significant relationship between vocabulary as measured by the Peabody Picture Vocabulary Test and reading ability as measured by the California Achievement Tests (sub-test reading).

Ho_{18}: In Group II, there is no significant relationship between vocabulary as measured by the Stanford-Binet Intelligence Scale (sub-test reading) and reading ability as measured by the Gilmore Oral Reading Test.

Ho_{19}: In Group II, there is no significant relationship between vocabulary as measured by the Stanford-Binet Intelligence Scale (sub-test vocabulary) and reading ability as measured by the California Achievement Tests (sub-test reading).

Ho_{20}: In Group II, there is no significant relationship between reading ability as measured by the Gilmore Oral Reading Test and the California Achievement Tests (sub-test reading).

Ho_{21}: In Group III, there is no significant relationship between speaking competence as measured by the Templin-Darley Tests of Articulation and vocabulary as measured by the Peabody Picture Vocabulary Test.

Ho_{22}: In Group III, there is no significant relationship between speaking competence as measured by the Templin-Darley Tests of Articulation and vocabulary as measured by the Stanford-Binet Intelligence Scale (sub-test vocabulary).

Ho_{23}: In Group III, there is no significant relationship between speaking competence as measured by Templin-Darley Tests of Articulation and reading ability as measured by the Gilmore Oral Reading Test.

Ho_{24}: In Group III, there is no significant relationship between speaking competence as measured by the Templin-Darley Tests of Articulation and reading ability as measured by the California Achievement Tests (sub-test reading).

Ho_{25}: In Group III, there is no significant relationship between vocabulary as measured by the Peabody Picture Vocabulary Test and vocabulary as measured by the Stanford-Binet Intelligence Scale (sub-test vocabulary).

Ho_{26}: In Group III, there is no significant relationship between vocabulary as measured by the Peabody Picture Vocabulary Test and reading ability as measured by the Gilmore Oral Reading Test.

Ho_{27}: In Group III, there is no significant relationship between vocabulary as measured by the Peabody Picture Vocabulary Test and reading ability as measured by the California Achievement Tests (sub-test reading).

Ho_{28}: In Group III, there is no significant relationship between vocabulary as measured by the Stanford-Binet Intelligence Scale (sub-test reading) and reading ability as measured by the Gilmore Oral Reading Test.

Ho_{29}: In Group III, there is no significant relationship between vocabulary as measured by the Stanford-Binet Intelligence Scale (sub-test vocabulary) and reading ability as measured by the California Achievement Tests (sub-test reading).

Ho_{30}: In Group III, there is no significant relationship between reading ability as measured by the Gilmore Oral Reading Test and the California Achievement Tests (sub-test reading).

Ho_{31}: The mean articulation scores for Groups I, II, and III as measured by the Templin-Darley Tests of Articulation, when adjusted for the influence of the Peabody Picture Vocabulary Test performance, do not differ (assuming that the assumption of homogeneity of variances has been met).

Ho_{32}: The mean articulation scores for Groups I, II, and III as measured by the Templin-Darley Tests of Articulation, when adjusted for the influence of the Stanford-Binet Intelligence Scale (sub-test vocabulary) performance, do not differ (assuming that the assumption of homogeneity of variances has been met).

Ho_{33}: The mean articulation scores for Groups I, II, and III, as measured by the Templin-Darley Tests of Articulation, when adjusted for the influence of the Gilmore Oral Reading Test performance, do not differ (assuming that the assumption of homogeneity of variances has been met).

Ho_{34}: The mean articulation scores for Groups I, II, and III as measured by the Templin-Darley Tests of Articulation, when adjusted for the influence of the California Achievement Tests (sub-test reading) performance, do not differ (assuming that the assumption of homogeneity of variance has been met).

Ho_{35}: For Group I, the proportion of deficient to non-deficient subjects for Reading, Speech, and Vocabulary do not differ.

Ho_{36}: For Group II, the proportion of deficient to non-deficient subjects for Reading, Speech, and Vocabulary do not differ.

Ho_{37}: For Group III, the proportion of deficient to non-deficient subjects for Reading, Speech, and Vocabulary do not differ.

Description of Tests

"Templin-Darley Tests of Articulation"

This test provides detailed information about the ability to produce a wide range of speech sounds in a variety of positions. For methods of administering and scoring, there is a manual designated as A Manual and Discussion of the Screening and Diagnostic Tests (Templin and Darley, 1960). The diagnostic test consists of 176 items. The various sound elements to be tested include: twenty-five different consonant sounds, twelve vowels, and six diphthongs. These were distributed among eight classifications as follows: (1) twelve vowels, (2) six diphthongs, (3) sixty-eight single consonants in the initial, medial, and final positions, (4) thirty-seven two-consonant blends, (5) twenty-three combinations of a consonant with the syllabic or non-syllabic vowel [ɚ] , (6) fourteen blends of a consonant with the syllabic or non-syllabic vowel [l] , (7) seven blends of two consonants together with [ɝ] , [ɚ], and the vowel [l] , and (8) nine three-

consonant blends. The test booklet contains fifty-seven cards and/or eighty-nine sentences to elicit the same test sounds. The test (individually given), is not a timed test and may be given to young children and older subjects with the same degree of validity.

"Gilmore Oral Reading Test"

The Gilmore Oral Reading Test was developed to provide classroom teachers, reading supervisors, and others particularly concerned with reading instruction, with a means of analyzing the oral reading performance of pupils in grades 1 through 8. The test provides measures of accuracy of oral reading, comprehension of material read, and rate of reading. The test comprises ten carefully constructed oral reading paragraphs which form a continuous story, and an illustration of characters and events in the paragraphs. There are five comprehension questions for each paragraph. For the test there is a manual designated as the Manual of Directions (Gilmore, 1952) which contains all information necessary to administer and score the test. Standard scores and grade equivalents are provided for Accuracy and Comprehension; Performance Ratings are provided for Accuracy, Comprehension, and Rate.

"California Achievement Test -- Sub-test Reading"

These tests are designed for the measurement, evaluation, and diagnosis of school achievement. This

series is composed of reliable and valid tests of skills and understandings in reading. The levels of the test batteries were carefully articulated to provide a sequential testing program from one level to the next. Manual: California Achievement Tests Complete Battery (Tiegs and Clark, 1965) includes directions for administering, scoring, and interpreting the tests. The test may be used by either teachers with a minimum of formal training or by specialists in the field.

Four levels of test batteries (Form X) were given as follows: Lower Primary Level (Grades 1 and 2) consists of two sub-tests: Test 1, Reading, divided into four sections: Word Form, Word Recognition, Meaning of Opposites, and Picture Associations. Test 2, Reading Comprehension, covers two areas: Following Directions and Interpretation of Material.

The Upper Primary Level (Grades H2-3-L4) consists of two sub-tests: Test 1, Reading Vocabulary, consists of two sections: Word Recognition and the Meaning of Opposites; Test 2, Reading Comprehension, divided into three sections: Following Directions, Reference Skills, and Interpretation of Materials.

The Elementary Level (Grades 4-5-6) is composed of two sub-tests: Test 1, Reading Vocabulary, consists of the following four sections: Mathematics vocabulary, Science vocabulary, Social Science vocabulary, Reading vocabulary.

Test 2, Reading Comprehension, consists of Following Directions, Reference Skills, and Interpretation of Materials.

The Junior High Level (Grades 7-8-9) is composed of two sub-tests: Test 1, Reading Vocabulary, consists of the following four sections: Mathematics vocabulary, Science vocabulary, Social Science vocabulary, General vocabulary. Test 2, Reading Comprehension, has the following three sections: Following Directions, Reference Skills, and Interpretation of Material.

Interpretation of scores is based on the 1963 revision of norms.

"Peabody Picture Vocabulary Test"

The Peabody Picture Vocabulary Test (Form B) is designed to provide an estimate of a subject's verbal intelligence through measuring his listening vocabulary. The test has been used widely as a clinical tool with subjects of average and above intellectual ability and has a special value with certain other groups. Since subjects are not required to read, the scale is especially fair for non-readers and remedial reading cases. The testing scale ranges from two years, six months to eighteen years of age. Administration of the test requires no special preparation. Directions for administering, scoring, and interpreting the test are found in the Expanded Manual: Peabody Picture

Vocabulary Test (Dunn, 1965). The test consists of 150 items and a correct answer may be given by number, pointing, or calling the name of the item. An understanding of vocabulary moves from the concrete to the abstract and less difficult to more difficult items.

