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THE USE OF THE CLOZE PROCEDURE IN DETERMINING
STRUCTURAL INTERFERENCE WITH
EIGHTH AND NINTH GRADE SPANISH/ENGLISH
BILINGUAL STUDENTS

THESIS

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Abstract

The purpose of this study was to examine the extent to which structural interference is present in the reading ability of bilingual subjects by assessing the differences among Spanish/English bilingual students in the use of syntax in the act of reading. The study sought to measure the extent to which the syntactic structure of the bilingual subjects' L_1 interfered with the use of syntax in the act of reading in the subjects' L_2 . A sample of 19 eighth and ninth grade bilingual students were administered modified lexical cloze passages in both L_1 and L_2 . Statistical parameters, including t statistics for the differences in paired scores and the coefficient of determination, were computed from the test scores for both L_1 and L_2 cloze passages. The statistical findings indicated that although three of the four lexical cloze tests revealed a statistically significant difference in the students' paired test scores, the students exhibited no significant structural interference. The study invites further investigations into the degree of structural interference in the reading abilities of bilingual students and the use of the cloze procedure as an appropriate test for measuring structural interference.

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Chapter 1

Statement Of The Problem

Purpose

The purpose of this study was to examine the extent to which structural interference is present in the reading ability of bilingual subjects by assessing the differences among eighth and ninth grade bilingual students in the use of syntax in the act of reading. The study sought to measure the extent to which the syntactic structure of the bilingual subjects' L_1 interfered with the use of syntax in the act of reading in the subjects' L_2 .

Questions To Be Answered

1. Is there a significant difference in the mean scores of bilingual students on tests utilizing the lexical cloze procedure in the students' L_1 and L_2 ?
2. Among subjects in a bilingual program, does the syntax of L_1 interfere with the syntax of L_2 in the act of reading?
3. In selections which are written in the subjects' L_1 and L_2 , does the type of modified lexical deletion influence the degree of interference in the ability of subjects in a bilingual program?

Need For The Study

In the last decade or two, the interest in the education of multi-cultural groups has grown substantially. Since the passage of the Bilingual Education Act of 1967, bilingual instruction programs have been instituted throughout the United States in increasing numbers. Most of these bilingual programs have attempted to use the subject's native language for instructional purposes and have introduced English as a second language.

Although bilingual instructional programs have provided a more receptive learning environment, a student's academic success continues to rely to a large extent upon his proficiency in English. It is clear that knowledge of a bilingual subject's control of the English language is an essential element in the determination of the specific needs for his attaining proficiency in English.

This study seeks to improve the understanding of the unique needs of bilingual students in learning to read the English language. The study investigated the fundamental problem of structural interference among bilingual students. Armed with an understanding of the role of structural interference, a teacher of bilingual students may provide more efficient and pertinent instruction, thus hastening the bilingual student's progress toward attaining English reading proficiency.

Definition Of Terms

Bilingual - one who speaks any two languages with relative ease, although not necessarily with equal degrees of fluency. For this study the two languages will be Spanish and English.

Cloze Procedure - a technique which requires the subject to supply the appropriate word for each omission which has been systematically deleted from a written passage at specified intervals.

Modified Lexical Cloze - a modification of the cloze procedure in which specific syntactical elements are deleted. For this study the specific deletions will be verbs and adjectives.

Structural Interference - the spontaneous interaction of languages, especially in a bilingual subject, to the extent that the syntactical rules of one language are violated by occasional substitution of the syntactic rules or elements of a second language.

Retrospective Analysis - a technique used to determine a subject's reason for a particular response through questions based upon the subject's recollections.

L₁ - in a multilingual subject, the language which is spoken with the greatest frequency and spontaneity.

L₂ - in a multilingual subject, the language which is spoken less frequently and often suppressed by the use of L₁.

Limitations Of The Study

The subjects in this study were limited to eight and ninth grade bilingual students with reading levels ranging between 5.5 and 9.8. The students who participated in the study were from an urban environment and were generally from a lower/middle socio-economic background.

Although a total of 21 eight and ninth grade students were included in the testing procedure, a fundamental difference in school curriculum existed between the two grade levels. During the course of

the school year, the eighth grade students participated in bilingual classes; however, the ninth grade curriculum did not include any bilingual courses.

Summary

Academic success in the United States continues to depend upon proficiency in the English language. This fact is true for bilingual students as well, even though bilingual students experience unique transitional language difficulties. One specific transitional difficulty is structural interference, the interaction of languages in which the syntactic rules of one language are violated by occasional substitution of the syntactic rules or elements of a second language.

This study sought to determine the extent to which structural interference is demonstrated by bilingual subjects. The results of the study should assist the teacher of bilingual students by providing a fundamental understanding of the role and extent of bilingual interference.

Chapter II

Review of the Literature

Purpose

The purpose of this study was to examine the extent to which the structural interference is present in the reading ability of bilingual subjects by assessing the differences among eighth and ninth grade bilingual students in the use of syntax in the act of reading. The study sought to measure the extent to which the syntactic structure of the bilingual subjects' L₁ interfered with the use of syntax in the act of reading in the subjects' L₂.

Introduction

The following review of the published research data focuses upon two main areas which are pertinent to this study. The first section is a review of key findings with regard to language acquisition and structural interference. The second section is a review of key findings with regard to the application of and experience with the cloze procedure.

Language

Language is a highly organized system of sounds and words which facilitate human communication. Languages throughout the world are as

different as the geography, the people, and the cultures, varying not only in the system of sounds and words but also in the ordering and structure of the sounds and words. Language has been described in the literature as characterized as two distinct levels. These two levels are often referred to as the surface structure, relating to the sounds and visual symbols of language, and the deep structure, relating to the meaning of language. It is then the function of syntax, or grammar, to provide a set of rules to enable the listener (or reader) to join the two levels and thus derive meaning from language sounds and symbols. Syntax is therefore a critical element in language. In the written system of language communication, comprehension is a blend of both vocabulary and syntactic understanding. Consequently, an individual's first language (L_1) can be expected to leave an indelible impression of the vocabulary and syntax of this native language.

Language Acquisition

When describing child language acquisition, researchers (e.g. Slobin, 1971; Brown 1973) generally claim that a basic set of underlying principles can be universally applied to describe the learning process. Most researchers believe that these universal principles are reflected in the process and number of stages of language acquisition occurring from the first stage of one word speech (age 8 to 17 months) through subsequent stages of expanded vocabulary and the acquisition of syntax rules. Furthermore, it has been shown that the underlying similarities in first language acquisition holds for children speaking a wide variety of languages.

Much research has been focused on the similarity of the

acquisition process of a second language (L_2) with the basic acquisition principles associated with the subjects' primary language (L_1). An extensive search of published research studies indicates that there are as many similarities as there are differences between a subject's L_1 and L_2 acquisition process (Boyd, 1975; Ervin-Tripp, 1974; Padilla & Liebman, 1975). In summarizing prior research findings (Grieve & Taylor, 1953; Modiano, 1968; Orata, 1953) Gonzales and Elijah (1979) stated that a child's acquired skills (lexical, syntactic, semantic, etc.) can be applied in the child's acquisition of secondary languages.

