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THE UNIVERSITY OF OKLAHOMA

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AN ANALYSIS OF SELECTED SYNTACTIC PRACTICES OF SEVENTH-GRADE STUDENTS IN ORAL AND WRITTEN DISCOURSE

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AN ANALYSIS OF SELECTED SYNTACTIC PRACTICES OF SEVENTH-GRADE STUDENTS IN ORAL AND WRITTEN DISCOURSE

APPROVED BY

DISSERTATION COMMITTEE

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AN ANALYSIS OF SELECTED SYNTACTIC PRACTICES OF SEVENTH-GRADE STUDENTS IN ORAL AND WRITTEN DISCOURSE

CHAPTER I

THE PROBLEM

Introduction

Basic research descriptive of grade norms for various populations is fundamental to curriculum design. In 1965 O'Donnell and associates said that " . . . we need research on basic process at this time almost more than we do research in teaching methods and curricula, which logically should stem from basic research."[1] Hilda Taba, a leading authority on curriculum design, further emphasized the need for diagnosis.

> . . . diagnosis should be a continuous part of ongoing curriculum and teaching. There is a continuous need to accommodate different types of learners, to introduce new materials or a new emphasis. These adjustments should be made not blindly, but according to definite diagnostic checks on what the students know and can understand, what skills they have, or what mental processes they have mastered.[2]

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[1]Roy C. O'Donnell, William J. Griffin, and Raymond C. Norris, Syntax of Kindergarten and Elementary School Children: A Transformational Analysis (Champaign, Illinois: National Council of Teachers of English, 1967), p. 4.

[2]Hilda Taba, Curriculum Development (New York: Harcourt, Brace & World, 1962), p. 231.

Morsey (p. 201), Hartung (p. 194), Kraus (p. 339), The Florida State Department of Education (p. 442), Meckel (pp. 984-85) and Pooley (p. 202) applied Taba's general remarks to language-arts instruction. Their statements may be summarized by observing that: "A truly functional program is based on the exact status of the pupils in each class and should therefore vary from school to school and from year to year."[3]

A sequence of study may develop from research which describes the linguistic usage of the students. "If we do not know what we can realistically expect of most children, we cannot decide what should be emphasized at each grade level."[4] O'Donnell (pp. 100-101), Pooley (p. 193), and Templin (pp. 3-4) agreed that the study of discourse should be restricted to limited areas organized in a grade sequence compatible with the language ability of the students in each grade and sub-group.

Templin further indicated the value of such normative data for "the clinical child psychologist, the school psychologist, the school nurse, and the pediatrician, among others . . . to provide as a standard against which the

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[3]Mildred A. Dawson, Marian Hollinger, and Ardell Elwell, Guiding Language Learning (New York: Harcourt, Brace & World, Inc., 1963), p. 47.

[4]J. N. Hook, "If a Curriculum Is To Be Sequential," Teaching English in Today's High Schools, ed. by Dwight L. Burton and John S. Simmons (New York: Holt, Rinehart, and Winston, Inc., 1965), p. 453.

language status of any individual child may be evaluated."[5] Such normative data for Grade 7 and its sub-groups are not currently available.

A search for normative data must also include investigation of the relationship between speech and writing. Educators have assumed that skills in both media were interrelated. The O'Donnell study indicated that such was the case until Grade 7 when the writing skills caught up with the students' abilities in speech. The implication of the O'Donnell study was that normative data must be considered in relation to the medium of communication.

Therefore, the needs which supported this study were summarized as follows:

(1) A foundation of basic research was necessary to support sound curricular decisions aimed at adjusting instruction in the language-arts to student abilities.

(2) A foundation of basic research was necessary for curricular decisions related to scope and sequence of subject matter.

(3) Knowledge of language structure peculiar to one medium of expression was sufficiently limited to curtail instruction in structure peculiar to that medium.

Statement of the Problem

The problem stated in the form of a question was: What diversity of linguistic ability is exhibited by seventh-grade students. A sub-problem was: Do such variables as sex,

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[5]Mildred C. Templin, Certain Language Skills in Children (Minneapolis: The University of Minnesota Press, 1957), p. 4.

measured intelligence, socioeconomic status and/or bilingualism promote deviation of sub-groups from the norm?

More specifically, the designers of curricula cannot establish instructional expectations until they first determine what level of language proficiency each student brings with him to the classroom. When the teacher faces a heterogeneous group of students, he should have some knowledge concerning what varied levels of language skill his students possess. In order to secure such information, it was necessary to perform two tasks: (1) to determine the range of oral and written language ability in Grade 7 as related to the variables of sex, measured intelligence, socioeconomic status, and bilingualism; and (2) to compare written and oral language communications to discover structures which are more peculiar to one medium of expression than to the other medium.

Hypotheses Tested

In order to attack the problem, it was necessary to test several null hypotheses. They were:

H_{o1}--There is no statistically significant difference between nominal structures used in oral expression and those used in written composition by seventh-grade students.

H_{o2}--There is no statistically significant difference between the sexes in their use of nominal structures in Grade 7 in oral or written discourse.

H_{o3}--There is no statistically significant difference among the various socioeconomic classes in Grade 7 in their use of nominal structures in oral or written discourse.

H_{o4}--There is no statistically significant difference between student groups of varied measured intelligence in their use of nominal structures in oral or written discourse in Grade 7.

H_{o5}--There is no statistically significant difference between monolinguals and bilinguals in their use of nominal structures in Grade 7 in oral or written discourse.

H_{o6}--There is no statistically significant difference between measurements of language usage expressed in terms of clause length or length of T-units.

Major Assumptions

The assumptions necessary for the pursuit of this study were:

(1) The T-unit device as described by Hunt and supported by the research of both Hunt and O'Donnell was an adequate measurement of language ability.

(2) The indices of socioeconomic status used in this study were sufficient to stratify students into the four divisions of the lower- and middle-class groups.

(3) Students develop in linguistic ability just as they do in the physical, emotional, and social areas.

Limitations

Certain limitations existed in this study. These included:

(1) No attempt was made to evaluate language usage by reference to structures other than T-units, clauses, phrases, and nominal structures. No evaluation was made of word choice, organization, style, effectiveness, nor other areas of language ability.

(2) The subjects studied were limited to students entering the first semester of Grade 7 at Memorial Junior High School, Kingsville, Texas.

(3) No attempt was made to control the variable of chronological age.

Treatment of Data

There was no reason to believe that those students who were studied were significantly different from other groups of seventh-grade students in other cities. However, there was no statistical information to describe the total population, even though the study dealt with a sample of a specific population. As a result, it was impossible to determine whether the sample used in this analysis was indeed typical of the total population. As a result, the statistical analysis chosen to examine the data employed a conservative approach.

Three statistics were used. Clause length and length of T-units were compared by use of the Pearson product-moment correlation coefficient. The relationship between mean clause length and mean T-unit length was explored by use of the t-test.

Sub-group usage of nominals and T-units was explored by using the t-test and Chi square statistics. Significance was determined by a .05 level of confidence. The formulas used for the t-test were the following ones from the Weinberg and Schumaker text, Statistics An Intuitive Approach:

$$S^2 = \frac{\Sigma X^2}{N - 1} - \frac{(\Sigma X)^2}{N(N - 1)}$$

$$S_d = \sqrt{\frac{(N_1 - 1)S_1^2 + (N_2 - 1)S_2^2}{N_1 + N_2 - 2}} \cdot \sqrt{\frac{1}{N_1} + \frac{1}{N_2}}$$

$$t = \frac{\overline{X}_1 - \overline{X}_2}{S_d}$$

Since the standard deviation of the total population was unknown, it was necessary to compute S^2 (sample variance) in order to compute S_d, an estimate of the standard deviation of the theoretical distribution of differences. Once the estimate of the standard deviation was calculated, it was possible to compute the significance of the difference between means. This was a conservative approach to statistical analysis. There were several instances when one t statistic was not significant, even though the difference between the two means was greater than the difference between two other means which gave a significant t statistic. Had the same standard deviation been used for both calculations, both differences between means would have been significant.

The formula used for the Pearson product-moment correlation coefficient was:

$$r = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{N\Sigma X^2 - (\Sigma X)^2} \cdot \sqrt{N\Sigma Y^2 - (\Sigma Y)^2}}$$

Definition of Terms

Definitions of the more important terms used in this study included the following:

T-unit --A syntactic structure consisting of an independent clause plus all of its dependent clauses and phrases.

Clause --A group of words which have a subject and predicate and which function as a group to convey meaning or to modify meaning.

Sentence-combining transformation --The embedding of a kernel sentence into another in ways determined by the rules of grammar. The embedding increases the information carrying power of the sentence.

Example: The boy stumbled. He began to cry. Embedded: Having stumbled, the boy began to cry. The result is one T-unit rather than two.

Embedding --The act of using all or part of one sentence as a phrase or clause in another sentence--an act of combining sentences.