"Stanford-Binet Intelligence Scale
Sub-test Vocabulary"

The Stanford-Binet Intelligence Scale, 1960 revision, provides standards of intellectual performance for children (age three) to young adulthood (age sixteen). Directions for administering, scoring, and interpreting the test are described in Stanford-Binet Intelligence Scale, Manual for the Third Revision (Terman-Merrill, 1960). The examiner for this test must be an experienced clinician who knows the instrument used and who is sensitive to the needs of the subject being tested.

The vocabulary sub-test consists of forty items. The standard for passing is year VI -- score 6; year VIII -- score 8; year X -- score 11; year XII -- score 15; year XIV -- score 17; year AA (Average Adult) score 20; year SAI (Superior Adult I) score 23; year SAII (Superior Adult II) score 26; and year SAIII (Superior Adult III) score 30. The purpose of the vocabulary test is to determine whether the subject knows the meaning of the word, not whether he can give a completely logical definition. Awkwardness of expression is disregarded. It is often necessary to

determine by additional questions whether the meaning is apprehended.

Operational Definitions

The following definitions are used for the purpose of this study:

1. Reading ability -- The phrase "reading ability," as defined by Bond and Tinker (1964), involves the degree to which the reader becomes involved in the recognition of printed or written symbols which serve as stimuli for the recall of meanings built up through the reader's past experience. This ability was determined by grade placement on the Gilmore Oral Reading Test and the California Achievement Tests (sub-test reading).

2. Speaking competency -- the phrase "speaking competency" refers to the intelligibility of speech as a result of correct articulation. Speaking competency was determined by the Templin-Darley Tests of Articulation.

3. Vocabulary level -- Vocabulary is the sum of words employed by an individual. The "vocabulary level" was determined by the Peabody Picture Vocabulary Test and the Stanford-Binet Intelligence Scale (sub-test vocabulary).

4. Bilingualism -- the word "bilingualism" refers to a condition in which there is the influence of two or more languages and the primary language is non-English.

5. Bilingual Groups -- This phrase refers to the following Indian Tribal Groups:

Group I	Cherokee	Language Origin--Iroquoian
Group II	Creek	Language Origin--Muskhogean
	Choctaw	Language Origin--Muskhogean
	Seminole	Language Origin--Muskhogean
Group III	Other Tribes	Language Origin--Mixed
	Mixed Tribes	Language Origin--Mixed

Limitations

This investigation was limited to individuals who are one-fourth to full-blood Indians. All subjects live in an Indian boarding school and are enrolled in grades one through eight. All subjects were given the same tests regardless of degree of Indian blood or tribal affiliation. Subjects were both reservation and non-reservation Indians. There were two assumptions made: (1) that there are no differences between boys and girls related to sex, and (2) that there is a bilingual difference (i.e., between non-bilingual language environment.

Subjects

The population was comprised of ninety-five male and ninety female Indian children who were in residence at Seneca Indian School, Wyandotte, Oklahoma. The subjects were enrolled in grades one through eight. The sample represented nine tribes and sixteen combinations of tribes, though Cherokee, Seminole, Creek, and Choctaw tribes constituted the majority of the population. There were

seventy-four Cherokee children in Group I; fifty-two Seminole, Creek, and Choctaw children in Group II; and fifty-nine children who were members of other tribes which were designated as Group III.

Procedure

One hundred eighty-five pupils of Seneca Indian School were administered the following individual tests: Templin-Darley Tests of Articulation, Gilmore Oral Reading Test, Peabody Picture Vocabulary Test, and the Stanford-Binet Intelligence Scale (vocabulary sub-test). The California Achievement Tests were administered to groups at four levels: Lower Primary, Upper Primary, Elementary, and Junior High. Information concerning name, sex, age, grade, and tribe of each pupil was obtained from school records.

The following procedure provides the sequence of steps followed in the analysis of data and their contribution to the analysis:

(1) To determine relationships, an inter-relation matrix was developed for the five standardized tests for each of the tribal groupings, I, II and III.

(2) To determine differences, four one-factor analysis of covariance were performed between the tribal groupings with the control variable in each instance being the articulation measure as determined by the Templin-Darley Tests of Articulation. The dependent variable in each analysis was either the Gilmore Oral Reading

Test, California Achievement Test, Stanford-Binet Intelligence Scale or the Peabody Picture Vocabulary Test. For each analysis the .05 probability level was adopted for rejection of the null hypothesis. For each analysis of covariance the sub-samples were examined to ascertain if they satisfied the assumptions of homogeneity of variances.

(3) (a) Three 3 x 2 Chi-Square analysis, one for each bilingual group, were made to determine the difference between articulation defects, reading ability and vocabulary deficiency.

(b) It was decided that if the 3 x 2 Chi-Squares were significant then combinations of 2 x 2 Chi-Squares would be completed to ascertain where the major discrepancy lies.

(c) Scores for the Gilmore Oral Reading Test and the California Achievement Test (sub-test reading) were averaged for a simple score.

(d) Scores for the Stanford-Binet Intelligence Scale (sub-test vocabulary) and the Peabody Picture Vocabulary Test were averaged for a simple score.

Hereafter, the Templin-Darley Tests of Articulation will be referred to as TDTA; the Gilmore Oral Reading Test as GORT; the California Achievement Tests (reading) as CATR; the Stanford-Binet Intelligence Scale as SBIS; and the Peabody Picture Vocabulary Test as PPVT.

CHAPTER IV

RESULTS OF STUDY

The obtained test scores were tabulated for each subject and arranged according to tribal affiliation into ither Group I, II, or III (Appendix C).

Correlation (Weinberg and Schumaker, 1962) refers to a relationship in which each unit change on one variable corresponds to a designated change in the other and the change is uniform. To explore the degree of relationship among the TDTA, the PPVT, the SBIS, the GORT, and the CATR, three product-moment coefficients were computed. These product-moment coefficients were developed to test the null hypotheses Ho_1 through Ho_{30}.

The product-moment coefficient value between the TDTA and the PPVT of .25 was greater than the .05 level of significance .230; therefore, Ho_1 is rejected, showing that there is an association between speaking competency and vocabulary. To further explore this relationship it was found that the correlation between the TDTA and the SBIS of .25 also was greater than the .05 level of significance;

thus, Ho_2 is rejected. The results show that for Group I there is a significant relationship between speaking competency and vocabulary. The results for Group II (Cherokees) are presented in Table 2.

TABLE 2

PRODUCT-MOMENT CORRELATION COEFFICIENTS AMONG TDTA, PPVT, SBIS, GORT, AND CATR FOR GROUP I (N = 74)

	TDTA	PPVT	SBIS	GORT	CATR
TDTA	--	.25*	.25*	.18	.24*
PPVT		--	.76**	.51**	.51**
SBIS			--	.75**	.68**
GORT				--	.71**
CATR					--

*Significant beyond the .05 level .230
**Significant beyond the .01 level .298

When investigating the relationship between speaking and reading, Table 2 reveals that between the TDTA and the GORT the .18 value failed to reach the .05 level of significance; hence Ho_3 is accepted. However, as the obtained value .24 for the TDTA and the CATR was significant at the .05 level, Ho_4 is rejected. In other words, there is no

association between speaking and reading when reading is measured by the GORT, but the converse is true when reading is measured by the CATR.

Table 2 reveals that when exploring the association between vocabulary as measured by the PPVT and vocabulary as measured by the SBIS, a correlation value of .76 exists. This value was greater than both the .05 level of significance and the .01 level of significance. Thus, Ho_5 is rejected.

The results in Table 2 indicate that the relationship between vocabulary as measured by the PPVT and reading when measured by both the GORT and the CATR is significant. Obtained values were .51 and .51 respectively, which were greater than the .05 level of significance; therefore, Ho_6 and Ho_7 are rejected. To support this hypothesis further, the obtained values between vocabulary as measured by the SBIS and reading as measured by the GORT and the CATR were found to be .75 and .68, which reach both the .05 and .01 level of significance; hence Ho_8 and Ho_9 are rejected and a significant relationship between vocabulary and reading is shown.