Structural Interference

The degree of interlingual interference continues to be the focus of many research studies of language acquisition among bilingual subjects. Interlingual interference can be defined as the spontaneous interaction of languages, especially in a bilingual subject, to the extent that the syntactical rules of one language are violated by occasional substitution of the syntactic rules or elements of a second language, and is primarily due to the difference in linguistic structures of different languages. Mackey (1968) defined interference more simplistically as the use of features belonging to one language while reading, writing, speaking, or interpreting another. In general, researchers are nearly equally divided on whether or not linguistic interference occurs in bilingual subjects.

In their 1974 study to determine whether interference occurred in the acquisition of a second language by young children, Dulay and Burt concluded that interference from the children's L_1 accounted for

approximately 5% of the syntactic errors in L₂ while "developmental strategies" accounted for nearly 90% of the syntactic errors. Studies conducted by Lapkin and Swain (1977) indicated that most errors could be attributed to intralingual rather than interlingual interference, i.e. many of the errors were similar to those made by children acquiring the target language as L₁.

In summarizing the research findings of those who refute interference, Durga (1978) indicated that bilingual subjects are believed to form associations between L₁ and L₂.

In their 1979 study, Gonzales and Elijah cited a long list of researchers who believed the existence of interference (Ching, 1976; Lapp & Flood, 1978; Ransom, 1978; Thonis, 1976; Tinker & McCullough, 1975; Zintz, 1975), but concluded from their study that no significant evidence of structural interference occurred in the reading comprehension of bilingual students. Gonzales and Elijah found that their subjects were clearly able to separate their knowledge of L₁ from "language strategies" used in comprehending L₂.

Spanish/English Comparison

An important consideration in assessing the degree of structural interference is the syntactic nature of the two languages involved in the subject's bilingual capabilities. In the comparison of the Spanish and English languages, the syntactic structure is similar to the degree that both languages incorporate a subject-verb-object word order; however, an element of the syntactic structure is different to the degree that in Spanish adjectives follow the noun, unlike the order in English. These elements are important considerations because

the extent of linguistic interference will be influenced by the structural dissimilarities between L_1 and L_2 . To illustrate the differences between English and Spanish, the following example is provided:

<u>English</u>	<u>Aux.</u>	<u>Pro.</u>	<u>Verb</u>	<u>Art.</u>	<u>Adj.</u>	<u>Noun</u>
	Do	you	see	a	black	cat?
<u>Spanish</u>	<u>Verb</u>	<u>Pro.</u>	<u>Art.</u>	<u>Noun</u>	<u>Adj.</u>	
	¿Ves	tú'	un	gato	negro?	

In the example above both sentences carry the identical meaning.

The Cloze Procedure

Description

This study utilized a cloze procedure to test for structural interference in bilingual students. The cloze procedure can be defined as the use of a written passage in which selected words are deleted according to a pre-determined method. The word deletion in the cloze passage can be based upon simply a mechanical deletion in which every nth word is deleted or upon a lexical rule in which a specific part of speech (noun, verb, adverb, adjective) is regularly deleted from the passage. In addition, the term modified cloze has been used to describe a broad range of word deletion rules which can be applied to the cloze passage; examples of the modified cloze include not only all forms of lexical cloze but also forms resulting from other pre-determined deletion rules as well.

Taylor (1953) provided a broad definition of the cloze procedure

as a "method of interrupting a message from a transmitter (writer or speaker), mutilating its language pattern by deleting parts and so administering it to receivers (readers or listeners) so that their attempt to make the patterns whole again patiently yield a considerable number of cloze units." (p.416) Culhane (1970) and others subsequently identified a variety of different applications of the cloze procedure including the variation of the number of words between deletions and the deletion of specific parts of speech. Since its introduction by Taylor (1953) the cloze procedure has been expanded in both definition and application.

Bormuth (1969) somewhat later offered a stricter definition of the cloze procedure as "a completely objective procedure wherein words are systematically deleted from a passage, usually every fifth word" (p.360).

In this study the cloze procedure was applied in the form of bilingual passages with lexical deletions to test for structural interference; however, research literature indicates a variety of tests and constructive applications for the cloze procedure. According to Horton (1974-75) the validity of the cloze test as a measure of reading comprehension has been clearly established by a number of researchers in the field. Bormuth (1969) has concluded that much research supports the correlation of cloze test scores with the standardized test scores with reading comprehension. Sinatra (1977) used a lexical cloze procedure to review and reinforce content vocabulary in a remedial reading program for elementary students. In 1974, Hansen and Hesse applied the cloze procedure in a test of teaching

materials and found that the procedure accurately indicated that the text materials in use at the time were too difficult for a great proportion of the student population.

The application of the cloze procedure as a tool in evaluation and teaching bilingual students, particularly where English is the second language (ESL), has been well documented by research studies over the years. In 1971 Oller and Conrad conducted a study to evaluate the proficiency of ESL subjects and concluded that use of the cloze procedure correlated with University of California, Los Angeles (UCLA) English as a Second Language Placement Examination (ESLPE) when the tests were scored for exact-word replacement. A variety of other studies which have focused upon the applicability of the cloze procedure as a measuring technique in the second language situation (Anderson, 1971; Aitken, 1977; Hisana, 1977; Lapkin and Swain, 1977; Levine, 1971; Oller and Conrad, 1971; Stubbs and Tucker, 1974) give further support to the application of the cloze procedure in the evaluation of language performance for bilingual subjects, particularly for the second language learner.

Use of cloze tests is growing increasingly popular with English as a Second Language (ESL) teachers who recognize the value of overall language proficiency tests in the ESL programs. The acceptance of the cloze procedure has grown considerably for bilingual studies essentially because the test is easy to administer and score, and it is an integrative measure of reading ability (Oller, 1973).

In several studies, cloze procedure tests have been substantiated as a valid measure which correlates highly with other tests of English

as a recessive language. Performance in the cloze procedure tests is indicative of the subject's proficiency in both the syntactic and semantic aspects of the tested language (Hisana, 1977).

Based upon the background research conducted for this study, although a large number of research studies have focused upon the application of the cloze procedure to assess language performance skills, relatively few studies have been documented in which the cloze procedure was used to evaluate structural interference between the subjects' L_1 and L_2 (Gonzales and Elijah, 1979).

An important factor in the cloze procedure is the scoring method. A number of studies already mentioned (Bormuth, 1968, 1969; McKenna, 1976; Rankin and Culhane, 1969; Taylor 1953, 1956) utilized an exact-word scoring method as the most objective and the most easily applied. In addition, these researchers determined that no additional information could be gained by alternate scoring methods such as synonyms or acceptable word replacements. This conclusion has been tested in subsequent studies (Thomas 1978) which claim that scoring based upon syntactically and semantically acceptable words can in fact provide more valuable information than exact-word scoring. Oller (1972) recognized a slight superiority of an acceptable word scoring method over the exact-word scoring method.

In addition, Miller and Coleman (1967) investigated the use of a weighted scoring system and found that there was near perfect correlation (.99) between the weighted scores and exact replacement scores. In this early research work the exact replacement scoring method was preferred on the basis of convenience without loss of information.