Nominal --Words or groups of words used as nouns. Typical nominals include nouns, pronouns, infinitives, infinite phrases, gerunds, gerund phrases, noun clauses, appositives. Nominals typically appear as subjects, objects, and complements.

Language ability --The degree of a student's mastery of the syntax of the English sentence.

Prepositional phrase --A group of words which is introduced by a preposition--such as, in, of, for--and which is used as one part of speech.

Genitive pronoun --A noun substitute which is used to show ownership.

Example: His book . . .

Genitive noun --A nominal which is used to show ownership.

Example: The girl's hat . . . Girl is normally a nominal but is used in this case to modify by showing ownership.

Adjective --A word used to modify a nominal.

Participle --A verbal or verb form used as a modifier.

Coordinate nominals --Two or more nominals in series connected by commas and/or coordinate conjunctions--e.g., and, but, or, nor.

Main clause coordinator --A word used to join two independent clauses--e.g., and, but, however.

Bilingual --A student who used Spanish predominantly at home.

CHAPTER II

REVIEW OF THE LITERATURE

In order to develop an effective language-arts curriculum, curriculum supervisors had to know what abilities the students brought with them to the classroom. In an effort to solve this problem, educators searched for a reliable measurement of language ability. The search considered length of response, sentence length, subordination, usage error tabulation, vocabulary tabulation, sentence type (simple, complex and/or declarative, interrogative) and innumerable lesser areas of usage and structure.

The results have been disappointing. As early as 1930, Bushnell recognized the inadequacy of measurement and sought to compare oral and written English "by means of a new technique." He concluded his discussion of instrumentation by saying: "The value of a study of this sort is obviously contingent . . . on the availability of appropriate techniques of measurement and comparison."[6] He evaluated "overloadedness-disjointedness," "logical errors," "repetition-wordiness"--areas of composition which demanded subjective

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[6]Paul Bushnell, An Analytical Contrast of Oral with Written English (New York: Columbia University Teachers College Bureau of Publications, 1930), p. 1.

evaluation. As a result, later researchers avoided Bushnell's "new technique."

As late as 1957, Templin echoed the call for instrumentation. She said, "Of primary importance in future study is the development and exploration of techniques used in the study of language."[7] The fact that Templin had no adequate instrument available is obvious in her expression of hope for the future in the following statement:

> Another reason why no present normative study of language can be really definitive is related to the units of measurement used in the analysis. In the study reported here, the traditional units--sounds, words, clauses, etc.--have been used in the measurement of growth in the language areas. Within a relatively few years different types of measurement may well be found more useful for such investigation.[8]

What seemed to be a "break-through" toward finding reliable instrumentation came in 1964. Experiments dealing with sentence length and clause length had been somewhat disappointing as measures of language ability. In 1964, Kellog Hunt experimented with a "minimum terminable unit" which he called a T-unit. The T-unit consisted of an independent clause plus all phrases and/or clauses related to it. A compound sentence containing two independent clauses was considered as two different T-units.

Hunt based his instrumentation on the research of Chomsky and his followers who have made tremendous strides in development of "generative" linguistic study involving

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[7] Templin, op. cit., p. 151. [8] Ibid., p. 4.

sentence transformations. The resulting grammars are frequently called generative or transformational grammars. The movement gained impetus with the appearance of Chomsky's Syntactic Structures in 1957. Hunt applied Chomsky's research to the development of instrumentation for language study. His comparison of the T-unit to sentence and clause length resulted in affirmation of the T-unit as the most reliable measurement of linguistic ability.

O'Donnell, Griffin, and Norris retested Hunt's observations in 1967. They concluded their research by saying: "This investigation supports the finding by Hunt that when fairly extensive samples of children's language are obtained, the mean length of T-units has special claim to consideration as a simple, objective, valid indicator of development in syntactic control."[9]

The recency of instrument development rendered obsolete most of the studies which occurred prior to 1964. Early research explored either subjective measurement or measurement devices with questionable reliability. Analysis of "errors" (Randolph, 1917; O'Rourke, 1930) was discarded as a measurement when linguists pointed out that error was relative to level of usage in different social classes and geographic areas.

Studies of sentence patterns, length, and types (Lull, 1929; Frogner, 1933; Smith, 1935; Heider and Heider, 1940)

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[9]O'Donnell, Griffin, and Norris, op. cit., pp. 98-99.

were questioned when research uncovered two facts: (1) Even pre-school children use most of the sentence patterns and types currently recognized in linguistic study; and (2) Young children show fondness for stringing clauses together by using the coordinate conjunction and--increasing the length of the "sentence" without corresponding improvement in maturity of expression.

Studies of clause structure were equally fruitless. However, research shows that there is some basis for considering clause length and subordination ratio as fair measurements. The research of LaBrant (1933), Davis (1941), Templin (1957), Harrell (1957), Riling (1965), and Golub (1967) support the use of clause length as discriminatory of linguistic ability. The O'Donnell study did not consider clause length. The failure to compare it to T-unit length is regrettable since Hunt found the T-unit more effective and no further studies have validated his claim. However, O'Donnell considered subordination and raised a question about its "sensitiveness" as a measure of growth.

Among past studies there have also been deficiencies of research design. As shown in Table 1, Templin and Harrell were apparently the only two who controlled all three variables. Both researchers used clauses as the target of their investigations. The earliest research (Randolph, Lull, O'Rourke, Bushnell) used no controls for I.Q., sex, or social class. Later studies by Smith and Heider and Heider were equally deficient.

TABLE 1

SUMMARY OF VARIABLE CONTROLS USED IN PREVIOUS RESEARCH

Date	Researcher(s)	Analyzed Speech	Analyzed Writing	I.Q. Control	Sex Control	Class Control
1917	Randolph	yes	no	no	no	no
1929	Lull	yes	yes	no	no	no
1930	O'Rourke	no	yes	no	no	no
1930	Bushnell	yes	yes	no	no	no
1933	LaBrant	no	yes	yes	yes	no
1933	Frogner	no	yes	yes	no	no
1935	M. E. Smith	yes	no	no	no	yes[a]
1941	E. A. Davis	yes	yes	yes	no	no
1948	Heider and Heider	no	yes	no	no	no
1957	Templin	yes	no	yes	yes	yes
1957	Harrell	yes	yes	yes	yes	yes
1964	Hunt	no	yes	no[b]	yes	no
1965	Riling	yes	yes	no	yes	no
1965	Sam and Stein	no	yes	no	yes	no
1965	O'Donnell, et. al.	yes	yes	yes	yes	no
1967	Golub	yes	yes	no	yes	no
1967	Graves	yes	yes	no	no	no

[a]Smith did have 55% "professional" and 20% "lower" class. Riling controlled for race only. O'Donnell restricted his study to the white middle class. Graves contrasted the extremes of upper and lower classes.

[b]Hunt restricted I.Q. to 90-110. Golub restricted his study to the white upper-middle class.

The variable of social class was not controlled by those who applied the T-unit as a measurement. Hunt exerted no control at all. O'Donnell restricted his study to white middle-class children. Only Graves referred to social class comparisons, but he restricted his comparisons to two classes--the extreme upper and lower class students which he contrasted.

His research was descriptive not of language ability but rather of differences in usage between the two extremes of social class.

A second research deficiency appeared in the ages and grades covered. Even though Grade 7 marked the beginning of intensive training in composition, Table 2 shows that research related to that grade is scarce.

TABLE 2

SUMMARY OF AREAS COVERED IN PREVIOUS RESEARCH

Date	Researcher(s)	Ages or Grades Covered	Number of Subjects	Examples of Items Studied
1917	Randolph			usage errors
1929	Lull	Grades 3,4,5,6	350	fragments, case forms
1930	O'Rourke	Grades 7 thru 12		usage errors
1930	Bushnell	Grade 10	100	overloadedness
1933	LaBrant	Grades 4 thru 9	482	subordination
1933	Frogner	Grades 7, 9, 11		sentence type
1935	M.E. Smith	Ages 18 to 72 mos.	22	sentence type
1941	E.A. Davis	Ages 5½, 6½, 9½	436	subordination
1948	Heider and Heider	Deaf: Ages 11-17 Hearing: Ages 8 to 14	301 817	length of sentence
1957	Templin	Ages 3, 4½, 6,8	480	clause usage
1957	Harrell	Ages 9 thru 15	580	clause usage
1964	Hunt	Grades 4,8,12	54	T-unit, varied lengths
1965	Riling	Grades 4 thru 6	300	clauses, error
1965	Sam & Stein	Grades 4, 5, 6	300	clauses, usage
1965	O'Donnell	Grades K, 1, 2, 3, 5, 7	180	T-unit, clauses
1967	Golub	Grade 11, Ages 16, 17	55	clauses and tenses
1967	Graves	Grade 8	80	T-units, clauses

Most research dealing with language development has concentrated on infants, pre-schoolers, and students in the early grades of elementary school. Consideration of language ability in older students is a recent concern.