Continuing the investigation one step further, an analysis was made to determine the relationship between reading as measured by the GORT and reading as measured by the CATR. The results as shown in Table 2 indicate a significant value of .71 which exceeds both the .05 and .01

levels of significance. Accordingly, Ho_{10} is rejected, thus emphasizing the interrelatedness of reading.

Data for Group I as presented in Table 2 indicates significant relationships among speaking competency, vocabulary, and reading ability, with correlation coefficients significant at the .05 level. The correlation between vocabulary and reading is significant at both the .05 and .01 levels. From these results the conclusion can be drawn that significant associations do exist.

The results in Table 3 reveal no significant relationship between speaking as measured by the TDTA and vocabulary as measured by the PPVT. The value .12 does not reach the .05 level of significance; therefore, Ho_{11} is accepted. Further investigation reveals a negative correlation of -.06 between speaking as measured by the TDTA and vocabulary as measured by the SBIS. This value also is below the .05 level of significance; hence Ho_{12} is accepted. When data were analyzed to determine the association between speaking and reading, no significance was found. A negative value of -.06 was found between the TDTA and reading as measured by the GORT and a value of .02 when reading was measured by the CATR. Neither value is significant at the .05 level; consequently, Ho_{13} and Ho_{14} are accepted. Table 3 represents the data for Group II, whose population consists of Creeks, Choctaws, and Seminoles.

TABLE 3

PRODUCT-MOMENT CORRELATION COEFFICIENTS AMONG TDTA, PPVT, SBIS, GORT, AND CATR FOR GROUP II (N = 52)

	TDTA	PPVT	SBIS	GORT	CATR
TDTA	--	.12	-.06	-.10	.02
PPVT		--	.53**	.46**	.05
SBIS			--	.73**	.60**
GORT				--	.64**
CATR					--

*Significant beyond the .05 level .273
**Significant beyond the .01 level .354

When exploring the relationship between vocabulary as measured by the PPVT and vocabulary as measured by the SBIS for Group II, a significant value of .53 was found. This value is greater than both the .05 and .01 levels of significance; thus, Ho_{15} is rejected.

An investigation of the association between vocabulary as measured by the PPVT and reading as measured by the GORT, reveals significant data. The correlation of .46 is significant at both the .05 and .01 levels; accordingly Ho_{16} is rejected. However, when vocabulary was measured by

the PPVT and reading was measured by the CATR a value of .05 was found. This value does not reach the .230 level of significance at the .05 level; therefore, Ho_{17} is accepted. Table 3 also reveals that when vocabulary was measured by the SBIS and reading measured by the GORT a value of .73 was obtained. This correlation is significant at both the .05 and .01 levels; thus Ho_{18} is rejected. Continuing to support the hypothesis of significant relationship when vocabulary was measured by the SBIS and reading was measured by the CATR, a significant positive value of .60 was found; hence Ho_{19} is rejected. In analyzing data to determine the intercorrelation of reading as measured by the GORT and the CATR, a significant value of .64 was found. This value reaches beyond the .05 and .01 levels of significance; hence, Ho_{20} is rejected.

The results above indicate that for Group II no significant relationships exist among speaking competency, vocabulary, and reading ability. In determining the relationship between vocabulary and reading, the obtained values were high and relatedness is shown. The correlation between vocabulary as measured by both tests, the PPVT and the SBIS, and reading as measured by the GORT, is significant at both the .05 and .01 levels. However, when vocabulary was measured by the PPVT and reading by the CATR, no significance was found; when vocabulary was measured by the SBIS and reading was measured by the CATR, a significant correlation was found.

To test Ho_{21} through Ho_{30}, product-moment correlation coefficients were computed to measure precise relationships among speaking, vocabulary and reading for Group III. The population of this group are those subjects who are not Cherokee, Creek, Choctaw, Seminole, or who belong to a combination of tribes. Data for Group III is presented in Table 4.

TABLE 4

PRODUCT-MOMENT CORRELATION COEFFICIENTS AMONG TDTA, PPVT, SBIS, GORT, AND CATR FOR GROUP III (N = 59)

	TDTA	PPVT	SBIS	GORT	CATR
TDTA	--	.21	.11	.40**	.13
PPVT		--	.78**	.69**	.55**
SBIS			--	.75**	.67**
GORT				--	.80**
CATR					--

*Significant beyond the .05 level .252
**Significant beyond the .01 level .336

No significance was found when the relationship between speaking competency was measured by the TDTA and vocabulary was measured by both the PPVT and the SBIS. The

obtained values were .21 and .11 respectively. Neither value reached the .05 level of significance; consequently, Ho_{21} and Ho_{22} are accepted. In determining the relationship between speaking as measured by the TDTA and reading as measured by the GORT, a significant correlation of .40 was obtained which is significant at both the .05 and .01 levels. Therefore, Ho_{23} is rejected, but when speaking was measured by the TDTA and reading was measured by the CATR no significant correlation was found. The obtained value .13 did not reach the .05 level of significance; thus, Ho_{24} is accepted. For Group III, there is a significant asscciation between vocabulary and reading. Between the PPVT and the GORT a value of .69 was found; between the PPVT and the SBIS a value of .78 was found; and between the PPVT and the CATR a value of .55 was found. Each of these values exceeds the .05 and .01 levels of significance; hence, Ho_{25}, Ho_{26}, and Ho_{27} are rejected. To further support the hypothesis that vocabulary and reading are significantly related, it was found that when vocabulary was measured by the SBIS and reading by the GORT the correlation is .75; when reading was measured by the CATR the correlation is .67. Each of these values is significant at the .01 and .05 levels; therefore, Ho_{28} and Ho_{29} are rejected.

In the last analysis presented in Table 4 a correlation of .80 was found when reading was measured by two different tests, the GORT and the CATR. This value exceeds

the .05 and .01 levels of significance; hence Ho_{30} is rejected. In reviewing Table 4, the conclusions can be drawn that for Group III significant relationships do exist among speaking, vocabulary, and reading. The results further support the relatedness between speech, vocabulary, and reading. The most significant relationship is between vocabulary and reading.

To determine if the mean articulation scores for the three groups differ when adjusted for the influence of vocabulary and reading, four analyses of covariance (Winer, 1962) were computed. In each analysis, the speech measure, the TDTA, was the independent variable, with the dependent variable either the PPVT, SBIS, GORT, or CATR. Samples were examined to ascertain if the assumption of homogeneity of variances was met. This assumption was met in each analysis with the exception of the GORT variable. Though, statistically speaking, the GORT failed to meet this assumption, it was treated as if it had, citing Norton (1956) who stated:

> It is apparent that marked heterogeneity of variance has a small but real effect on the form of the F-distribution. If one used the probabilities read from the normal-theory F-table in interpreting the results of an experiment with a degree of heterogeneity, he might think he was making a test at the 5% level when actually he was making at the 7% level, when actually he was doing so at the 2+% level of significance. Accordingly, where marked (but not extreme) heterogeneity is expected, it is desirable to allow for the discrepancy by setting a slightly higher "apparent" level of significance for this test than one would otherwise

employ (the "apparent" level being that indicated by the F-Table).

The mean articulation scores for Groups I, II, and III were adjusted for the influence of PPVT performance. The results of these computations are summarized in Table 5.

TABLE 5

ANALYSIS OF COVARIANCE: TDTA SCORES CORRECTED FOR INFLUENCE OF PPVT PERFORMANCE

Source	SS	df	MS	F
Treatments	1655.11	2	827.56	3.51*
Error	42640.48	181	235.59	
Total	44295.59	183		

*Significant beyond .05 level 3.04

The computed F-ratio 3.51 is greater than 3.04; therefore, treatment differences are significant at the .05 level. Thus, Ho_{31} is rejected. The results of the analysis of covariance when mean articulation scores were adjusted for the influence of SBIS performance are presented in Table 6.

Since the F-ratio is less than 1, it is obvious that treatment differences are not significant; therefore, Ho_{32} is accepted. In other words, mean articulation scores for the three groups differ when adjusted for the

influence of vocabulary as measured by SBIS. Analysis of covariance was used to investigate the differences between speech competency as measured by the TDTA and reading ability as measured by the GORT and the CATR. Computed data are presented in Tables 7 and 8.