Another important dimension of the cloze procedure is the reinforcement of the cloze tests with individual discussions with subjects following testing. Early research studies (Heitzman and Bloom, 1967; Schneyder, 1965) recognized the potential effect of reinforcing the cloze tasks by permitting subjects to verbalize and discuss their answers. The researchers determined, however, that reading comprehension was not necessarily improved by reinforcement. A current search of published findings indicates that these early conclusions with regard to reinforcement have not been contradicted by more recent studies.

Summary

In the written system of language communication, comprehension is a blend of both vocabulary and syntactic understanding. These acquired skills in a native language can be applied to the acquisition of a secondary language. Just how much the structure of the native language may interfere with the comprehension of a secondary language has been and continues to be the focus of many research studies. Unlike most of these research efforts, this study utilized a modified cloze procedure to test for structural interference.

Chapter III

Design Of The Study

Purpose

The purpose of this study was to investigate the degree of structural interference in the reading ability of eighth and ninth grade students in a bilingual program.

Questions

The questions investigated in this study were as follows:

1. Is there a significant difference in the mean scores of bilingual students on tests utilizing the lexical cloze procedure in the students' L_1 and L_2 ?
2. Among students in a bilingual program, does the syntax of language one (L_1) interfere with the syntax of language two (L_2) in the act of reading?
3. In selections which are written in the subjects' L_1 and L_2 , does the type of modified lexical deletion influence the degree of interference in the ability of subjects in a bilingual program?

Methodology

Subjects

The subjects involved in the study were eighth and ninth grade students attending a junior/senior high school.

A total of 21 bilingual (Spanish/English) students participated in this study. There were 10 eighth graders (4 males, 6 females) and 11 ninth graders (4 males, 7 females).

Two of the students, a male eighth grader and a female ninth grader, were eliminated from the analysis of data because they were absent and unable to complete all of the four modified lexical cloze passages.

Instruments and Procedures

Four narrative modified lexical cloze passages, two in Spanish and two in English, were administered to all 19 eighth and ninth grade bilingual subjects in the study. Each of the four modified lexical cloze passages consisted of approximately 250 words. Verb deletions comprised two of the passages (Spanish/English) and adjective deletions the other two passages. All of the passages were selected from books written especially for young so that the students were able to relate to, as well as enjoy, the passages.

Readabilities were performed on each of the four selections so that each pair of passages (Spanish/English modified verb cloze and Spanish/English modified adjective cloze) were as equivalent as possible. The Spaulding Spanish Readability Formula was used to determine the readability of the Spanish passages, and the Dale-Chall

Readability Formula was used to determine the readability of the English passages.

In the first session, each subject was given the two modified lexical cloze passages in which the verbs were deleted. The time allowed for each subject to complete both cloze passages was 40 minutes. The second session, one week later, was conducted identically to the first session with the exception that each student was given the cloze passages with the adjective deletions.

A third session was conducted within three school days after the testing to discuss with each subject the results of the modified lexical cloze passages. Test scores were calculated not only for the performance in providing exact word replacements but also for the performance in providing appropriate substitution replacements (syntactically correct). In sessions held following the scoring of the tests, a retrospective analysis was conducted in which the subjects were asked individually to describe their reasoning behind each of the identified syntactical errors. The retrospective analysis was used in an attempt to discover any potential misconceptions shared among a majority of the subjects.

Statistical Procedure

For each of the four experimental conditions, scores on the cloze passages of exact verb replacement, scores on the cloze passages of exact adjective replacement, scores on the cloze passages of appropriate verb replacement, and scores on the cloze passages of appropriate adjective replacement, four key statistical parameters were computed

including the mean test scores, the t statistic for the differences in paired test scores, the coefficient of determination, and the t statistic for coefficient of determination. The test score data and the actual statistical computations are provided in the appendices.

For the first four null hypotheses the mean test scores and the t statistic for the paired test scores were used to test the significance of the differences between the overall performance of the students on the Spanish and English passages. A comparison of the computed t statistic with the critical value of t (at a 95% confidence level) provided the basis for determining the statistical significance of the differences in test scores. The paired Spanish and English test scores were judged to be significantly different with 95% confidence if and only if the computed t statistic exceeded the critical value of t.

For the four experimental hypotheses the coefficient of determination and the t statistic for this coefficient were used to test the significance of the correlation between the students' overall performance on the Spanish and English passages. The significance of the correlation between the Spanish and English test scores was first measured by the value of the computed coefficient of determination. (Minimum, 1970, p. 445). Computed values of the coefficient less than 0.5 would indicate that correlation between the Spanish test scores and the English test scores was not significant; for values greater than 0.5 a significant correlation would be indicated.

In addition, the t statistic was computed for each of the coefficients of determination and was compared to the critical value of t

(at a 95% confidence level) to substantiate further the statistical significance of the computed coefficients. The paired Spanish and English test scores were judged to exhibit correlation with 95% confidence if and only if the computed t statistic exceeded the critical value of t.

Summary

Modified lexical cloze passages were constructed to determine if there was any structural interference among bilingual students in the use of syntax in the act of reading. The sample consisted of 19 bilingual eighth and ninth grade students. Two verb-deletion cloze passages (Spanish/English) and two adjective-deletion passages (Spanish/English) were administered; each pair of cloze selections was given in the same time period. Statistical parameters were computed from the test scores for each of the passages and included the mean scores, the t statistic for the differences in paired scores, the coefficient of determination, and the t statistic for the coefficient of determination.

Chapter IV

Analysis Of Data

Purpose

The purpose of this study was to investigate the degree of structural interference in the reading ability of eighth and ninth grade students in a bilingual program.

Findings and Interpretations

Structural Interference

Four null hypotheses and four experimental hypotheses were investigated in this study. The four null hypotheses were as follows:

H₀ There will be no significant difference in the mean scores of exact verb replacement of Spanish and English cloze passages.

H₀ There will be no significant difference in the mean scores of exact adjective replacement of Spanish and English cloze passages.

H_0 There will be no significant difference in the mean score of appropriate verb replacement of Spanish and English cloze passages.

H_0 There will be no significant difference in the mean scores of appropriate adjective replacement of Spanish and English cloze passages.

The four experimental hypotheses were as follows:

H_1 The coefficient of determination will be less than 0.50 when 19 students in a bilingual program are given a cloze test in which they are asked to provide an exact verb replacement in Spanish and English passages.

H_2 The coefficient of determination will be less than 0.50 when 19 students in a bilingual program are given a cloze test in which they are asked to provide an exact adjective replacement in Spanish and English passages.

H_3 The coefficient of determination will be less than 0.50 when 19 students in a bilingual program are given a cloze test in which they are asked to provide an appropriate verb replacement in Spanish and English passages.

H₄ The coefficient of determination will be less than 0.50 when 19 students in a bilingual program are given a cloze test in which they are asked to provide an appropriate adjective replacement in Spanish and English passages.

The statistical analysis summarized in Table 1 was used to test the first null hypothesis by determining if a significant difference existed between paired test scores for exact verb replacement in the Spanish and English cloze passages. A scatter diagram of the actual test scores is shown in Figure 1 included in Appendix A. As indicated in Table 1, the computed t statistic (-4.040) for the differences in paired test scores exceeded the critical value limits of t (+/- 2.101) at the .05 level of significance (95% confidence); therefore, the first null hypothesis is rejected. A significant difference in the direction of L_2 does exist between the students' performance on the Spanish passages and the English passages for exact verb replacement in the lexical cloze procedure.