O'Rourke's study covered Grade 7, but his research dealt with percentage of errors--a poor measurement of ability. LaBrant's research also touched Grade 7, but it was "inclusive"--giving no breakdown by grade level. Frogner investigated Grade 7 by discussing sentence length and type--measuring devices that have proved unreliable. Harrell's study crossed Grade 7, but he discussed his results in terms of age level. Hunt skipped the grade entirely in his investigation of T-units.

Only the O'Donnell study dealt with Grade 7 by applying adequate instrumentation. However, O'Donnell gathered his data in March, 1965--toward the <u>end</u> of Grade 7. His objective was to establish the validity of the T-unit as a measuring device. He did not try to develop normative data for any grade. No study dealt with the language ability used by the students who entered Grade 7 for their first month of intensive language study.

A third research deficiency appeared in the number of subjects. When O'Donnell considered Grade 7, he investigated only 30 white middle-class students. Hunt studied 18 students in each of three grades. Graves considered 80 students, but they were enrolled in Grade 8.

Furthermore, it has been necessary for past researchers to limit their populations. A detailed analysis of oral and written compositions would have been an extensive undertaking with large samples. The alternatives were: (1) limit the number of samples (or, subjects) in order to research numerous aspects of syntactic control; and (2) limit the areas of syntactic development studied in order to include the communications of larger numbers of subjects. Most researchers chose the first alternative--to explore numerous aspects of development in search of the best indicator of ability. Normative studies are actually nonexistent.

A final research deficiency appeared in language-arts interrelationships. Educators have long suspected that speaking and writing skills were interrelated. However, only eight previous studies have compared language ability in both media. Hunt ignored oral expression in his research. O'Donnell and Graves tested both media with the T-unit measurement. Other pertinent studies included Davis (1941), Harrell (1957), Riling (1965) and Golub (1967)--studies which investigated clause usage in both media.

In summary, a survey of the literature revealed deficiencies in variable control, observation of students in Grade 7, number of subjects, and media interrelationships. An adequate, reliable measuring device was not available until Hunt's research in 1964. His procedure has not been applied to determine the range of ability which could be expected in the early months of Grade 7.

CHAPTER III

METHODS AND PROCEDURES

Source of Data

One hundred three seventh-grade students were asked to write expository essays dealing with problems which they considered important. A list of suggested topics was offered to stimulate the students' thinking. The list of suggestions appears in Appendix A of this volume. However, their topics were not limited to those suggested. Additional written samples came from book reports and other normal classroom assignments in the students' English and Social Studies classrooms. These assignments required narrative and descriptive writing skills.

Each student was also asked to respond to questions in an oral interview situation. Samples of the questions asked appear in Appendix B. A tape recording of each student's response was transcribed for intensive analysis and comparison with the student's samples of writing. Garbled expressions were omitted from both oral and written communications.

Samples in both media were collected during the first two months of the subjects' seventh-grade year in 1970. Grade 7 was selected because it marks the beginning of extensive language-arts instruction in many school systems.

Transcriptions of both media were analyzed to determine the quantities of nominal structures, T-units, clauses, and nominal modifiers which each student used in both media.

Statistics related to sub-groups were then compared under the variables of sex, measured intelligence, socio-economic status and bilingualism. Measured intelligence was determined by scores on the Science Research Associates' Primary Mental Abilities Tests administered in October, 1970, to the subjects involved in this study. Therefore, the data on measured intelligence and language skills in both media were collected at approximately the same time.

The SRA battery was used because it is regularly administered by the Kingsville Public Schools where the study was made. The PMA test literature showed a reliability coeffieient of .91. The test validity was established by correlating PMA scores with various grade-point averages. Original standardization of the test was based on results from 32,708 students in 73 schools and 39 school systems across the nation.

Socioeconomic Classification

Each student's socioeconomic status was based on the occupation and educational level of the adult with whom he lived. In most cases, the father was the family financial support. However, in some cases, the principal source of income was the mother--usually divorced--or a guardian. Two scales were devised to classify the heads-of-households according to occupation and educational level.

In devising the occupational scale, consideration was given to local community attitudes toward occupations, to the NORC (National Opinion Research Center) findings for the South regarding occupational social status, to the "Socio-economic Index for Occupations in the Detailed Classification of the Bureau of the Census: 1950," and to the North-Hatt Scale of Prestige based on 2,920 interviews.

In preparing the scale for educational standing, consideration was given to data drawn from surveys conducted by the New York School of Social Work at Columbia University Teachers College. The two scales used appear in Appendix C and Appendix D.

After applying the two scales, typical individuals appeared. The typical upper-middle-class individual was a college graduate either with or without an advanced degree. He was a professional person or a worker employed in a managerial position. The typical lower-middle-class individual had completed high school and possibly some college work. He worked in either a skilled, small managerial, or secretarial occupation. The typical upper-lower-class person had completed at least grade seven and possibly grade eleven. He worked in a semi-skilled or service occupation. The lower-lower-class individual had completed grade six or less and worked in an occupation requiring unskilled labor or accepted public welfare.

These descriptions compared favorably with classifications by Cloward and Jones, researchers who drew their data from surveys conducted by the New York School of Social Work, Columbia Teachers College. They based their measure of social class "upon the education and occupation of the head of the household, and the total family income, adjusted for the number of persons living on that income."[10]

Research by Reiss excluded income data because "income and occupation are functionally related."[11] Because Reiss indicated so close a relationship between income and occupation, it seemed unnecessary to consider both indices. However, because of the influence of racial issues in the community used for this study, it was necessary to retain educational classifications--contrary to the implications of Reiss' study. At the same time, limiting the indices to two provided a degree of simplicity to the research itself. Distributions of the samples broken up into the various sub-groups appear in Table 3.

No attempt was made in this study to control for chronological age. However, figures were developed to note the mean measured intelligence and the mean chronological age for each sub-group. These statistics appear in Table 4.

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[10]Richard A. Cloward and James A. Jones, "Social Class: Educational Attitudes and Participation," Education in Depressed Areas, ed. by A. Harry Passow (New York: Columbia University Teachers College Press, 1966), pp. 195-6.

[11]Albert J. Reiss, Jr., Occupations and Social Status (New York: The Free Press of Glencoe, Inc., 1961), p. 116.

TABLE 3

DISTRIBUTIONS OF SAMPLES

Classification	Written Samples	Oral Samples	Classification	Written Samples	Oral Samples
LL Class	20	20	IQ 70-79	7	7
UL Class	42	42	IQ 80-89	19	20
LM Class	29	30	IQ 90-109	38	38
UM Class	11	11	IQ 110-120	22	22
TOTALS	102	103	IQ 121 up	14	14
			TOTALS	100	101
Boys	50	51	Bilingual	46	47
Girls	52	52	Monolingual	56	56
TOTALS	102	103	TOTALS	102	103

TABLE 4

MEAN I.Q. AND MEAN AGE FOR ALL SUB-GROUPS

Sub-group	I.Q. Mean	Age Mean	Sub-group	I.Q. Mean	Age Mean
Boys	101.5	12:10	LL Class	89.4	13:2
Girls	101.4	12:9	UL Class	100.5	12:9
Bilingual	93.5	12:11	LM Class	107.3	12:8
Monolingual	108.0	12:8	UM Class	110.2	12:4
TOTAL GROUP	101.4	12:9			

Note: Month numbers are separated by a colon from year numbers.

Since several researchers in the past noted ranges of intelligence and age, statistics were also developed to show the ranges in both areas as they relate to this study. These statistics appear in Table 5. However, no attempt was made to compare these statistics to other studies.

TABLE 5

AGE AND I.Q. RANGES FOR ALL SUB-GROUPS

Sub-group	I.Q. Range	Age Range	Sub-group	I.Q. Range	Age Range
Boys	71 - 137	11:3-14.5	LL Class	70 - 113	12:2 - 14:5
Girls	70 - 133	11:11-14.5	UL Class	71 - 131	12:0 - 14:5
Bilingual	70 - 133	12:1-14:5	LM Class	83 - 137	12:1 - 13:10
Monolingual	81 - 137	11:3-13:10	UM Class	92 - 131	11:3 - 13:10
TOTAL GROUP	70 - 137	11:3-14:5			

Syntactic Structures Investigated

In order to increase the numbers of samples considered, only nominal structures and T-units were investigated. The specific syntactic areas covered included: (1) Word-length of clauses and T-units; (2) Percentage of long T-units (nine words or more long); (3) Use of main-clause coordinators; (4) Incidence of nominals formed by sentence-combining transformations; (5) Nominal modifiers consisting of adjectives, prepositional phrases, participles, genitive forms and a combination of all modifiers used; and (6) Frequency of coordinate nominals within T-units. Each of these areas has proved at least partially definitive of language ability. Each of these areas was investigated in both written and oral communications.

Primary consideration was given to nominal structures over other types because language research indicated that individuals have greater knowledge of nominals. Nominals name. The vocabulary of the pre-school child is filled with nominals.