TABLE 6

ANALYSIS OF COVARIANCE: TDTA SCORES CORRECTED FOR INFLUENCE OF SBIS PERFORMANCE

Source	SS	df	MS	F
Treatments	9.97	2	4.99	.32
Error	2814.85	181	15.55	
Total	2824.82	183		

.05 significant level 3.04

TABLE 7

ANALYSIS OF COVARIANCE: TDTA SCORES CORRECTED FOR INFLUENCE OF GORT PERFORMANCE

Source	SS	df	MS	F
Treatments	2544.66	2	1272.33	1.50
Error	153319.75	181	847.07	
Total	155864.41	183		

.05 level of significance 3.04

TABLE 8

ANALYSIS OF COVARIANCE: TDTA SCORES CORRECTED FOR INFLUENCE OF CATR PERFORMANCE

Source	SS	df	MS	F
Treatment	1115.43	2	557.72	1.17
Error	86376.57	181	447.22	
Total	87492.00	183		

.05 level of significance 3.04

In analyzing the data in Table 7 the F-ratio was found to be 1.50 which does not reach the .05 level of significance, 3.04. Therefore, Ho_{33} is accepted and treatment differences are not significant. The last analysis, made to determine the influence of reading, as measured by CATR, on group mean articulation scores, further supports the lack of significance in treatment differences. The computed F-value 1.17 does not reach the .05 level of significance; thus, Ho_{34} is accepted.

In reviewing Tables 5, 6, 7, and 8, Analysis of Covariance, the PPVT performance is the only one which was significant at the .05 level when the mean TDTA scores had been adjusted for the influence of the PPVT, SBIS, GORT, and CATR.

Chi square (Lindquist, 1956) is a useful test to determine characteristics (parameters) of the population from which the experimental observations may be regarded as random samples. For this reason it was employed to determine the proportion of deficient to non-deficient subjects for speech, vocabulary, and reading. Tables 9, 10, and 11 present data for all three groups.

TABLE 9

CHI SQUARE THREE-BY-TWO CONTINGENCY TABLE FOR GROUP I (N = 74)

Deficiency	Yes	No	Total
Speech Deficiency	73	1	74
Vocabulary Deficiency	58	16	74
Reading Deficiency	53	21	74
Totals	184	38	222

Chi square values were computed from the data presented in Contingency Tables 9, 10, and 11 and the results are shown in Table 12.

Table 12 reveals that for Group I, the computed chi square value is 20.415 which is significant at the .05 and .01 levels of significance, and Ho_{35} is rejected. For Group II, the chi square value is 19.374, and for Group III

TABLE 10

CHI SQUARE THREE-BY-TWO CONTINGENCY TABLES FOR GROUP II (N = 52)

Deficiency	Yes	No	Total
Speech Deficiency	51	1	52
Vocabulary Deficiency	40	12	52
Reading Deficiency	33	19	52
Totals	124	32	156

TABLE 11

CHI SQUARE THREE-BY-TWO CONTINGENCY TABLES FOR GROUP III (N = 59)

Deficiency	Yes	No	Total
Speech Deficiency	58	1	59
Vocabulary Deficiency	41	18	59
Reading Deficiency	44	15	59
Totals	143	34	179

chi square equals 18.206; both values are significant at the .05 and .01 levels of significance. Therefore, Ho_{36} and Ho_{37} are rejected.

TABLE 12

CHI SQUARE VALUES AS COMPUTED FROM THREE-BY-THREE CONTINGENCY TABLES 9, 10, AND 11 FOR GROUPS I, II, AND III

Group I	Group II	Group III
N = 74	N = 52	N = 59
x^2=20.415**	x^2=19.374**	x^2=18.026**

*Significant beyond the .05 level 5.99
**Significant beyond the .01 level 9.21

The decision was made that if significant chi square values were found for speech, vocabulary, and reading, then combinations of two-by-two chi squares would be computed to ascertain where the discrepancies lie. The chi square two-by-two contingency tables for all three groups are shown in Table 13.

Chi square values for each group were computed from the two-by-two sub-tables found in Table 14. Table 14 clearly shows that the major discrepancy among speech, vocabulary, and reading is caused by the extreme influence of speech. The obtained chi square values for all three groups show differences between speech and reading which reach beyond the .05 and .01 levels of significance. This is true also between speech and vocabulary which have even greater chi square values. The differences between vocabulary and reading as computed by chi square are not

TABLE 13

CHI SQUARE TWO-BY-TWO CONTINGENCY TABLES
FOR GROUPS I, II, AND III

	Group I (N=74)			Group II (N=52)			Group III (N=59)		
Deficiency	Yes	No	Total	Yes	No	Total	Yes	No	Total
Speech Deficiency	73	1	74	51	1	52	58	1	59
Reading Deficiency	58	16	74	40	12	52	41	18	59
Totals	131	17	148	91	13	104	99	19	118
Speech Deficiency	73	1	74	51	1	52	58	1	59
Vocabulary Deficiency	53	21	74	33	19	52	44	15	59
Totals	162	22	148	84	20	104	102	16	118
Vocabulary Deficiency	58	16	74	40	12	52	41	18	59
Reading Deficiency	53	21	74	33	19	52	44	15	59
Totals	111	37	148	73	31	104	85	33	118

significant in any of the three groups. Although there are deficiencies in vocabulary and reading, they are not significantly different one from the other.

TABLE 14

CHI SQUARE VALUES COMPUTED FROM DATA FOUND IN TWO-BY-TWO CONTINGENCY TABLES FOR GROUPS I, II, AND III

Group	Speech-Reading	Speech-Vocabulary	Vocabulary-Reading
Group I	13.000**	19.274**	.576
Group II	8.791**	17.890**	1.654
Group III	16.336**	12.219**	.168

*Significant beyond .05 level 5.99
**Significant beyond .01 level 9.21

CHAPTER V

SUMMARY, DISCUSSION, AND IMPLICATIONS

Summary

Language is an integral part of the culture of people, and whether it is spoken or written, it comprises a set of signals that serve the social need for the intercommunication of ideas and concepts. Speech and reading are the most widely used means of communication, and research indicates significant relationships between them. Van Riper (1964) and Eisenson (1963), authorities in the field of speech, concur that reading, writing, listening, and speaking are all closely linked together, and that the basic linkage is in the language symbol. In considering the parallels and relationships between the disabilities of speech and reading, research indicates that both appear to be produced by inadequate speech models, poor hearing, brain injuries, mental retardation, emotional conflicts, bilingualism, lack of motivation, and inadequate teaching. Monroe (1932) and Artley (1948) frequently mention articulation as a cause of reading disability. Articulation is

also considered a contributing factor in speech problems associated with bilingual children from non-English language environments who have no opportunity to develop speech and vocabulary skills that are prerequisite to reading in the American school. They are educationally penalized because of their limited ability to translate words, ideas, and concepts into English. The purpose of this study was to investigate speaking competency, vocabulary range, and reading ability of a population whose language environment is non-English, to determine if significant relationships and differences exist.

The Templin-Darley Tests of Articulation, Peabody Picture Vocabulary Test, Stanford-Binet Intelligence Scale, sub-test vocabulary, Gilmore Oral Reading Test, and the California Achievement Tests, sub-test reading, were administered to 185 Indian children, enrolled in grades one through eight, at Seneca Indian School, Wyandotte, Oklahoma. Subjects were grouped according to tribal affiliation into Group I, Cherokee; Group II, Creek, Choctaw and Seminole; and Group III, other tribes and combinations of tribes.

Findings

The basic experimental designs were to determine if relationships and/or differences exist among speaking competency, vocabulary, and reading ability of bilingual language environment groups. When investigating these

relationships as determined by performances on the TDTA, PPVT, SBIS, GORT, and CATR for Group I, significant correlations were found. Obtained scores revealed significant correlations at the .05 level among speaking, vocabulary, and reading. Further analysis of scores showed the relationship between vocabulary and reading to be significant at both the .05 and .01 levels. Therefore, for Group I, significant relationships among speaking competency, vocabulary and reading exist.