Table 1

Correlated Test of Significance of Difference Between
Mean Scores on Spanish and English Cloze Passages
Exact Verb Replacement

	Mean	s.d.	$t_{crit.}$	$t_{obt.}$
Spanish	15.8%	8.3%	2.101	-4.040
English	27.0%	11.9%		

d.f. = 18

$p < .05$

Table 2 summarizes the statistical analysis used to test the first experimental hypothesis by determining if a significant correlation existed between the paired data for the same verb replacement test scores. As indicated in Table 2, the computed coefficient of determination was .103, indicating a very weak correlation between Spanish and English test scores. The first experimental hypothesis is accepted. In addition, the computed t statistic (1.397) for the correlation coefficient ($r = 0.321$) was within the critical value limits of t (± 2.110) at the .05 level of significance; therefore, the indicated weak correlation between the paired test scores was due to chance.

Table 2

Exact Verb Replacement Statistical Summary On Spanish and
English Cloze Passages

	Mean	s.d.	r	<u>r^2</u>	$t_{crit.}$	$t_{obt.}$
Spanish	15.8%	8.3%	.321	.103	2.110	1.397
English	27.0%	11.9%				

d.f. = 17

$p < .05$

The analysis summarized in Table 3 was used to test the second null hypothesis by determining if a significant difference existed between paired test scores on the exact adjective replacement in the Spanish and English cloze passages. A scatter diagram of the actual test scores is shown in Figure 2 included in Appendix A. As indicated in Table 3, the computed t statistic (4.404) for the difference in the paired test scores exceeded the critical value limits of t (± 2.101) at the .05 level of significance (95% confidence); therefore, the second null hypothesis is rejected. A significant difference in the direction of L_1 does exist between the students' performance on the Spanish passages and the English passages for the exact adjective replacement in the lexical cloze procedure.

Table 3

Correlated Test of Significance of Difference Between
Mean Scores On Spanish and English Cloze Passages
Exact Adjective Replacement

	Mean	s.d.	$t_{crit.}$	$t_{obt.}$
Spanish	15.2%	10.4%	2.101	4.404
English	5.6%	5.7%		

d.f. = 18

$p < .05$

Table 4 summarizes the statistical analysis used to test the second experimental hypothesis by determining if a significant correlation existed between the paired data for the same adjective replacement test scores. As indicated in Table 4, the computed coefficient of determination was .179, indicating a weak correlation between Spanish and English test scores. The second experimental hypothesis is accepted. In addition, the computed t statistic (1.925) for the correlation coefficient ($r = .423$) was within the critical value limits of t (± 2.110) at the .05 level of significance; therefore, the indicated weak correlation between the paired test scores was due to chance.

Table 4

Exact Adjective Replacement Statistical Data Summary
On Spanish and English Cloze Passages

	Mean	s.d.	r	r ²	t _{crit.}	t _{obt.}
Spanish	15.2%	10.4%	.423	.179	2.110	1.925
English	5.6%	5.7%				

d.f. = 17

$p < .05$

The analysis summarized in Table 5 was used to test the third null hypothesis by determining if a significant difference existed between paired test scores for appropriate verb replacement in the Spanish and English cloze passages. A scatter diagram of the actual test scores is shown in Figure 3 included in Appendix A. As indicated in Table 5, the computed t statistic (-0.476) for the differences in paired test scores was within the critical value limits of t (+/- 2.101) at the .05 level of significance; therefore, the third null hypothesis is accepted. No significant difference exists between the students' performance on the Spanish passages and the English passages for appropriate verb replacement in the lexical cloze procedure.

Table 5

Correlated Test of Significance of Difference Between
Mean Scores On Spanish and English Cloze Passages
Appropriate Verb Replacement

	Mean	s.d.	$t_{crit.}$	$t_{obt.}$
Spanish	56.5%	19.4%	2.101	-0.476
English	59.6%	19.9%		

d.f. = 18

$p < .05$

Table 6 summarizes the statistical analysis used to test the third experimental hypothesis by determining if a significant correlation existed between the paired data for the same verb replacement test scores. As indicated in Table 6, the computed coefficient of determination was .002, indicating a very weak correlation between Spanish and English test scores. The third experimental hypothesis is accepted. In addition, the computed t statistic (-0.182) for the correlation coefficient ($r = .044$) was within the critical value limits of t (+/- 2.110) at the .05 level of significance; therefore, the indicated very weak correlation was due to chance.

Table 6

Appropriate Verb Replacement Statistical Data Summary
On Spanish and English Cloze Passages

	Mean	s.d.	r	r ²	t _{crit.}	t _{obt.}
Spanish	56.5%	19.4%	-.044	-.002	2.110	-0.182
English	59.6%	19.9%				

d.f. = 17

p .05

The analysis summarized in Table 7 was used to test the fourth null hypothesis by determining if a significant difference existed between paired test scores for appropriate adjective replacement in the Spanish and English cloze passages. A scatter diagram of the actual test scores is shown in Figure 4 included in Appendix A. As indicated in Table 7, the computed t statistic (-4.284) for the differences in paired test scores exceeded the critical value limits of t (+/- 2.101) at the .05 level of significance; therefore, the fourth null hypothesis is rejected. A significant difference does exist in the direction of L₂ between the students' performance on the Spanish passages and the English passages for appropriate adjective replacement in the lexical cloze procedure.

Table 7

Correlated Test of Significance of Difference Between
Mean Scores On Spanish and English Passages
Appropriate Adjective Replacement

	Mean	s.d.	t _{crit.}	t _{obt.}
Spanish	62.3%	17.7%	2.101	-4.284
English	85.1%	11.0%		

d.f. = 18

p < .05

Table 8 summarizes the statistical analysis used to test the fourth experimental hypothesis by determining if a significant correlation existed between the paired data for the same adjective replacement test scores. As indicated in Table 8, the computed coefficient of determination was .073, indicating a very weak correlation between Spanish and English test scores. The fourth experimental hypothesis is accepted. In addition, the computed t statistic (-1.161) for the correlation coefficient ($r = 0.271$) was within the critical value limits of t (+/- 2.110) at the .05 level of significance; therefore, the indicated very weak correlation between paired test scores was due to chance.

Table 8

Appropriate Adjective Replacement Statistical Data Summary
On Spanish and English Cloze Passages

	Mean	s.d.	r	r ²	t _{crit.}	t _{obt.}
Spanish	62.3	17.7	-.271	.073	2.11	-1.161
English	85.1	11.0				

d.f. = 17

$p < .05$

The results of the statistical analysis for each of the eight hypotheses can be summarized as follows in Table 9.