His development of language skills and vocabulary are closely tied to the percentage of nominals used. The appearance of verbs and connectives follows the child's knowledge of nominals. It seems fairly evident that the English sentence itself is based on the interrelationships of nominals embedded in various positions in the sentence. The nominal is of essential importance and seemed to be the logical point of departure for describing normative data at any grade level.

Once the number of nominals or nominal modifiers were tabulated, the means of the sub-groups were compared statistically to determine the significance of their differences. The sub-groups were compared in their uses of: (1) length and use of T-units; (2) main clause coordinators; (3) sentence-combining transformations; (4) coordinate nominals; (5) nominals modified by a participle; (6) nominals modified by a genitive pronoun; (7) nominals modified by an adjective; (8) nominals modified by a genitive noun; (9) nominals modified by a prepositional phrase; and (10) total modifiers used.

CHAPTER IV

ANALYSIS OF THE DATA

Differences between Oral and Written Expression

Sub-group variables in the use of long or short T-units in both media were checked by use of the Chi square statistic. The total number of T-units used in each medium by each sub-group was divided into two groups: T-units using eight words or less and T-units using nine or more words. The shorter length was considered a short unit by both Hunt and O'Donnell in their research. The longer unit was considered "medium" or "long" by both men.

When the two media were compared, the results showed that every sub-group produced a difference in usage which was significant at either the .01 or .05 level of confidence with one degree of freedom. Significance in this case meant that there was a strong relationship between the length of the T-units and the mode of expression. The subjects used a much longer T-unit and a much larger percentage of long T-units in written material than in oral discourse. Table 6 gives an indication of the significance and importance of differences between media in use of T-units.

These results compared favorably with the research of Hunt and O'Donnell. Differences could be accounted for by the

fact that neither study included a heterogeneous group. However, as shown in Table 7, the results of the three studies were remarkably similar.

Differences between mean length for oral and written expressions would have widened in the present study if the subjects had conquered their tendency to use numerous main clause coordinators in speech. Over 72 per cent of all T-units expressed orally contained a main clause coordinator--usually or, but, or and. Such coordinators appeared in only 27 per cent of the written T-units. Data for both media appear in Table 8. This tendency to bridge thoughts with coordinate conjunctions lengthened the speech T-units and brought the means and percentages of both media closer together.

TABLE 6

LENGTH AND USE OF T-UNITS IN BOTH MEDIA BY ALL SUB-GROUPS

Sub-group	Written Discourse		Oral Discourse			
	Mean T-unit Length	% of Units Which Were Long	Mean T-unit Length	% of Units Which Were Long	Chi^2	Level of Significance
Boys	10.41	56.9	8.69	39.0	5.86	.05
Girls	10.74	57.5	8.40	36.3	8.84	.01
Monolingual	10.12	60.1	8.23	39.9	8.00	.01
Bilingual	10.97	53.1	8.83	35.4	6.56	.05
LL Class	9.91	50.4	8.21	33.5	5.24	.05
UL Class	10.95	59.6	8.43	37.4	10.56	.01
LM Class	10.35	55.8	8.76	39.1	5.78	.05
UM Class	10.77	58.9	9.29	44.9	3.92	.05
I.Q. 70-89	10.03	52.5	8.09	35.4	6.56	.05
I.Q. 90-109	10.91	59.3	8.55	38.6	9.68	.01
I.Q. 110 up	10.70	58.5	8.83	40.1	7.20	.01
TOTAL GROUP	10.58	56.5	8.56	37.8	7.22	.01

TABLE 7

COMPARISON OF T-UNIT LENGTH IN ORAL AND WRITTEN MEDIA IN PAST AND PRESENT STUDIES

Media	Research Study	Grade Level	Mean T-unit Length	Percentage of Units Which Were Long
Writing	Hunt's study	4	8.6	38.1
		8	11.5	61.1
		12	14.4	76.8
	O'Donnell's study	3	7.6	30.3
		5	9.3	48.7
		7	9.9	52.5
	Present study	7	10.5	56.5
Speech	O'Donnell's study	3	8.7	39.6
		5	8.9	39.2
		7	9.8	45.7
	Present study	7	8.5	37.8

TABLE 8

RATE OF OCCURRENCE PER 100 T-UNITS OF MAIN CLAUSE COORDINATORS

Sub-group	Oral	Written	Difference	Sub-group	Oral	Written	Difference
Boys	70.3	26.3	+ 44.0	Bilingual	69.9	30.5	+ 39.4
Girls	73.8	27.9	+ 45.9	Monoling.	73.8	24.2	+ 49.6
LL Class	66.7	30.0	+ 36.7	IQ 70-89	67.1	32.6	+ 34.5
UL Class	73.3	30.5	+ 42.8	IQ 90-109	70.8	30.3	+ 40.5
LM Class	79.2	21.8	+ 47.9	IQ 110 up	77.1	21.3	+ 55.8
UM Class	79.2	21.8	+ 57.4	TOTAL	72.0	27.1	+ 44.9

The t-test was applied to differences between the mean numbers of main clause coordinators in both media. The results were significant at the .01 level of confidence. The tendency to bridge thoughts in writing by using coordinate conjunctions was significantly less than it was in speech in Grade 7.

While the use of coordinate conjunctions operated to close the gap between media, other factors operated to widen the distance to the point of significance. One of these factors was the use of sentence-combining transformations. Such transformations use the embedding process to combine thoughts from two sentences into a single expression. For example, consider the following two sentences: I see a dog. The dog is brown. They may be combined by modifying the nominal dog: I see a brown dog.

Table 9 shows that the tendency to use such transforms was greater in writing than in speech. Application of the t-test produced a significant difference between media at the .01 level. Such significance indicated that the samples of writing possessed greater linguistic maturity in use of this structural technique than the samples of oral material.

Another operant which influenced the mean length of written units was the use of coordinate nominals within units. Just over 6 per cent of the spoken units contained coordinate nominals. The figure was 9.4 per cent for the written units. Application of the t-test produced results which were significant at the .01 level. The extent of usage for coordinate nominals is illustrated in Table 10.

TABLE 9

RATE OF OCCURRENCE PER 100 T-UNITS OF SENTENCE-COMBINING TRANSFORMATIONS

Sub-group	Oral	Written	Difference	Sub-group	Oral	Written	Difference
Boys	42.1	61.6	- 19.5	Bilingual	39.0	54.5	- 15.5
Girls	43.7	59.8	- 16.1	Monoling.	46.1	65.9	- 19.8
LL Class	30.5	41.1	- 10.6	IQ 70-89	39.6	50.2	- 10.6
UL Class	44.3	66.0	- 21.7	IQ 90-109	41.6	62.7	- 21.1
LM Class	53.8	67.1	- 13.3	IQ 110 up	46.5	66.3	- 19.8
UM Class	69.7	105.7	- 36.0	TOTAL	42.9	60.7	- 17.8

TABLE 10

RATE OF OCCURRENCE PER 100 T-UNITS OF COORDINATE NOMINALS WITHIN T-UNITS

Sub-group	Oral	Written	Difference	Sub-group	Oral	Written	Difference
Boys	5.8	8.6	- 2.8	Bilingual	4.9	8.0	- 3.1
Girls	6.3	10.9	- 4.6	Monoling.	7.0	11.3	- 4.3
LL Class	4.4	6.4	- 2.0	IQ 70-89	5.2	7.2	- 2.0
UL Class	5.4	10.4	- 5.0	IQ 90-109	5.4	10.9	- 5.5
LM Class	7.9	10.8	- 2.9	IQ 110 up	7.1	10.5	- 3.4
UM Class	7.4	9.7	- 2.3	TOTAL	6.0	9.8	- 3.8

When nominal modifiers were considered, results showed another strong influence operating to produce differences between media. The *t*-test was applied to the use of several types of nominal modifiers. The results were not significant for use of participles nor genitive pronouns. Data for these two modifiers appear in Tables 11 and 12.

TABLE 11

RATE OF OCCURRENCE PER 100 T-UNITS
OF NOMINALS MODIFIED BY A PARTICIPLE

Sub-group	Oral	Written	Difference	Sub-group	Oral	Written	Difference
Boys	.41	.66	- .25	Bilingual	.35	.62	- .27
Girls	.47	.55	- .08	Monoling.	.59	.59	00
LL Class	.55	.44	+ .11	IQ 70-89	.50	.88	- .38
UL Class	.49	1.05	- .56	IQ 90-109	.50	.70	- .20
LM Class	.60	.12	+ .48	IQ 110 up	.48	.36	+ .12
UM Class	.00	.52	- .52	TOTAL	.48	.60	- .12

TABLE 12

RATE OF OCCURRENCE PER 100 T-UNITS OF NOMINALS
MODIFIED BY A GENITIVE PRONOUN

Sub-group	Oral	Written	Difference	Sub-group	Oral	Written	Difference
Boys	13.6	20.0	- 6.4	Bilingual	14.3	18.5	- 4.2
Girls	16.2	18.3	- 2.1	Monoling.	15.3	19.7	- 4.4
LL Class	12.9	14.0	- 1.1	IQ 70-89	15.4	16.8	- 1.4
UL Class	15.0	19.3	- 4.3	IQ 90-109	14.8	18.6	- 3.8
LM Class	14.0	18.9	- 4.9	IQ 110 up	14.9	21.4	- 6.5
UM Class	20.3	25.0	- 4.7	TOTAL	14.8	19.1	- 4.3

Other types of nominal modifiers showed significant differences in usage between media. The *t*-test was applied in all cases. Differences based on the use of adjectives was significant at the .01 level. The rate of use, as noted in Table 13, favored a greater use of adjectives in written material.