In analyzing data for Group II, no significant relationships were found among speaking, vocabulary, and reading ability. Data revealed a negative value between speaking as measured by the TDTA and vocabulary as measured by the SBIS. A negative value was also found between speaking and reading as measured by the GORT. Statistically, these two scores were negative, but because the values did not reach the .05 level they were not significant. Significant relationships between vocabulary and reading were found in this group: correlations which were significant at the .05 and .01 levels of significance. For Group II, the relationships are not significant among speaking, vocabulary, and reading, but are highly significant between vocabulary and reading.

Data for Group III reinforces the hypothesis that a relationship exists between speaking and reading. Results indicate a significant correlation between speaking as

measured by the TDTA and reading as measured by the GORT. Further analysis of data for Group III reveals correlations between vocabulary and reading ranging from .55 to .80 which are significant at the .05 and .01 levels. From these findings it can be concluded that for Group III, significant relationships do exist among speaking, vocabulary, and reading.

To investigate further, four analyses of covariance were computed to determine if the PPVT, SBIS, GORT, and CATR performances would influence articulation scores for the three groups. Results indicate that when the TDTA scores were corrected for the influence of the PPVT performance, a significant value was obtained. When the TDTA scores were corrected for the influence of the SBIS, GORT, and CATR, no significant values were found.

In the last analysis, data were combined to determine the proportion of deficient to non-deficient subjects for speech, vocabulary, and reading. Significant chi square values were found for each of the three groups; therefore, two-by-two chi squares were computed to investigate which factor or factors caused the major discrepancies. In Group I, the obtained value for speech and reading was found to be significant at the .05 and .01 levels; chi square values for speech and vocabulary were also found to be significant at the .05 and .01 levels. However, for vocabulary and reading, the chi square was not found to be

significant. Data for Group II revealed significant chi square values for speech and reading, and also for speech and vocabulary, but no significant value was found for reading and vocabulary. In further analyzing data, it was found that for Group III chi square values were found to be significant for speech and reading, speech and vocabulary, but not significant for vocabulary and reading. Results from the computed two-by-two chi squares revealed conclusively that the severe influence of speech is the major factor causing discrepancies. To recapitulate, for all three groups, chi square values for speaking and reading were found to be significant. For speaking and vocabulary significant chi square values were also found. However, when chi square was computed for vocabulary and reading, no significant value was found for any of the groups. Defects were found in both reading and vocabulary but they did not differ significantly one from the other.

The findings of this study indicate a significant relationship among speaking competency, vocabulary, and reading. Evidence is also presented that when deficiencies exist, speech is the major contributing factor.

Implications

The evidence presented in this study supports the tenet of positive and significant relationships among language abilities. Results also indicate that proficiency

in speaking would affect reading performance and that a deficiency in speech is a major factor in other language deficiencies. Consequently, the assumption can be made that improvement in speech should contribute to improvement in reading.

The ability to influence the linguistic development of language-disadvantaged children is important for both theory and practice. By manipulating the bilingual child's verbal behavior, it should be possible to change his level of intellectual, linguistic, and behavioral functioning. Increased verbalization and verbal approach to problem solving should facilitate intellectual development and thereby have important ramifications for the prevention of educational retardation.

Non-English speaking children could be helped by intensifying the teaching of skills in the areas of listening, speaking, and reading. Many teachers are not aware of the nature of the bilingual child's linguistic difficulties; therefore, they do not develop appropriate methods and materials for his instruction. The teacher, as a cross-cultural interpreter, when functioning in situations involving children from divergent sub-cultures, must develop a clear understanding of the fact that cultural communities differ within a wide range of variation on the basis of their way of life, their mode of communication, and the manner in which they conceive the world in which they live.

The Indian culture, one of the many sub-cultures in the United States, contains elements of social values, customs, traditions, concepts, religions, and languages which differ from those of the primary culture. The language differences act as a deterrent to educational growth in the framework of an English-language school environment. Therefore, schools should provide a sequence of language experiences which are attuned to the child's language needs in school, neighborhood, and social situations. Such experiences must be linguistically sound as well as psychologically acceptable to the child's way of thinking, his cultural predisposition, and his deep-seated attitudes and feelings.

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APPENDIX A

COMPARATIVE VOCABULARIES

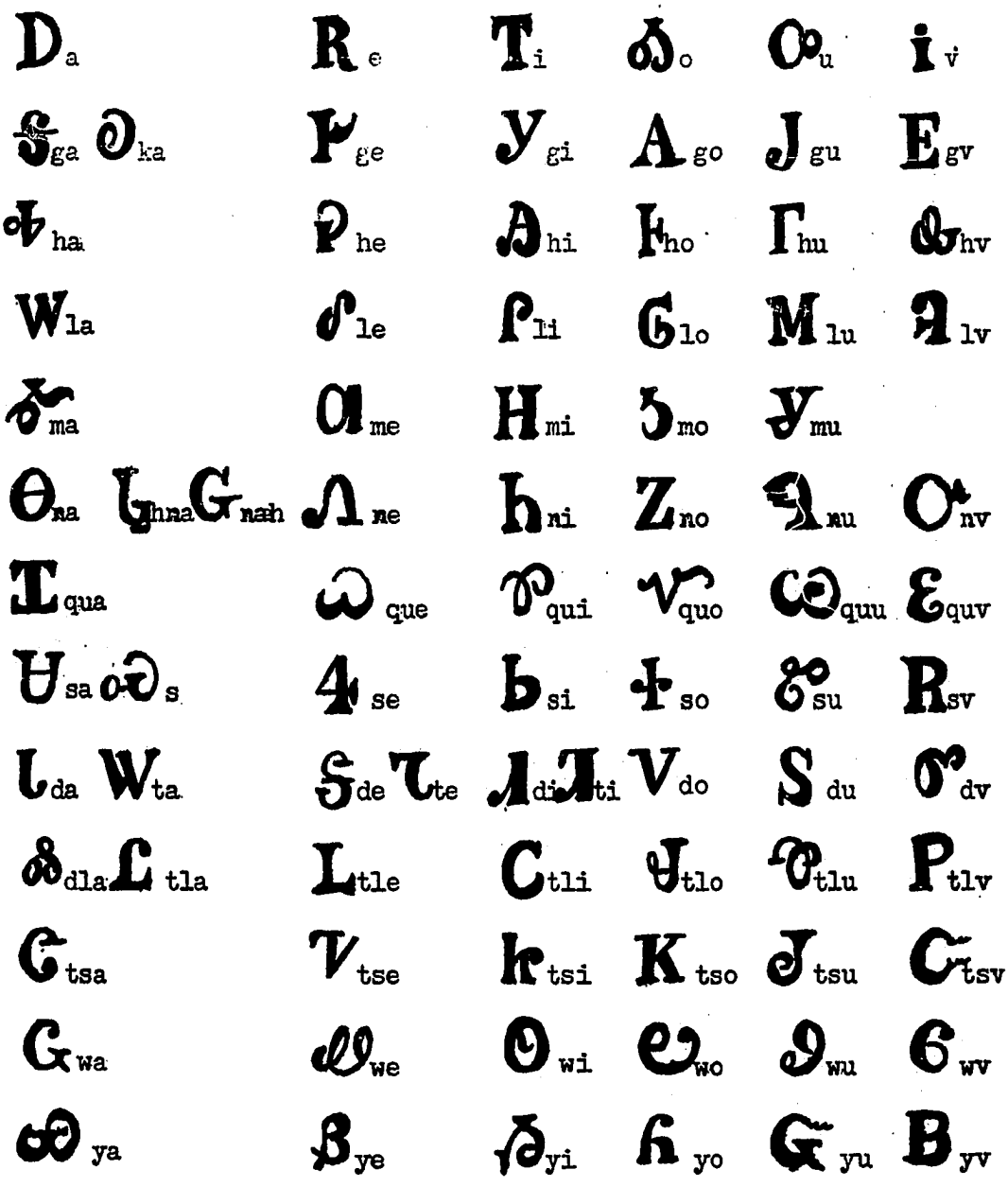
English	Choctaw	Seminole	Creek
man	hatak	hvnvnwa	nakni
woman	ohoyo	hokte	taikee
boy	vlla nakni	chipane	ahlehloce
girl	vlla tek	choktoche	taikoche
my older brother	amvnni	chvtstaha	chachie
my younger brother	sanakfish	chachose	chaiapose
people	okla	iste	iaton
face	nashaka	tulhofv	tafokse
tongue	isunlvsh	tolasua	cholase
hand	ibbvk	inke	elbe
heart	chukvsh	chafike	chonosbe
friend	kana	enhesse	acheme
horse	chukka	chuko	chiki
rock	tali	cvto	tale
dog	ofi	efv	efe
deer	issi	eco	eche
bird	hushi	fuswv	foose
large	chito	rakke	choobe
little	isketini	loputke	uikchosis
high	chaha	hvlui	abvnti
low	akalusi	kunchapi	iakni
to eat	ipa	papetv	empike
to walk	nowa	yakapita	chaiake
to steal	hukopa	holskopita	okepeke