TABLE 9
Summary of Statistical Findings

Modified Lexical Deletion Test & Criteria	Significance of Difference In Paired Test Scores	t(X-Y)	Significance of Correlation of Paired Test Scores	r^2	t_r
Exact Verb Replacement	Significant difference exists	-4.040	Very weak correlation attributable to chance	.103	1.397
Exact Adjective Replacement	Significant difference exists	4.404	Weak correlation attributable to chance	.179	1.925
Appropriate Verb Replacement	No significant difference exists	-0.476	Very weak correlation attributable to chance	.002	-0.182
Appropriate Adjective Replacement	Significant difference exists	-4.284	Very weak correlation attributable to chance	.073	-1.61

The Effect of Modified Lexical Deletions

The experimental data also provided the opportunity to examine the influence of the type of modified lexical deletion upon the calculated coefficients of determination. The statistical findings summarized in the preceding Table 9 illustrate the comparison of these coefficients for the two types of modified lexical deletion (verb deletion and adjective deletion). As the findings indicate, no statistically significant correlation is present in either test result, with all values of the coefficients of determination falling below 0.179 and the weak correlation attributable to chance in each of the modified lexical deletion tests.

Summary

The analysis of the data consisted of two statistical measures of association: (1) a comparison of the paired test scores using a t-test for correlated samples, difference of the means and (2) an evaluation of the coefficient of determination for the paired test scores including a t-test for the statistical significance of the computed correlation. As summarized in Table 9, three of the four null hypotheses were rejected based upon the existence of a significant difference in mean test scores. Only in the results of the appropriate verb replacement paired test scores was the absence of a significant difference confirmed and the null hypothesis accepted. Also, all four of the experimental hypotheses were accepted based upon the presence of only weak correlation which in each case was attributable to chance. In addition, a comparison of the same statistical measures between the

two different modified lexical cloze tests used (verb/adjective) indicated that no significant difference existed between the statistical results found from the two lexical cloze tests.

Chapter V

Conclusions and Implications

Purpose

The purpose of this study was to investigate the degree of structural interference in the reading ability of eighth and ninth grade bilingual students.

Conclusions

The findings of this study lead to the following conclusions:

1. Provided a number of modified lexical deletion tests, Spanish/English bilingual students exhibited no significant structural interference in their reading ability.

2. Provided two different modified lexical deletion tests, the bilingual students also showed no significant difference in their performance between the two deletion tests (verb/adjective).

As indicated by the summarized test results (Table 9) three of the four lexical cloze tests produced a statistically significant difference in the paired test scores. Both the exact verb replacement and the appropriate adjective replacement tests revealed this difference in the direction of L_2 , i.e. English scores were significantly higher than Spanish scores. The exact adjective replacement test revealed a difference in the direction of L_1 , i.e. Spanish scores were

significantly higher than English scores. Although not substantiated by this study, the direction in favor of L_2 could arise from the disproportionately greater emphasis placed upon L_2 in the classroom and from the students' retention of L_1 as primarily a spoken language without an equal scholastic emphasis upon structure. Where the difference favored L_1 , the students are apparently demonstrating a comparatively better working knowledge of L_1 adjectives required for exactly correct scoring on the L_1 passage. This apparent exception in overall performance (L_1 vs. L_2) might indicate a relative weakness in the students' L_2 vocabulary for the adjectives required for exactly correct scoring in the L_2 passage.

Limitations

There were several key limitations evident in this study which must be considered when assessing the results. They are as follows:

1. Small sample size. Nineteen students participated in the study providing responses to a total of four reading passages--two in Spanish and two in English. The total group consisted of nine eighth graders and ten ninth graders. Although these smaller segments provided an opportunity to isolate the test performance by grade, the smaller sample size is of greater concern to the accuracy of findings based upon a comparison of these subsegments.

2. Non-random selection of students. Students from both grade levels were selected by their teacher on the basis of their willingness to cooperate with the requirements of the study. Although this qualification of participants must be judged as important, if not

essential to the success of conducting such tests, the final results of the testing could be biased by the selection process.

3. Lack of in-depth subjective responses from the students. Although student cooperation to participate in the testing was quite acceptable, essentially all the participating students were hesitant to discuss their reasoning behind correct and incorrect answers. The lack of any subjective assessment of test results prevents the possible insights which may have otherwise resulted from in-depth responses from each of the participating students.

Implications for Further Research

The results of this study indicate that further investigation into the use of the cloze procedure with bilingual students should be pursued in order to substantiate further the results of this study and the usefulness of the cloze procedure in such testing. Current literature suggests that only a limited number of studies utilizing the cloze procedure with bilingual students have actually been undertaken for either testing or instructional purposes. Specifically, the application of this experimental procedure to a much larger number of participants could add considerably to the substantiation of both the findings and the procedure.

This study also invites further investigation into the actual difference between test subject performance on verb cloze versus adjective cloze when the test scoring was based upon appropriate verb/adjective word replacement. Further in-depth research could provide valuable insights into the underlying reasons for this initially

indicated difference. Examination of the results of this study suggest that an appropriate scoring procedure would need to be established to assure accurate judgment of the appropriateness of the verb and adjective responses. It is suggested that a panel of expert judges might provide the criteria for judging the responses.

In addition, this study invites subsequent research into the comparative performance of students whose L_1 is English and L_2 is Spanish (for comparison to L_1 Spanish and L_2 English as in this study) using the same experimental procedure described herein. A comparison of the findings could provide valuable insight into the influence of L_1 and L_2 upon the degree of structural interference.

It is recommended that further research utilizing the cloze procedure should incorporate retrospective analysis immediately following each test to provide an in-depth appreciation of the test results and a better appreciation of the degree of structural interference which may be indicated by the test results. It is also recommended that further research should also attempt to compare the performance and abilities of the subject with his or her self-concept in order to isolate the role of structural interference and to probe the relationship of overall performance and the student's self-concept.

Implications for Classroom Practice

The results of this study as well as other studies (Kaminsky, 1977; O'Reilly, 1974) suggest that the cloze procedure can potentially be applied as a teaching mechanism as well as a testing device. The consistent deletion of specific parts of speech could serve to

emphasize the syntactical structure of L_1 and L_2 for bilingual students.

Use of the cloze procedure may also be applied by teachers as an additional instructional tool to strengthen a student's ability to utilize his or her acquired syntactic skills to improve reading comprehension (in particular) of L_2 for bilingual students.

Summary

Spanish/English bilingual students exhibited no significant structural interference in their reading ability as tested using the modified lexical cloze procedure. These findings could have been influenced by the small number and non-random selection of students participating in the testing. The study invites further investigations into the degree of structural interference and the use of the cloze procedure as an appropriate test. Ultimately, the cloze procedure could be applied in the classroom to reinforce syntactical structure of L_1 and L_2 for bilingual students.