TABLE 13

RATE OF OCCURRENCE PER 100 T-UNITS
OF NOMINALS MODIFIED BY AN ADJECTIVE

Sub-group	Oral	Written	Difference	Sub-group	Oral	Written	Difference
Boys	31.9	42.4	- 10.5	Bilingual	27.0	35.6	- 8.6
Girls	29.5	41.0	- 11.5	Monoling.	33.8	46.9	- 13.1
LL Class	24.0	36.0	- 12.0	IQ 70-89	27.2	34.3	- 7.1
UL Class	29.0	41.4	- 12.4	IQ 90-109	30.4	44.8	- 14.4
LM Class	35.9	39.9	- 4.0	IQ 110 up	33.2	43.5	- 10.3
UM Class	37.9	53.1	- 15.2	TOTAL	30.7	41.3	- 10.6

The use of genitive nouns in both media showed a difference which was significant at the .05 level. However, the quantity of genitive nouns may not have been great enough to warrant much enthusiasm over the level of significance. Table 14 shows that the small difference which did exist favored written material.

TABLE 14

RATE OF OCCURRENCE PER 100 T-UNITS
OF NOMINALS MODIFIED BY A GENITIVE NOUN

Sub-group	Oral	Written	Difference	Sub-group	Oral	Written	Difference
Boys	.86	1.93	- 1.07	Bilingual	1.03	1.71	- .68
Girls	1.35	2.34	- .99	Monoling.	1.11	2.52	- 1.41
LL Class	1.25	1.33	- .08	IQ 70-89	.88	1.03	- .15
UL Class	1.02	2.54	- 1.52	IQ 90-109	1.09	2.71	- 1.62
LM Class	.91	1.38	- .67	IQ 110 up	1.22	2.48	- 1.26
UM Class	1.39	3.15	- 1.76	TOTAL	1.07	2.14	- 1.07

The presence of nominal modifiers in the form of prepositional phrases was both more apparent and significant. The percentages appear in Table 15. The difference between media in the use of prepositional phrases was significant at the .01 level.

TABLE 15

RATE OF OCCURRENCE PER 100 T-UNITS OF NOMINALS MODIFIED BY A PREPOSITIONAL PHRASE

Sub-group	Oral	Written	Difference	Sub-group	Oral	Written	Difference
Boys	9.3	18.0	- 8.7	Bilingual	8.1	19.8	- 11.7
Girls	10.3	16.7	- 6.4	Monoling.	11.2	14.5	- 3.3
LL Class	7.0	14.0	- 7.0	IQ 70-89	7.5	14.3	- 6.8
UL Class	9.2	16.6	- 7.4	IQ 90-109	10.0	17.5	- 7.5
LM Class	11.9	19.3	- 7.4	IQ 110 up	10.7	19.1	- 8.4
UM Class	12.4	19.4	- 7.0	TOTAL	9.8	17.4	- 7.6

When all nominal modifiers were combined, the differences between media were significant at the .05 level of confidence. The percentages of total modifiers used appears in Table 16.

TABLE 16

RATE OF OCCURRENCE PER 100 T-UNITS OF ALL NOMINAL MODIFIERS

Sub-group	Oral	Written	Difference	Sub-group	Oral	Written	Difference
Boys	72.3	105.7	- 33.4	Bilingual	63.7	91.5	- 27.8
Girls	74.3	104.4	- 30.1	Monoling.	80.9	116.5	- 35.6
LL Class	59.1	85.3	- 26.2	IQ 70-89	64.7	85.7	- 21.0
UL Class	69.0	106.2	- 37.2	IQ 90-109	73.6	112.0	- 38.4
LM Class	82.0	102.7	- 20.7	IQ 110 up	78.3	111.7	- 33.4
UM Class	95.0	130.0	- 35.0	TOTAL	73.1	105.0	- 31.9

The results of this study pointed toward rejection of the first null hypothesis. The difference between nominal structures used in oral expression and those used in written composition by seventh-graders was statistically significant. The results agreed with the statement from O'Donnell's study in his summary related to T-unit length. He said:

> These facts are consistent with a number of others indicating that syntactic control of third graders was much weaker in writing than in speech, but that in the upper grades there was a reversal of relative mastery in the two modes of expression.[12]

Sex Differences

Sex differences in language ability proved relatively insignificant. Where significant differences did appear, the boys showed greater ability.

In the use of long T-units, boys were superior to girls in oral discourse. Over 39 per cent of all T-units used by boys in speaking were long. The girls used long T-units 36.3 per cent of the time. The difference proved significant at the .05 level of confidence.

The only other difference between the sexes appeared in the use of adjectives. This difference, significant at the .02 level, again favored the boys. The oral discourse by the boys showed a greater tendency to use adjectives. However, no significant difference appeared in use of adjectives in writing. Also, there were no significant differences in either oral or written material in the use of any other modifier.

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[12]O'Donnell, Griffin, and Norris, op. cit., p. 48.

When all nominal modifiers were combined, the differences between the sexes were again insignificant.

In the use of main clause coordinators, transformations, and coordinate nominals, no significant differences appeared in either medium.

As a result of such overwhelming lack of significant differences, the second null hypothesis was accepted. There seemed to be no great differences between the sexes in Grade 7 in use of nominal structures.

The results agreed with previous research. Minor variations appeared in the numbers of certain syntactic expressions per 100 T-units, but neither Hunt nor O'Donnell noted many significant differences between the sexes in use of nominals. O'Donnell's study showed the number of coordinate conjunctions used in initial position in the sentence. Per 100 T-units in speech, the boys had 71.5, girls 78.6. The present study showed boys with 70.3 and girls with 73.8. In written copy, O'Donnell showed 21.5 for boys, 24.5 for girls. The present study showed 26.3 for boys, 27.9 for girls. However, differences were negligible between the two studies, and both studies agreed that differences between the sexes in their use of nominals were minimal.

Socioeconomic Class Differences

Differences among the various socioeconomic classes were frequently significant. The number of significant differences might have increased if a total population standard

deviation had been known. As shown in Table 17, the differences between means increased in size, but the t statistic declined. The decline was caused by fluctuation in the size of the S_d, the "estimated" standard deviation of the total population. Since the S_d statistic was divided into the difference between the means, the fluctuation of that statistic influenced the size of the resulting t statistic. If the S_d had always been the same figure, the t-test would have shown an increasing level of significance to accompany the increase in size of mean differences.

TABLE 17

DIFFERENCE BETWEEN MEANS FOR COORDINATE NOMINALS IN WRITING

Sub-groups Compared	Means	Difference	t-score	Significance Level
LL Class--UL Class	1.45-2.83	1.38	3.06	.01
LL Class--LM Class	1.45-3.07	1.62	2.60	.02
LL Class--UM Class	1.45-3.36	1.91	2.12	.05

In the case of the data in Table 17, this problem was not troublesome because all comparisons proved significant. However, in other cases the fluctuation of the S_d resulted in no significance for a difference between means that was larger than another difference which produced a significant t. For this reason, the statistical analysis employed in this study could be considered conservative.

In spite of the conservative approach to analysis, differences among social classes were often significant. The significance frequently showed one or two classes operating in isolation from the rest of the group. Table 18 shows an example of such isolation. In this case, the LL Class was relatively isolated from the rest of the group. Such cases appeared several times when the isolation was much more severe than the one noted in Table 18.

TABLE 18

USE OF LONG T-UNITS IN WRITING BY SOCIAL CLASSES

Sub-groups Compared	Means	Difference
LL Class--UL Class	11.3 -- 16.1	4.8**
LL Class--LM Class	11.3 -- 15.8	4.5*
LL Class--UM Class	11.3 -- 20.3	9.0**
UL Class--LM Class	16.1 -- 15.8	.3
UL Class--UM Class	16.1 -- 20.3	4.2
LM Class--UM Class	15.8 -- 20.3	4.5

* Significant only at the .10 level.
** Significant at the .05 level.

The isolation of the LL Class in the use of long T-units was further apparent in the percentages of all T-units which were long. The data appear in Table 6. The LL Class used significantly fewer long T-units in writing. No significant differences appeared when speech samples were compared. However, percentages gradually increased

when the table was arranged in order from the LL Class down to the UM Class in the speech column of Table 6.

In the use of main clause coordinators, the only significant difference appeared at the .02 level between the UL and LM classes in speech. At no other point in either medium was the difference significant.