English	Choctaw	Seminole	Creek
one	achvffa	thlamen	hvmken
two	tuklo	toklan	hokkolen
three	tuchina	tockinan	totcenen
four	ushta	citaken	osten
five	talhapi	chaskepen	cahepen
six	hvnnali	ipaken	epaken
seven	ontuklo	colapaken	kulvpaken
eight	ontuckina	tosnapoken	cenvpaken
nine	chvkhalin	ostapoken	ostvpaken
ten	pokali	pakolen	palen

CHEROKEE COMPARABLE VOCABULARY

all	ni-ga-da
yes	ha-wa
no	tla
man	a-s-ga-yv
woman	a-ge-yv
boy	a-tsu-tsa
girl	a-ye-yv-tsa
one	sa-wo
two	ta-li
three	tso-i
four	nv-gi
five	hi-s-gi
six	su-da-li
seven	ga-li-quo-gi
eight	tsu-ne-la
nine	so-hna-la
ten	s-go-hi

APPENDIX B



Sounds represented by Vowels

a, as a in father, or short as a in rival
e, as a in hate, or short as e in met
i, as i in pique, or short as i in pit
o, as aow in law, or short as o in not.
u, as oo in fool, or short as u in pull.
v, as u in but, nasalized.

Consonant Sounds

g nearly as in English, but approaching to k d nearly as in English, but approaching to t h k l m n. q. s. t. w. y. as in English. Syllables beginning with g. except S have sometimes the power of k, Λ. S. G are sometimes sounded to, tu, tv, and Syllables written with tl except L sometimes vary to dl.

MUSKOKEE ALPHABET
(Creek and Seminole)

A	a	as in far, as afke.
C	c	che, for tch, as ceme Cesvs.
E	e	as i in pin.
F	f	fe, as in English.
H	h	he, " "
I	i	as in pine, as likes.
K	k	ke, as in English.
L	l	le, " "
M	m	me, " "
N	n	ne, " "
O	o	as in note; as ofv, opv, ostet.
P	p	pe, as in English.
R	r	hle, for hl, as rvro, rakke.
S	s	se, as in English.
T	t	te, " "
U	u	as oo in wood, as hoktuce, pum.
V	v	as u in tub, as yvmv, ekvnv.
W	w	we, as in English.
Y	y	ye, " "

DIPHTHONGS

AE	ae	as in aeha.
Au	au	as in vhauke.
Eu	eu	as in yafkateu.
CE	ce	as in hopcetakuc.
OU	ou	as in sapokou.
Ue	ue	as in uewv.

ALPHABET
(Choctaw)

Letters		Sounded
A	a	as a in father.
Ą	ą	as u in tub, and a in above, around.
B	b	as in English.
Ch	ch	as in church.
E	e	as e in they, and short e as in met.
F	f	as in English.
H	h	as in English.
I	i	as i in marine and short as i in pin.
K	k	as in English.
Ł	ł	as an aspirated l.
L	L	as in English.
M	m	as in English.
N	n	as in English.
O	o	as o in note, go.
P	p	as in English.
S	s	as in sir; never as s in his.
Sh	sh	as in shall.
T	t	as in English.
U	u	as oo in wool, u in full.
W	w	as in war, we.
Y	y	as in you.

DIPHTHONGS

Ai	ai	as i in pine.
Au	au	as ow in now, how.

NASALIZED VOWELS

A^n	a^n	These are pure nasals, and retain the
I^n	i^n	vowel sounds, except before the letter k,
O^n	o^n	in which case they are like the long ang,
U^n	u^n	ing, ong, ung. The usual sound is softer than ang, and like that of the French vowel followed by n in the same syllable.

CONSONANTS AND VOWELS

Let it be remembered that each consonant has but one sound and that the sounds ascribed to the vowels are such as they have, respectively, in accented syllables; in unaccented syllables they have the sound of short vowels. English readers should remember not to give the English sound to the vowels, except as noted in the alphabet.

a^{n}, i^{n}, o^{n}, and u^{n}, or some of them, are used as separate words or final syllables. They are used also before the consonants and semivowels b, f, h, k, m, n, s, sh, w, and y. Before the consonant p, sometimes before b and the vowels, for the sake of euphony the letter m is added, or the nasal sound becomes m of necessity from the position of the organs of speech at that time, as am, im, om, and um.

In making these remarks general rules are stated. It is not to be supposed that each and all of the nasals are thus used. There are exceptions, which the student must be ready to notice. An unwritten language has its anomalies and irregularities.

APPENDIX C

RAW SCORES GROUP I

Grade	Name	Birthdate	Sex	Tribe	TDTA	PPVT	SBIS	CATR Vo.	CATR Com.	CATR Total	GORT Acc.	GORT Com.	Wds P/M
1	SH	02-07-61	F	Cherokee	137	48	2	23	4	27	0	6	19
1	RP	08-30-61	F	Cherokee	168	45	3	15	1	16	0	3	12
1	CWR	08-30-61	M	Cherokee	164	45	5	39	3	42	3	0	30
1	CSR	09-11-59	F	Cherokee	172	51	5	39	3	42	3	0	30
1	KT	12-10-60	M	Cherokee	170	55	2	30	2	32	0	10	6
2	BA	10-27-60	F	Cherokee	171	55	8	52	6	58	10	15	54
2	DA	07-29-59	M	Cherokee	175	60	5	21	16	37	5	15	24
2	DSA	10-27-60	F	Cherokee	173	52	6	45	3	48	4	13	24
2	BB	03-16-60	M	Cherokee	174	53	6	37	19	71	26	23	108
2	DC	10-07-59	F	Cherokee	174	57	9	26	23	49	7	15	54
2	DH	08-01-59	F	Cherokee	169	47	6	24	18	42	8	20	0
2	GWK	07-01-60	M	Cherokee	174	48	6	55	5	60	7	15	48
2	SP	01-11-59	F	Cherokee	175	59	4	56	10	66	8	15	54
2	JTP	10-18-59	M	Cherokee	166	60	7	42	4	46	2	11	0
2	DT	04-19-59	M	Cherokee	162	56	7	35	4	39	0	15	0

Grade	Name	Birthdate	Sex	Tribe	TDTA	PPVT	SBIS	CATR Vo.	CATR Com.	CATR Total	GORT Acc.	GORT Com.	Wds P/M
3	BMK	07-12-58	F	Cherokee	171	54	6	34	39	73	20	24	96
3	BJR	02-01-58	M	Cherokee	171	55	9	32	28	60	19	20	66
3	MT	12-16-57	F	Cherokee	172	54	11	38	38	76	15	20	66
3	HV	02-26-59	M	Cherokee	175	61	8	27	21	48	5	8	60
3	WY	09-25-57	M	Cherokee	171	56	7	32	0	32	0	10	0
4	BJ	12-03-57	M	Cherokee	173	63	10	44	38	79	34	23	83
4	DB	05-20-57	F	Cherokee	160	64	9	44	49	93	21	32	144
4	SB	08-05-58	F	Cherokee	175	63	11	42	47	89	25	28	120
4	CC	12-28-57	F	Cherokee	174	63	13	43	47	90	27	25	162
4	CYC	10-07-56	F	Cherokee	175	60	11	44	43	87	30	26	160
4	MC	10-07-56	M	Cherokee	168	59	11	42	36	78	39	36	132
4	HAH	05-06-57	F	Cherokee	165	53	4	42	38	80	28	20	132
4	JJ	01-16-58	F	Cherokee	173	62	12	45	38	83	54	36	136
4	AH	12-16-58	M	Cherokee	166	63	11	38	38	76	33	34	120
4	JCP	02-12-57	M	Cherokee	173	61	9	39	34	73	26	15	90