Selected References

Selected References

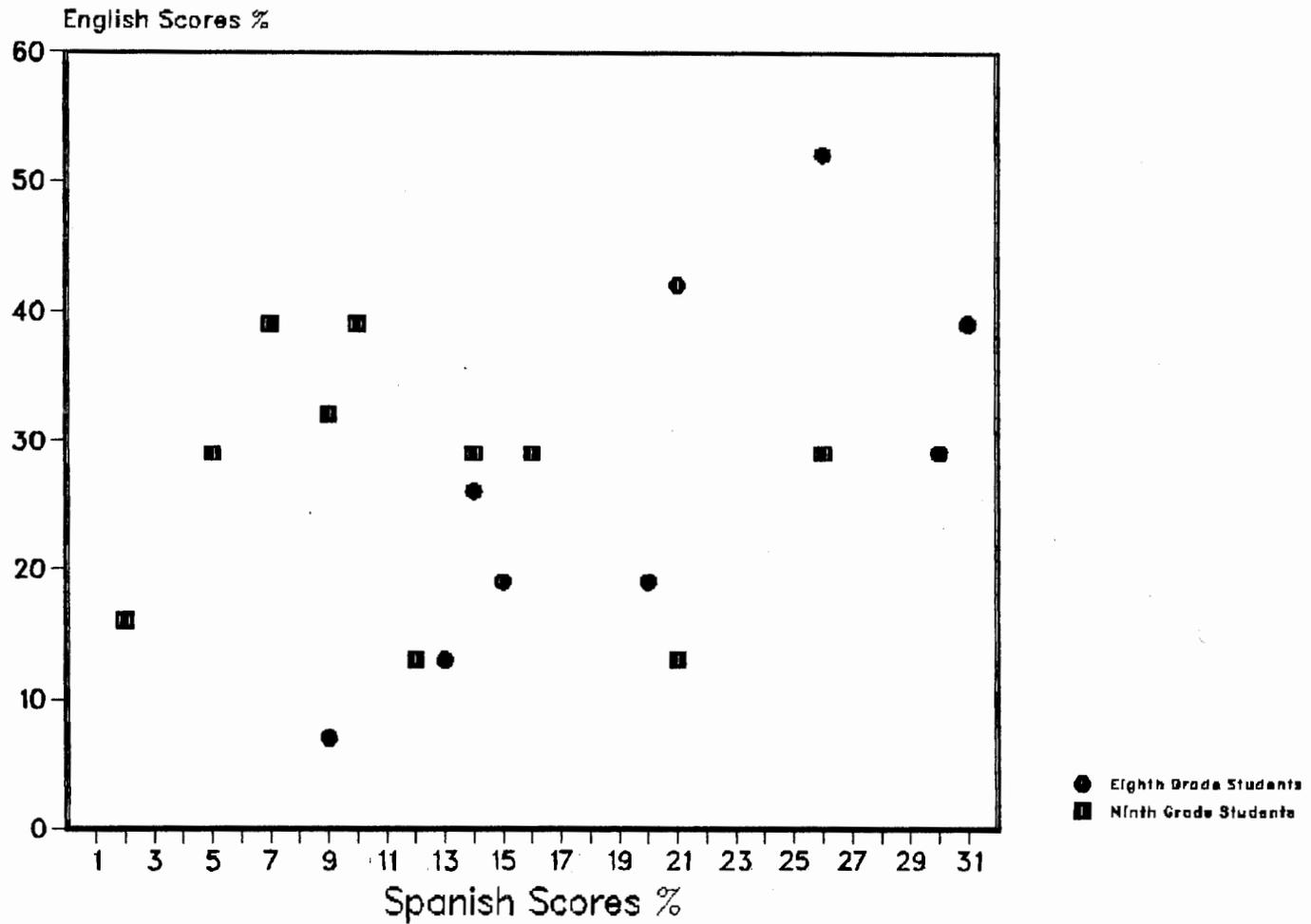
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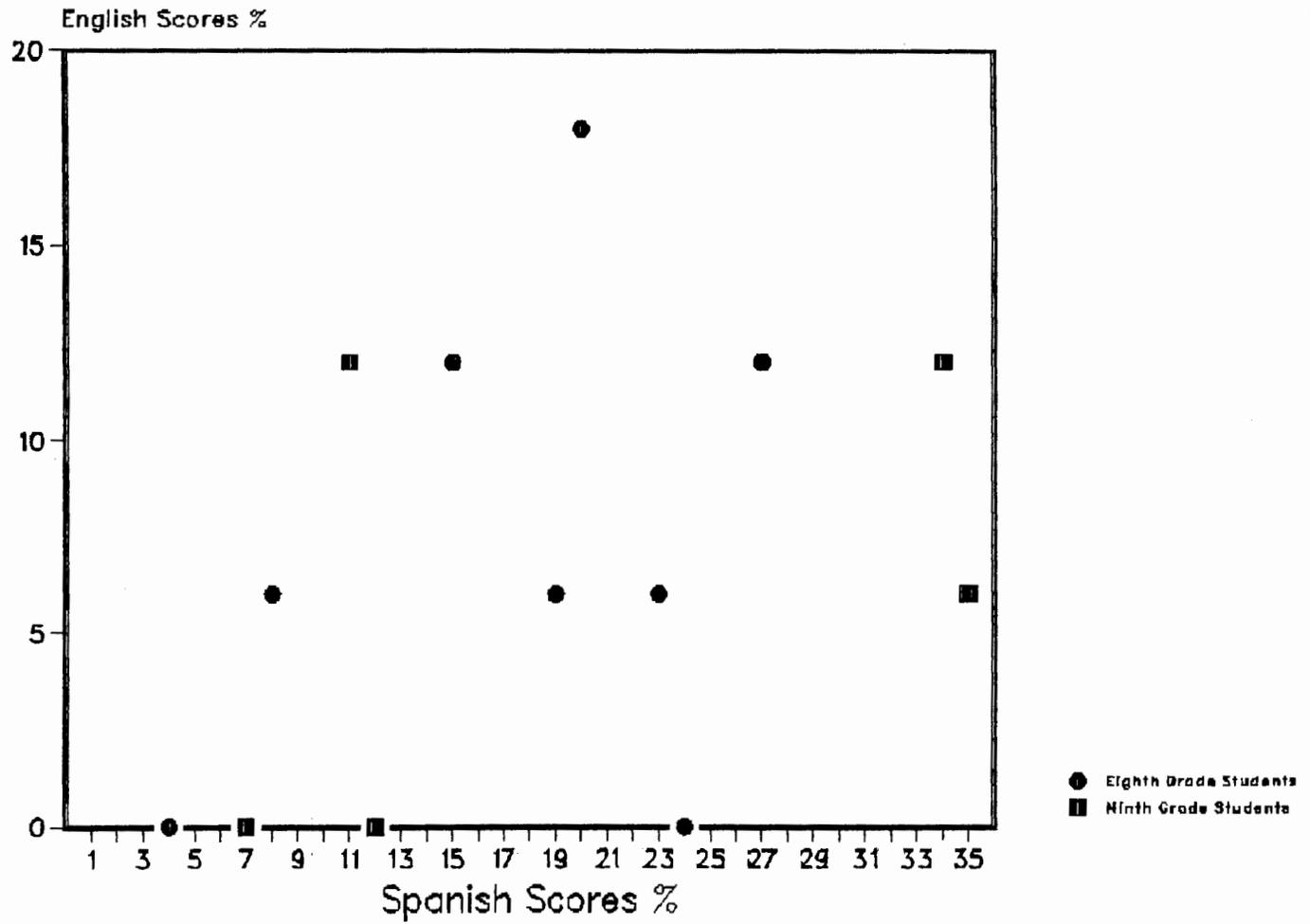
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Appendices