A move toward greater language ability usually shows a decline in use of coordinate conjunctions such as and and but at the first of the sentence. Table 8 shows that the LL Class used fewer such coordinators per 100 T-units than any other class. The inference would be that the LL Class had greater ability in speech than other classes.

However, the factor of bilingualism entered the picture here. The bilingual student in the oral interviews was slow in response. As a result, he used fewer coordinates to connect main clauses. This fact was supported by the data in Table 8 which shows bilinguals using fewer coordinate conjunctions than monolinguals in speech but not in writing.

This factor may also have influenced the writing. The mean for the LL Class in writing (6.7) was lower than the UL Class mean (8.2). Even the number of coordinators used in writing per 100 T-units was slightly lower (30.0 to 30.5). However, bilinguals did not differ significantly from monolinguals in this area in writing.

The general trend among the entire group was to move toward less frequency of usage in writing until the low of

21.8 coordinators per 100 T-units was reached with the UM Class. In spite of the decline in use from one class sub-group to another, the differences were insignificant.

The data concerning coordinators compared favorably with O'Donnell's research. O'Donnell found seventh graders using 75.1 main clause coordinators in speech per 100 T-units. The class sub-groups in the present study ranged from the LL Class low of 66.7 up to the UM Class high of 79.2. The group total was 72.

O'Donnell's seventh graders used 23.0 coordinators per 100 T-units in writing. The range in the present study was from 21.8 to 30.5 with a 27.1 total group score. Hunt found that 17.6 per cent of the T-units written by eighth graders included an introductory coordinate.

In all three studies, the use of sentence-combining transformations proved more significant and discriminatory of ability. In the present study, the UL and LM classes seemed to be segments of the same group. The difference between the means of the two classes was small in both media. All other differences in both media proved significant. The results, shown in Table 19, indicated three distinct groups when the UL and LM classes were combined.

Since transformations develop as a result of using modifiers, the data showed less use of modifiers by the LL Class. The UM Class used modifiers frequently. Table 9 shows a steady and substantial increase in percentages of

transformations used per 100 T-units when the class sub-groups were placed in rank order from LL to UM.

TABLE 19

DIFFERENCES AMONG CLASS SUB-GROUPS IN USE OF SENTENCE-COMBINING TRANSFORMATIONS

	Writing		Speech	
Sub-groups Compared	Means	Difference	Means	Difference
LL Class--UL Class	9.2-17.9	8.7*	19.4-27.9	8.5*
LL Class--LM Class	9.2-19.0	9.8*	19.4-29.5	10.1*
LL Class--UM Class	9.2-36.5	27.3*	19.4-40.9	21.5*
UL Class--LM Class	17.9-19.0	1.1	27.9-29.5	2.4
UL Class--UM Class	17.9-36.5	18.6*	27.9-40.9	13.0*
LM Class--UM Class	19.0-36.5	17.5	29.5-40.9	11.4**

* Significant at the .01 level.
** Significant at the .02 level.

Analysis of the use of coordinate nominals within T-units showed the LL Class functioning again in relative isolation. The isolation was complete in written samples. When compared to each of the other three sub-groups, the LL Class showed a difference which was significant at the .05 level or greater.

In spoken T-units, there was no significant difference between the LL and UL classes in their use of coordinate nominals. However, the differences between the LL Class and the two upper classes were significant at the .05 level. The affinity between the LL and UL groups was the only relationship

which kept the LL Class from being completely isolated from the rest of the group. No other significant differences appeared between class sub-groups in the use of coordinate nominals.

In the writing samples, the use of nominal modifiers resembled the use of nominal transformations. The two middle classes, UL and LM, showed a difference between means of only .3. All other comparisons between social class sub-groups were significant at the .05 level or better. In effect, there were three groups distinctly evident. The UL and LM classes formed a central group. The other two classes formed the extremes. The levels of significance indicated a strong dichotomy among the three groups.

In speech, the differences were not as great. Only two comparisons proved significant: UM-LL and UM-UL. The tendency of all sub-groups was to use fewer modifiers in speech than in writing.

When the total number of modifiers was broken up into specific types, the significant relationships changed radically. No significant results appeared in the use of genitive nouns by class sub-groups in either medium. The only significant difference in use of participles appeared at the .05 level in speech between the UL-UM classes. But the frequency of participial usage per 100 T-units was so small that even this one instance would not seem to imply a serious difference among the sub-groups.

In the use of prepositional phrases, again only one comparison was significant. The difference between the LL-LM classes in writing was significant at the .05 level. No significant results appeared in speech.

In the use of genitive pronouns, strong differences appeared at five points. Significance at the .05 level occurred between the LL-UL and the UL-UM classes in writing and between the LL-UM and the LM-UM classes in speech. The LL-UM classes differed in writing at the .01 level.

When adjectives alone were considered, significance appeared at several points, as shown in Table 20. The UL and LM classes again showed an affinity. The other classes frequently showed significant differences in both media when contrasted with the two middle groups.

TABLE 20

DIFFERENCES IN USE OF ADJECTIVES BY CLASS SUB-GROUPS

	Writing		Speech	
Sub-groups Compared	Means	Difference	Means	Difference
LL Class--UL Class	8.1-11.2	3.1**	15.3-18.2	2.9
LL Class--LM Class	8.1-11.3	3.2	15.3-19.7	4.4**
LL Class--UM Class	8.1-18.3	10.2*	15.3-22.2	6.9*
UL Class--LM Class	11.2-11.3	.1	18.2-19.7	1.5
UL Class--UM Class	11.2-18.3	7.1*	18.2-22.2	4.0
LM Class--UM Class	11.3-18.3	7.0**	19.7-22.2	2.5**

* Significant at the .01 level.
** Significant at the .05 level.

There were strong, significant differences among the social class sub-groups in use of long T-units in writing and in use of sentence-combining transformations, coordinate nominals, and nominal modifiers in both media. The results recommended rejection of the third null hypothesis. There were statistically significant differences among socioeconomic classes in their use of nominal structures in both media.

Differences Among I.Q. Sub-groups

The occasional isolation of the LL Class from other socioeconomic classes was similar to the isolation of the lowest I.Q. group. The students who composed both groups were essentially the same persons. Therefore, the results of the research in these two subdivisions were highly similar.

In written discourse, the lowest I.Q. sub-group isolated itself from the other groups in numbers of T-units used. The differences between the lowest group and the other five groups were significant at the .01 and .05 levels with the exception of the comparison between the top and bottom groups. Between those groups, significance appeared only at the .10 level.

The isolation of the lower I.Q. group was not apparent in speech. Only two significant differences appeared in numbers of long speech T-units used. The 80-89 I.Q. group differed from the 121-up group at the .05 level. The 90-109 group differed from the top group also at the .05 level. No other statistics were significant in the use of long T-units in speech.

However, a quick reference to Table 6 shows a consistent upward trend in the percentage of long T-units per 100 units in speech. However, it is important to note the erratic behavior of the companion statistics in the written samples. In general, there seemed to be little significant difference among I.Q. groups in their use of long T-units.

In the use of main clause coordinators, it was the 121-up I.Q. group which seemed to function in isolation. In written discourse, the top group differed from the 80-89, the 90-109, and the 110-120 groups at the .05 level of significance or better. No other relationships were significant.

In the use of coordinators in speech, a similar isolation appeared. The top group differed from the 80-89 and the 90-109 groups at the .05 and .02 levels. The top and bottom groups differed only at the .10 level. No significant difference appeared between the two top groups nor at any other point of comparison in speech.

The isolation of the 121-up group was violated by the lowest I.Q. group. The means of the two groups for written samples were 5.5 and 4.3 for the bottom and top groups respectively. In speech samples, the difference between the two groups was significant only at the .10 level. The lower group used fewer main clause coordinators than any other group except for the top group in writing. It is used fewer than any other group in speech except for the 80-89 group.

Data related to use of sentence-combining transformations in writing showed the lowest I.Q. group again functioning

in isolation. The difference between the two lowest groups was small (significant only at the .10 level), but the other relationships differed at the .05 level or better. No other significant differences appeared in writing and none appeared anywhere among sub-groups in speech.

In written discourse, the lowest I.Q. group contrasted at the .01 and .05 levels with the top two groups in their use of coordinate nominals within T-units. No other comparisons were significant. In spoken samples, it was the upper two groups which leaned toward isolation. The top differed from the 80-89 and the 90-109 groups at the .02 level. The 110-120 group differed from the 90-109 group at the .05 level. The means for the written coordinate nominals increased steadily as the I.Q. rose. However, the lowest group used more coordinates in speech than either of the next two groups.

In the use of adjectives in writing, the lowest group again tended to isolate itself with differences between it and higher groups at the .10, .05, .01, and .10 levels. No other sub-group relationships were significant. In the speech samples, significance at the .01 and .02 levels existed between the 80-89 group and the top two groups. No other differences were significant.