Grade	Name	Birthdate	Sex	Tribe	TDTA	PPVT	SBIS	CATR Vo.	CATR Com.	CATR Total	GORT Acc.	GORT Com.	Wds P/M
4	JFR	05-14-56	F	Cherokee	169	57	11	32	35	67	19	24	102
5	RA	08-31-57	F	Cherokee	173	76	10	28	38	66	56	35	114
5	JJA	11-27-56	M	Cherokee	176	81	13	10	4	14	5	9	84
5	RC	06-24-55	M	Cherokee	176	78	6	28	39	67	21	30	132
5	LSC	11-04-57	F	Cherokee	173	63	9	34	41	75	37	32	120
5	JD	10-10-56	M	Cherokee	167	78	13	32	37	69	33	23	126
5	TD	10-19-57	M	Cherokee	174	74	12	34	38	82	48	41	126
5	DJH	05-30-55	M	Cherokee	176	59	6	18	32	50	6	20	0
5	HR	12-14-53	M	Cherokee	176	78	8	24	28	52	6	0	0
5	TDS	04-22-56	M	Cherokee	173	76	9	37	48	85	35	27	150
5	ST	01-08-57	F	Cherokee	174	70	7	31	41	72	40	20	138
5	BT	09-23-57	F	Cherokee	175	62	3	23	33	56	25	13	114
6	SLB	09-07-56	M	Cherokee	172	103	18	47	51	98	39	41	156
6	SPB	02-02-55	M	Cherokee	173	81	13	37	22	59	35	26	132
6	RB	11-11-55	M	Cherokee	176	94	18	40	50	90	58	35	162
6	DH	06-22-56	M	Cherokee	171	60	8	16	18	34	29	15	126

Grade	Name	Birthdate	Sex	Tribe	TDTA	PPVT	SBIS	CATR Vo.	CATR Com.	CATR Total	GORT Acc.	GORT Com.	Wds P/M
6	JKK	08-12-56	F	Cherokee	176	61	6	35	32	67	33	27	126
6	BV	04-13-35	F	Cherokee	175	64	9	33	37	70	8	13	180
6	JY	07-16-54	M	Cherokee	163	83	11	42	55	97	46	34	156
7	DCA	11-19-54	F	Cherokee	165	84	13	34	39	73	48	35	156
7	DC	11-28-53	M	Cherokee	168	79	10	22	29	56	36	35	198
7	DD	08-20-53	M	Cherokee	162	86	11	36	24	60	64	36	120
7	BF	05-21-51	F	Cherokee	168	75	14	25	23	48	28	24	120
7	MBF	05-21-51	F	Cherokee	162	78	11	18	31	49	53	30	156
7	RH	12-21-54	M	Cherokee	172	79	12	22	37	56	49	36	126
7	JSK	09-28-54	F	Cherokee	175	67	7	20	36	56	38	20	150
7	JDL	10-27-55	M	Cherokee	168	76	12	19	27	46	22	28	120
7	WR	04-04-54	M	Cherokee	175	87	16	35	55	90	35	44	72
7	RR	02-22-52	M	Cherokee	176	85	16	28	35	63	51	44	48
7	GT	12-16-54	M	Cherokee	172	80	14	26	44	66	49	36	102
7	DWE	05-28-55	F	Cherokee	172	106	18	43	53	96	55	40	150
8	RB	03-25-54	M	Cherokee	176	95	15	54	61	115	58	45	132
8	NJB	07-19-54	M	Cherokee	165	70	8	28	29	57	40	27	120

Grade	Name	Birthdate	Sex	Tribe	TDTA	PPVT	SBIS	CATR Vo.	CATR Com.	CATR Total	GORT Acc.	GORT Com.	Wds P/M
8	DC	07-20-54	F	Cherokee	174	100	15	27	43	70	49	31	126
8	DG	01-20-54	F	Cherokee	174	117	9	19	39	56	30	25	294
8	FH	02-25-33	F	Cherokee	172	76	11	17	33	50	56	29	162
8	RJ	07-22-54	F	Cherokee	168	82	11	31	28	59	61	29	126
8	JP	01-11-53	F	Cherokee	168	82	9	28	37	65	34	23	186
8	BJR	09-08-52	F	Cherokee	174	80	12	33	32	65	47	22	126
8	JDR	06-30-52	M	Cherokee	176	99	18	35	48	83	64	33	84
8	MR	05-26-54	M	Cherokee	175	101	15	56	71	127	64	37	124
8	WR	08-16-54	F	Cherokee	171	82	16	24	28	52	27	24	96
8	LS	06-17-54	F	Cherokee	174	81	15	37	57	94	56	40	108
8	SAV	04-05-52	F	Cherokee	160	58	7	16	16	32	20	29	108
					GROUP II								
1	LME	03-25-61	F	Creek	167	66	2	15	4	19	0	6	19
2	JHB	07-20-59	M	Choctaw	173	65	8	45	5	50	1	10	42
2	JG	10-11-58	M	Creek	175	75	11	41	1	42	0	1	16
2	MT	07-06-59	F	Seminole	175	53	8	49	6	55	6	8	72

Grade	Name	Birthdate	Sex	Tribe	TDTA	PPVT	SBIS	CATR Vo.	CATR Com.	CATR Total	GORT Acc.	GORT Com.	Wds P/M
3	TW	04-01-60	M	Creek	176	54	4	58	9	67	18	18	54
3	KC	10-04-58	F	Choctaw	173	60	10	39	36	75	24	24	90
3	GMJ	11-22-58	F	Creek	173	60	7	26	37	63	12	24	66
3	PM	12-06-58	M	Creek	175	69	7	41	38	79	34	24	126
3	JT	10-31-57	F	Seminole	171	58	8	24	29	53	8	8	48
3	DW	01-20-59	F	Creek	174	51	6	25	18	43	9	14	78
4	PEM	12-06-58	M	Creek	170	56	12	42	37	79	39	24	174
4	BT	07-01-55	M	Seminole	163	64	9	41	36	77	23	30	114
5	CC	08-31-56	M	Choctaw	174	65	9	34	41	75	37	32	120
5	DIC	03-17-56	M	Seminole	175	73	6	34	29	63	6	8	27
5	SG	02-14-57	M	Choctaw	130	73	14	30	52	82	44	41	138
5	MH	04-10-54	M	Creek	175	83	8	23	35	58	8	10	0
5	LJ	04-08-56	F	Creek	174	80	14	36	52	88	43	18	162
5	CM	12-06-55	F	Creek	167	65	7	35	47	82	27	31	156
5	CT	01-25-53	M	Seminole	174	75	12	11	20	31	9	9	0
6	GG	08-05-56	M	Creek	175	85	10	39	29	68	47	23	150

Grade	Name	Birthdate	Sex	Tribe	TDTA	PPVT	SBIS	CATR Vo.	CATR Com.	CATR Total	GORT Acc.	GORT Com.	Wds P/M
6	MH	12-11-54	F	Creek	173	72	11	35	57	92	29	21	202
6	MYH	12-04-54	F	Creek	176	86	10	42	58	100	45	38	126
6	DJ	07-28-56	F	Creek	175	125	13	38	53	91	12	18	150
6	MP	01-10-55	M	Creek	174	97	13	42	26	68	49	38	144
7	LB	09-09-53	M	Seminole	169	74	7	23	21	44	7	22	66
7	SC	06-07-54	F	Seminole	170	77	9	31	40	71	48	35	156
7	MD	04-12-53	F	Choctaw	175	79	12	24	47	71	41	21	198
7	JD	09-04-54	M	Seminole	161	79	11	45	45	90	34	31	174
7	ND	09-09-55	F	Seminole	171	77	11	40	29	69	40	37	72
7	RF	11-19-52	M	Creek	168	84	10	21	25	46	24	20	152
7	PM	07-25-53	M	Seminole	175	67	6	19	22	41	16	24	186
7	HT	03-06-54	M	Seminole	175	85	14	38	51	89	9	28	54
7	LT	02-15-54	F	Seminole	165	65	5	17	30	47	19	14	150
7	ZT	07-28-55	F	Creek	169	72	10	38	38	76	40	34	204
7	MT	03-13-55	M	Seminole	163	78	9	17	22	39	40	35	125
7	FW	08-26-55	F	Creek	174	82	15	27	35	52	71	32	162
8	JB	12-05-53	M	Seminole	174	94	15	35	42	77	34	23	222