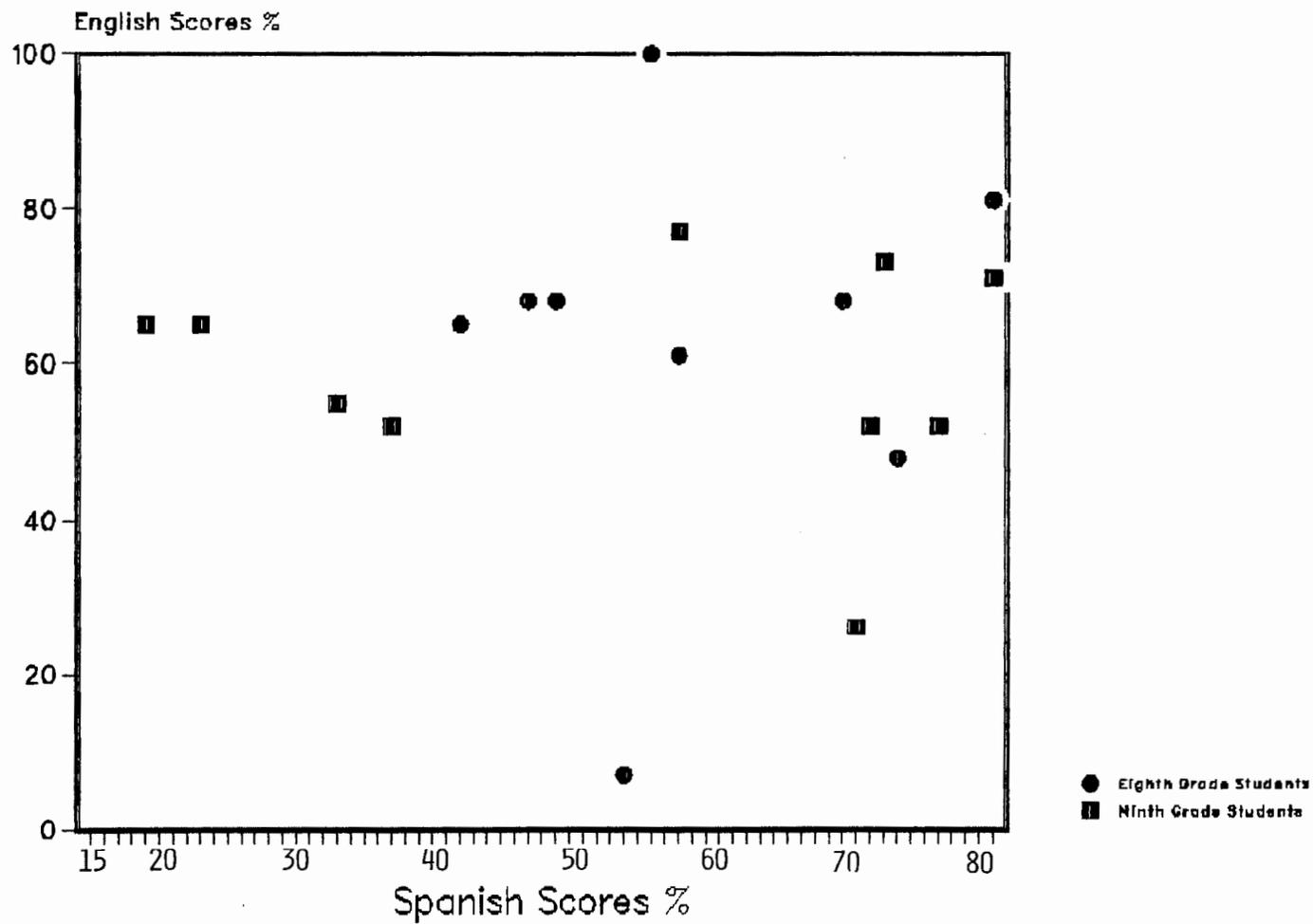
APPENDIX A
SCATTER PLOT
SPANISH VS ENGLISH TEST SCORES
VERB EXACT



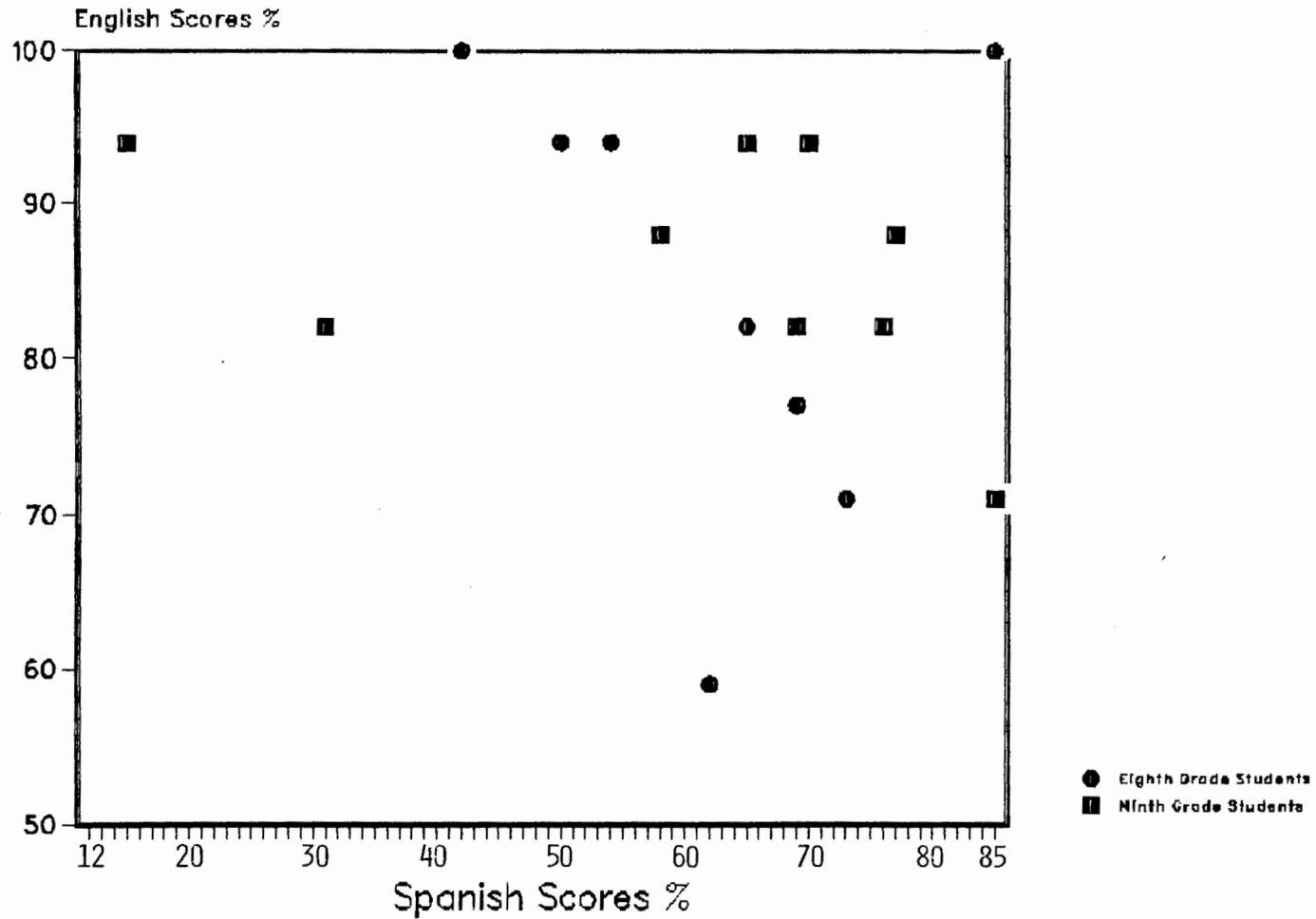
APPENDIX A
SCATTER PLOT
SPANISH VS ENGLISH TEST SCORES
ADJECTIVE EXACT



APPENDIX A
SCATTER PLOT
SPANISH VS ENGLISH TEST SCORES
VERB EXACT & SUBSTITUTE



APPENDIX A
 SCATTER PLOT
 SPANISH VS ENGLISH TEST SCORES
 ADJECTIVE EXACT & SUBSTITUTE



APPENDIX B

ACTUAL TEST DATA - SPANISH AND ENGLISH, EXACT AND
ACCEPTABLE SUBSTITUTES

	<u>VERB LEXICAL CLOSE</u>				<u>ADJECTIVE LEXICAL CLOSE</u>				
	<u>Spanish (43 Possible)</u>		<u>English (31 Possible)</u>		<u>Spanish (26 Possible)</u>		<u>English (17 Possible)</u>		
	<u>Exact</u>	<u>Substitute</u>	<u>Exact</u>	<u>Substitute</u>	<u>Exact</u>	<u>Substitute</u>	<u>Exact</u>	<u>Substitute</u>	
<u>8th Grade</u>									
<u>Students</u>									
1	6	26	4	11	4	12	2	8	
2	6	12	8	12	7	15	2	15	
3	13	11	9	22	5	12	1	13	
4	4	19	2	0	1	17	0	13	
5	13	17	12	9	6	5	1	16	
6	9	16	8	13	5	8	3	13	
7	11	24	16	9	6	13	0	12	
8	9	11	13	8	2	12	1	15	
9	6	15	6	15	6	12	0	13	

VERB LEXICAL CLOSE

ADJECTIVE LEXICAL CLOSE

	Spanish (43 Possible)		English (31 Possible)		Spanish (26 Possible)		English (17 Possible)	
	<u>Exact</u>	<u>Substitute</u>	<u>Exact</u>	<u>Substitute</u>	<u>Exact</u>	<u>Substitute</u>	<u>Exact</u>	<u>Substitute</u>
<u>9th Grade Students</u>								
10	11	24	9	13	9	11	2	13
11	4	4	10	10	0	4	0	16
12	7	24	9	8	2	16	0	14
13	2	31	9	7	2	15	1	15
14	3	7	12	8	3	12	2	13
15	5	26	4	12	3	19	2	10
16	1	13	5	12	1	19	0	15
17	4	21	12	12	1	7	0	14
18	9	22	4	4	3	15	0	16
19	6	10	9	7	9	9	1	13

APPENDIX B

TEST SCORES - SPANISH AND ENGLISH, EXACT AND
ACCEPTABLE SUBSTITUTES

	VERB LEXICAL CLOSE				ADJECTIVE LEXICAL CLOSE			
	SPANISH		ENGLISH		SPANISH		ENGLISH	
	<u>Exact</u>	<u>Exact + Substitute</u>	<u>Exact</u>	<u>Exact + Substitute</u>	<u>Exact</u>	<u>Exact + Substitute</u>	<u>Exact</u>	<u>Exact + Substitute</u>