There were no significant differences among I.Q. groups in their use of participles or genitive nouns in either medium. However, reference to Table 14 will show a steady increase in use of genitive nouns as I.Q. increased.

In the use of genitive pronouns, there were no significant differences among the speech samples. In the written samples, the 110-120 group differed from the lowest and the 90-109 groups at the .05 level. No other relationships in the writing samples were significant.

Prepositional phrases were used significantly less in writing by the lowest I.Q. group than by the other four groups. Significance appeared at the .05, .10, .05, and .10 levels. When speaking, the lowest two groups differed from the top two groups with significance at the .05 level and lower. Neither the top nor bottom groups differed with the median group significantly. However, Table 15 shows that the progression toward more extensive use of prepositional phrases increased with the rise in I.Q. level.

The final category--total modifiers used--again showed the lowest I.Q. group in relative isolation. It differed with the next three higher groups in writing at the .05, .05, and .01 levels. It differed from the top group at the .10 level. In speech, the only significant differences appeared between the 80-89 group and the top two groups. It was somewhat of a curiosity, as shown in Table 16, that the top I.Q. group used slightly less modifiers in writing than the middle group. The movement toward greater use of modifiers in speech increased with I.Q.

When the total research was reviewed, the null hypothesis fell. Significant differences did exist among student

groups of varied measured intelligence in their use of nominal structures in both media. The hypothesis would fall principally because of the tendency of one group or another to become isolated from the rest of the students. The written samples from the lowest group were relatively isolated in the use of long T-units, transformations, coordinate nominals, adjectives, prepositional phrases, and total modifiers.

The top groups seemed isolated in use of main clause coordinators in both media, in use of coordinate nominals in speech, and in use of prepositional phrases in speech. Basic differences were not numerous, but they appeared with a frequency which would reject the null nypothesis of no significant difference.

Influences of Bilingualism

Differences between bilingual and monolingual students in writing appeared significant only at the .10 level in the use of main clause coordinators, coordinate nominals within T-units, number of adjectives, and total number of nominal modifiers. No area showed a significance greater than .10, and most of the areas showed no significance at all.

Comparisons in speech provided a different picture. The two groups differed at the .01 level in their use of main clause coordinators, frequency of coordinate nominals within T-units, use of adjectives, and use of total nominal modifiers. Significance appeared at the .02 level in use of prepositional phrases as nominal modifiers. The difference in use of

sentence-combining transformations was significant at the .05 level. No significant differences appeared in either medium in use of long T-units, participles, genitive nouns, or genitive pronouns.

The problems caused by bilingualism thus seemed more important in the area of speech than writing. The fifth null hypothesis fell when the medium of speech was considered. However, there was no reason to reject the null hypothesis when it was applied to the samples of writing. No significant differences appeared in writing. The bilinguals showed greater ability in writing than in speech. In fact, they were relatively equal to their monolingual peers in writing skills.

However, all garbles were removed from both speech and writing samples prior to analysis. The bilinguals had a tendency to write incomplete units or garbled expressions which would lead a reader to believe that they were incapable of using the English language adequately. However, when such garbles were removed, the nominal structures used by the bilinguals in writing were approximately the same as those of their monolingual classmates.

Differences appeared. As noted in Tables 9 through 16, the monolinguals showed greater ability in nearly every category in both media. Even though the differences were often statistically slight, they were present.

Language Maturity in Clause Length and T-unit Length

Both O'Donnell and Hunt sought to prove that the T-unit length was an adequate measurement of language maturity. Both men agreed that it was the best measuring device available. Hunt's research considered another alternative device, clause length, which was prominent in previous research. He also considered the ratio of clauses per T-unit as a possible measuring device.

Since both studies indicated that T-unit length was a superior device to differentiate among grade levels, it was necessary to see whether the unit was adequate for research among sub-groups within the same grade level. A quick glance at Table 21 raises some questions. In samples of oral communication, T-units and clauses showed an increase in length as the social class or I.Q. level moved upward. However, the ratio of clauses per T-unit showed extremely small differences among social class groups and actually fluctuated among the I.Q. groups.

When written samples were considered, Table 21 shows that all three measurements failed to show consistency in differentiating among sub-groups within the same grade. No measurement in this study seemed sensitive enough to do the job better than the other two.

When clause and T-unit lengths were compared by use of the Pearson product-moment correlation coefficient, the data produced an r of .98 for written material and .94 for oral

TABLE 21

WORD LENGTH OF CLAUSES AND T-UNITS

	Mean Number of Words Per Clause		Mean Number of Words Per T-unit		Ratio of Clauses Per T-unit	
Sub-group	Spoken	Written	Spoken	Written	Spoken	Written
Boys	8.24	9.41	8.69	10.41	1.26	1.52
Girls	8.09	9.54	8.40	10.74	1.25	1.60
Bilingual	8.39	9.75	8.83	10.97	1.26	1.54
Monoling.	7.90	9.16	8.23	10.12	1.25	1.57
LL Class	7.76	8.93	8.21	9.91	1.25	1.54
UL Class	8.06	9.69	8.43	10.95	1.25	1.62
LM Class	8.33	9.32	8.76	10.35	1.26	1.52
UM Class	8.98	9.84	9.29	10.77	1.27	1.47
IQ 70-89	7.77	9.22	8.09	10.08	1.25	1.55
IQ 90-109	8.19	9.72	8.55	10.91	1.24	1.59
IQ 110 up	8.39	9.48	8.83	10.70	1.26	1.54
TOTAL	8.17	9.48	8.56	10.58	1.25	1.56

discourse. Clause length and T-unit length seemed to be more closely related in the written copy, perhaps because there was a tendency to use longer dependent clauses in writing than in speech.

However, when the two measuring devices were compared with the use of the t-test, the results were significant at the .01 level for both media. Hunt's reasoning proposed that the difference favored T-units because the percentages increased more rapidly. For example, he showed that the average length of clauses in grades 4, 8, and 12 increased from 77 per cent to 94 per cent to 100 per cent. The average length of T-units for these grades increased 60 per cent to

80 per cent to 100 per cent. The percentages increased with greater increments for T-unit length.

When this line of reasoning was applied to the present research, the percentages were erratic when moving from the LL Class up to the UM Class. When the technique was applied to the more uniform speech material, the social class percentages increased from 86.4 to 89.7 to 92.7 to 100 per cent. The increase for T-unit length for the same groups was: 88.3, 90.7, 84.2, 100 per cent. Clause length increased at a greater rate than T-unit length. When the same reasoning was applied to the I.Q. levels, the clause length in oral discourse increased from 92.6 to 97.6 to 100. The increases for T-unit length were 91.6, 96.8, 100 per cent. The larger increases favored the T-unit.

In view of the discrepancies involved, it was difficult to believe that T-unit length could be considered much more effective than the length of clauses.

Seventh-Grade "Norms"

The "norms" for the seventh-grade students in this study in their use of T-units were as follows: (1) average length of T-units: writing 10.58, speech 8.56; and (2) percentage of communication using long T-units: writing 56 per cent, speech 37 per cent. The "norms" for use of nominal structures per 100 T-units were: (1) main clause coordinators: speech 72, writing 27; (2) sentence-combining transformations: speech 42, writing 60; (3) coordinate nominals within

T-units: speech 6, writing 9; (4) adjective modifiers: speech 30, writing 41; (5) prepositional phrases: speech 9, writing 17; and (6) all nominal modifiers: speech 73, writing 105.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The purpose of this study was to determine the diversity of linguistic ability among seventh-grade students in their use of nominals, nominal modifiers, T-units and clauses. The study explored the influence of sex, measured intelligence, socio-economic status, and bilingualism on each of the structures analyzed in written and spoken communications.

The need for the study was established by pointing out that curriculum design requires knowledge of the student's abilities at a given grade level. Scope and sequence arrangement of subject matter should be based on such knowledge.

The review of research and related literature revealed deficiencies in variable control, in observation of students in Grade 7, in number of subjects, and in media interrelationships. An adequate, reliable measuring device was not available until Hunt's research in 1964. His procedure was never applied to determine the range of ability which could be expected in the early months of Grade 7.

The following null hypotheses were derived from the problem of the study:

H_{o1}--There is no statistically significant difference between nominal structures used in oral expression and those used in written composition by seventh-grade students.

H_{o2}--There is no statistically significant difference between the sexes in their use of nominal structures in Grade 7 in oral or written discourse.

H_{o3}--There is no statistically significant difference among the various socioeconomic classes in Grade 7 in their use of nominal structures in oral or written discourse.

H_{o4}--There is no statistically significant difference between student groups of varied measured intelligence in their use of nominal structures in oral or written discourse in Grade 7.

H_{o5}--There is no statistically significant difference between monolinguals and bilinguals in their use of nominal structures in Grade 7 in oral or written discourse.

H_{o6}--There is no statistically significant difference between measurements of language usage expressed in terms of clause length or length of T-units.