Grade	Name	Birthdate	Sex	Tribe	TDTA	PPVT	SBIS	CATR Vo.	CATR Com.	CATR Total	GORT Acc.	GORT Com.	Wds P/M
8	CC	09-07-54	F	Choctaw	174	96	17	46	39	85	43	33	144
8	MD	02-23-53	M	Choctaw	174	86	14	50	55	105	55	45	120
8	JF	12-28-54	F	Creek	175	78	13	22	39	61	48	33	144
8	DJ	08-27-55	M	Creek	160	87	12	33	39	72	39	35	84
8	PJ	07-10-52	M	Choctaw	157	63	8	25	37	62	24	32	162
8	DJS	07-31-54	F	Creek	175	96	16	47	57	104	80	39	144
8	DK	06-14-51	M	Choctaw	162	66	5	27	23	50	30	27	114
8	KK	09-23-51	M	Choctaw	169	68	8	20	28	48	39	32	114
8	MM	09-29-52	M	Creek	174	109	14	57	69	126	86	37	210
8	ES	12-05-52	M	Choctaw	159	69	6	20	30	50	16	31	132
8	RT	05-27-54	M	Creek	160	84	16	34	43	77	33	33	144
8	MT	01-10-52	F	Seminole	162	71	10	28	25	53	29	24	108
8	MAT	11-26-51	F	Choctaw	168	69	10	29	38	67	34	25	180
8	AT	05-26-53	F	Seminole	174	124	10	32	35	67	47	29	150
8	MW	06-15-53	F	Choctaw	160	93	18	47	45	92	69	32	168

GROUP III

Grade	Name	Birthdate	Sex	Tribe	TDTA	PPVT	SBIS	CATR Vo.	CATR Com.	CATR Total	GORT Acc.	GORT Com.	Wds P/M
1	JDJ	07-09-60	M	Osage	175	67	2	30	6	36	0	15	36
1	FL	10-18-60	M	Ck-Sem	173	59	4	41	7	48	5	7	42
1	RL	10-02-61	M	Ck-Sem	170	47	3	19	1	20	0	10	12
1	RP	07-27-61	M	Cr-Cher	166	44	4	16	1	17	0	10	12
1	KS	06-05-61	F	Cr-Cher	172	51	5	36	2	38	0	15	30
2	MH	11-06-58	F	Os-Oto	175	54	7	54	11	65	10	9	60
2	EH	02-18-60	F	Nav-Sem-Ck	174	48	6	55	5	60	7	15	48
2	DNE	08-02-59	M	Oto-Pon	173	62	8	69	13	82	13	11	72
2	SS	04-16-60	M	Cr-Cher	176	71	5	49	9	58	16	11	48
2	IT	02-01-60	F	Cr-Sem	176	54	9	51	4	55	11	11	60
2	RW	08-12-60	M	Sem-Chey-Ara	174	59	6	38	3	41	2	15	18
3	ED	08-20-58	M	Cr-Cher	161	77	8	36	28	64	6	14	102
3	KH	04-20-56	F	Os-Oto	169	61	8	38	32	64	33	12	120
3	CH	09-30-58	F	Sem-Nav-Ck	169	56	6	33	32	65	20	16	72
3	JJ	07-27-59	F	Osa-Bkft	169	56	10	36	40	76	29	16	138

Grade	Name	Birthdate	Sex	Tribe	TDTA	PPVT	SBIS	CATR Vo.	CATR Com.	CATR Total	GORT Acc.	GORT Com.	Wds P/M
3	JL	03-07-59	F	Cr-Sem	175	58	8	36	36	72	28	17	90
3	LP	09-03-59	F	Cr-Cher	173	53	7	22	18	40	6	15	66
3	PT	04-30-58	M	Cr-Sem	164	57	7	28	29	57	7	17	30
3	MLW	01-09-58	M	Cho-Chi	139	59	8	49	6	55	2	10	0
4	LD	03-26-57	M	Cr-Cher	175	87	13	36	39	75	34	34	114
4	CD	10-29-58	M	Seminole	175	73	12	44	45	89	41	21	138
4	JKH	12-07-57	M	Os-Oto	171	63	10	40	41	81	27	27	90
4	ERL	05-09-57	M	Cr-Cher	171	75	10	11	14	25	0	14	64
4	BNE	05-03-57	M	Oto-Pon	169	67	9	37	39	76	29	17	150
4	SNE	08-15-58	F	Oto-Pon	157	71	13	43	47	90	38	25	132
4	WP	07-19-58	M	Shaw-Qua	174	65	12	43	44	87	13	25	101
4	NP	08-08-58	F	Cr-Cher	169	55	10	39	41	80	32	19	144
4	TSS	05-30-58	M	Osa-Paw	175	89	11	41	29	70	16	20	108
4	VDW	06-02-57	M	Cho-Chi	171	62	11	28	34	62	9	38	66
5	MH	12-28-51	M	Flo-Sem	175	70	5	12	24	36	0	0	0
5	IMJ	06-21-56	F	Osa-Bkft	173	81	14	34	44	78	34	51	138
5	BCJ	09-29-57	F	Osage	174	73	7	35	39	74	47	24	102

Grade	Name	Birthdate	Sex	Tribe	TDTA	PPVT	SBIS	CATR Vo.	CATR Com.	CATR Total	GORT Acc.	GORT Com.	Wds P/M
5	MKL	09-26-57	F	Cr-Sem	171	64	10	23	45	68	40	32	150
5	AM	01-29-56	M	Cher-Osa	174	83	14	13	23	36	5	15	0
5	AP	05-08-56	F	Qua-Shaw	165	65	10	23	38	61	30	24	168
5	JCP	02-12-53	M	Qua-Shaw	169	73	11	23	30	53	13	14	108
5	LP	01-26-56	M	Qua-Shaw	166	74	8	31	36	67	23	28	126
5	KS	02-27-57	F	Paw-Osa	174	66	11	28	45	73	22	20	126
5	RMW	04-17-57	F	Sem-Chey-Ara	174	65	8	29	43	72	33	24	144
6	SJL	01-02-56	M	Yac-Cher	175	91	14	35	28	63	21	21	102
6	TRL	02-15-56	M	Cr-Sem	175	80	11	43	57	100	44	34	84
6	BM	11-26-55	M	Cr-Cher	176	76	13	36	45	81	37	26	108
6	KR	04-18-54	F	Quapaw	176	74	13	34	39	75	63	26	84
6	CT	12-20-55	F	Cr-Sem	175	85	12	38	52	90	58	81	126
6	ET	04-19-54	F	Cr-Sem	174	72	11	31	40	71	22	10	20
6	DW	02-01-56	F	Cho-Chi	175	69	10	35	49	84	52	27	150
6	RW	04-03-55	M	Ara-Sem-Chey	176	77	12	33	51	84	39	34	138
7	CBH	08-06-52	M	Micc	170	96	20	21	45	66	35	35	228
7	JJ	06-25-54	F	Paw-Osa-Bkft	168	74	17	29	35	64	42	34	168

Grade	Name	Birthdate	Sex	Tribe	TDTA	PPVT	SBIS	CATR			GORT		Wds
								Vo.	Com.	Total	Acc.	Com.	P/M
7	LWM	10-07-53	M	Cher-Osa	172	81	11	10	20	30	23	22	84
7	LS	01-05-54	F	Chick	168	80	15	46	46	92	38	38	144
7	LT	02-17-53	F	Cr-Sem	175	67	12	20	33	53	32	22	114
7	RW	01-22-53	M	Cher-Cho	100	14	40	43	83	25	25	28	198
7	WSW	05-25-52	M	Cr-Cher	165	66	9	20	27	47	10	29	120
8	MD	03-11-54	F	Cr-Cher	175	108	21	55	61	116	68	35	144
8	CR	04-24-52	F	Quapaw	168	76	9	22	26	48	38	20	180
8	TS	12-04-53	F	Cr-Cher	175	109	20	51	63	114	89	43	138
8	LW	02-04-54	F	Cho-Chi	176	104	13	38	45	83	71	43	114
8	RW	03-16-53	F	Sem-Chey-Ara	175	90	18	45	54	99	65	33	114