One hundred three seventh-grade students in a Kingsville, Texas, junior high school were asked to write and to respond to questions in an oral interview in September and October, 1970. The communication samples were collected during the first two months of the students' seventh-grade year. Garbled expressions were removed. Tabulations of each student's syntactic usage provided the data which was tested by use of the t-test, Chi square, and the Pearson product-moment correlation coefficient. The variable of measured intelligence was determined by the SRA Primary Mental Abilities Test. Each student's socioeconomic status was determined by applying two classification indices which ranked the head of the household according to his vocation and his educational level.

The analysis of data resulted in the following findings:

(1) The students studied demonstrated greater syntactic control in writing than in speech. Differences in use of nominal structures between the two media were significant in every sub-group at the .05 or .01 levels. Differences overwhelmingly favored writing as the medium showing the greater linguistic sophistication at the seventh-grade level.

(2) When sex differences were explored, the results were insignificant. Boys were superior to girls in use of long T-units and adjectives in the speech medium. All other differences were minimal and not significant at any level.

(3) Several differences appeared among sub-groups in the socioeconomic and I.Q. classifications. The most notable result was the comparative isolation of the Lower-Lower Class and the lowest I.Q. group from the rest of the subdivisions in each classification. The LL Class was isolated from all others in use of long T-units, coordinate nominals, and nominal modifiers in writing. The group was isolated in both media in use of sentence-combining transformations.

(4) The UL and LM socioeconomic groups stood close together in use of transformations in both media and in use of nominal modifiers in writing. The UM Class appeared in isolation in both media in the use of transformations. In use of spoken nominal modifiers, the group differed from the lower two classes only. The isolation of the group was complete in the use of written nominal modifiers.

(5) In the area of measured intelligence, the lowest group appeared isolated in use of transformations, adjectives, prepositional phrases, and total modifiers in writing. In written coordinate nominals, the lowest group differed from only the top two groups. In speech, the lowest two groups, I.Q. 70-79 and 80-89, differed significantly from the top two groups, I.Q. 110-120 and 121-up, in their use of coordinate nominals and prepositional phrases. Other differences appeared but not with consistency.

(6) Bilingualism produced significant differences in language ability only in the medium of speech. The bilinguals often showed slightly less ability

than monolinguals in both media, but the differences were insignificant in writing. In speech, the differences appeared at the .05 level or greater in the use of main clause coordinators, coordinate nominals within T-units, adjectives, prepositional phrases, transformations, and total modifiers. Only in the use of main clause coordinators did the results favor the bilingual.

(7) When the measuring devices of clause length and T-unit length were compared, the results were inconclusive. The correlation coefficient was a little over .98 for written copy and .94 for speech material. The t-test showed differences significant at the .01 level in both media. When Hunt's percentage method was applied, neither measurement showed superiority.

On the basis of these findings, null hypotheses one, three, four, and five were rejected. Null hypotheses two and six could not be rejected.

Conclusions

The conclusions drawn from this study pertain only to the sample studied in Kingsville, Texas. The conclusions may be stated in order of significance as follows:

(1) The seventh-grade student exhibits greater syntactic control in writing than in speech. Even though the student's ability in speech was far superior when he entered the first grade, the elementary grades reversed his abilities. Research by Hunt and O'Donnell in other parts of the country indicated that the reversal occurred after grade five and before grade seven or eight.

(2) Language-arts teachers in Grade 7 need to emphasize the development of oral communication skills. Such emphasis should begin in the late years of elementary school.

(3) The variables of measured intelligence and socioeconomic status influence the development of language skill in writing more than in speech.

The lower groups in both classifications were often isolated from the rest of the groups. The isolation was more frequent in writing than in speech. The variation of results between media indicated that students in the lower groups have the ability to control syntax as effectively but not as frequently as their peers.

(4) Bilingual students possess the ability to control syntax effectively when given an abundance of time in which to think. They control syntax better in writing than in speech. The ability is present. But the bilingual student cannot use his ability as quickly as the monolingual student.

(5) The variable of sex does not influence development of syntactic control sufficiently to be worthy of consideration.

(6) The T-unit is nc more effective than the clause in discriminating among sub-groups within a single grade level.

Recommendations for Instruction

In view of the data presented in this study, several recommendations seemed important to improvement of instruction in Grade 7. However, the recommendations stated here apply only to the school system and the sample studied. Replication of the study in other systems would be necessary for broader applications of these recommendations.

(1) Language-arts teachers and supervisors should emphasize development of oral language skills in Grade 7. The oral skills which at one time far surpassed the writing skills have fallen behind by the end of Grade 6.

(2) Language-arts curricula should avoid teaching definitions of grammatical entities such as noun, pronoun, noun clause, etc. The students used such nominal structures adequately.

(3) The students who have low I.Q. scores and who come from the Lower-Lower Class should receive training

in the following areas: (a) Use of modifiers in both media--especially adjectives and prepositional phrases; (b) Use of coordinate nominals; and (c) Use of sentence-combining transformations.

(4) Those students in the Upper-Lower Class and the I.Q. 80-89 groups should receive training in the use of sentence-combining transformations.

(5) The upper class students should be used as teacher aides in order to develop their critical skills more fully and to give weaker students more individual help.

(6) Bilingual students should receive training in the elimination of garbled expressions in both media.

(7) Bilingual students should receive extensive training in oral communication skills in the following areas: (a) Use of nominal modifiers; and (b) Expression of nominal relationships with main clause coordinators, coordinate nominals, and sentence-combining transformations.

Recommendations for Further Study

In view of the results of this study, several recommendations seemed important to further research.

(1) Replication of this study in other school systems would be important to further the establishment of normative data.

(2) Replication of this study in other school systems would be important to further establish the influence on language ability by the variables of measured intelligence, socioeconomic status, and bilingualism.

(3) Further research needs to consider measurements of linguistic ability which are more discriminatory than T-units or clauses within a single grade. While such measurements may be effective in discriminating among grade levels, they seem to lack sufficient precision to differentiate adequately among sub-groups within the same grade level.

(4) Further research needs to use heterogeneous groups to establish whether the T-unit or the clause is the superior measurement of language ability.

(5) The effect of student bilingualism on teacher attitudes toward the student deserves exploration. Change in the teacher's attitude toward teaching the bilingual student may depend on whether the teacher's attitude is affected by the student's skill in speaking and/or writing.

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APPENDIX A

SAMPLES OF QUESTIONS USED FOR WRITING

1. What is your opinion about drugs?
2. Should pets be penned up?
3. Describe your most frightening experience.
4. Briefly describe what the story was about in your book report.
5. If you could change one thing at Memorial Junior High, what would you change and why?
6. Do you think teachers give too much homework? If so, why?
7. Should we have school twelve months each year? Why?
8. Why do you think water and/or air pollution is bad?
9. Describe your most embarrassing moment.
10. Do you think smoking is bad? Why?

APPENDIX B

SAMPLES OF INTERVIEW QUESTIONS

1. What kind of pets do you have, and what interesting things do they do?
2. What do you do when school is out in the afternoon? During summer vacation?
3. What exciting things happened on your last vacation or trip?
4. Why do you like Boy Scout/Girl Scout camp?
5. What subject in school do you like best and why?
6. What do you dislike most about school and why?
7. What happened at the last football game?
8. Tell me the story of the last book report you gave.
9. Tell me about your favorite T.V. show.
10. Tell me about your favorite movie.
11. What is your best friend like, and what do you do together?
12. What is the difference between going to junior high and elementary school?

APPENDIX C

CLASSIFICATION OF OCCUPATIONS

LEVEL 1

Physician
Dentist
Lawyer
University Professor

LEVEL 2

Engineer (mechanical, industrial)
Pharmacist
Mgr. Insurance Agency
Commissioned Officer in Military
Veterinarian
Building Contractor
Minister
School Administrator

LEVEL 3

Teacher, Librarian
Railroad Engineer
Civil Service Director
Department Store Head
Mgr. Furniture Store
Mgr. Small Store
Draftsman
Secretary

LEVEL 4

Machinist
Carpenter
Bookkeeper
Policeman
Railroad Conductor
Postman
Plumber

LEVEL 5

Deliveryman
Practical Nurse
Factory Machine Operator
Shipping Clerk
Technician

LEVEL 6

Auto mechanic
Barber
Painter
Roofer
Cook
Store Clerk
Truck Driver
Laundry Worker
Filling Station Att.
Taxi Driver
Yardman
Cowboy
NCO's in Military
Railroad Station Hand

LEVEL 7

Bartender
Waiter
Janitor
Porter
Weight Checker

LEVEL 8

Public Relief

APPENDIX D

CLASSIFICATION OF EDUCATIONAL ATTAINMENT

LEVEL 1: Advanced college degree

LEVEL 2: Graduate of a four-year college program

LEVEL 3: Some college training but not a college graduate

LEVEL 4: High School graduate

LEVEL 5: Completed grades 10 or 11

LEVEL 6: Completed grade 7, 8, or 9

LEVEL 7: Completed grade 6 or less

LEVEL 8: Never attended school