<u>8th Grade Students</u>								
1	14.0%	74.4%	12.9%	48.4%	15.4%	61.5%	11.8%	58.8%
2	14.0%	41.9%	25.8%	64.5%	26.9%	84.6%	11.8%	100%
3	30.2%	55.8%	29.0%	100%	19.2%	65.4%	5.9%	82.4%
4	9.3%	53.5%	6.5%	6.5%	3.8%	69.2%	0	76.5%
5	30.2%	69.8%	38.7%	67.7%	23.1%	42.3%	5.9%	100%
6	20.9%	58.1%	19.4%	61.3%	19.2%	50.0%	17.6%	94.1%
7	25.6%	81.4%	51.6%	80.6%	23.1%	73.1%	0	70.6%
8	20.9%	46.5%	41.9%	67.7%	7.7%	53.8%	5.9%	94.1%
9	14.0%	48.8%	19.4%	67.7%	23.1%	69.2%	0	76.5%

	VERB LEXICAL CLOSE				ADJECTIVE LEXICAL CLOSE			
	SPANISH		ENGLISH		SPANISH		ENGLISH	
	<u>Exact</u>	<u>Exact + Substitute</u>	<u>Exact</u>	<u>Exact + Substitute</u>	<u>Exact</u>	<u>Exact + Substitute</u>	<u>Exact</u>	<u>Exact + Substitute</u>
<u>9th Grade Students</u>								
10	25.6%	81.4%	29.0%	71.0%	34.6%	76.9%	11.8%	88.2%
11	9.3%	18.6%	32.3%	64.5%	0	15.4%	0	94.1%
12	16.3%	72.1%	29.0%	54.8%	7.7%	69.2%	0	82.4%
13	4.7%	76.7%	29.0%	51.6%	7.7%	65.4%	5.9%	94.1%
14	7.0%	23.3%	28.7%	64.5%	11.5%	57.7%	11.8%	88.2%
15	11.6%	72.1%	12.9%	51.6%	11.5%	84.6%	11.8%	70.6%
16	2.3%	32.6%	16.1%	54.8%	3.8%	76.9%	0	88.2%

APPENDIX B

SUMMARY OF PAIRED COMPARISONS OF SPANISH/ENGLISH

TEST SCORES - ALL STUDENTS (19)

Xi, Spanish scores
Yi, English Scores

TEST & CRITERIA

	<u>\bar{X}</u>	<u>\bar{Y}</u>	<u>Sx</u>	<u>Sy</u>	<u>t(x-y)</u>	<u>r²</u>	<u>t(r)</u>	<u>r</u>
Verbs-exact	15.8%	27.0%	8.3%	11.9%	-4.040	.103	1.397	.321
Adjectives-exact	15.2%	5.6%	10.4%	5.7%	4.404	.179	1.925	.423
Verbs-exact and substitute	56.5%	59.6%	19.4%	19.9%	-0.476	.002	-0.182	-.044
Adjectives-exact and substitute	62.3%	85.1%	17.7%	11.0%	-4.284	.073	-1.161	-.271

APPENDIX B

SUMMARY OF PAIRED COMPARISONS OF SPANISH/ENGLISH

TEST SCORES - EIGHTH GRADE STUDENTS ONLY (9)

Xi, Spanish scores
Yi, English Scores

TEST & CRITERIA

	<u>\bar{X}</u>	<u>\bar{Y}</u>	<u>Sx</u>	<u>Sy</u>	<u>t(x-y)</u>	<u>r²</u>	<u>t(r)</u>	<u>r</u>
Verbs-exact	19.9%	27.2%	7.6%	14.6%	-2.083	.520	2.754	.721
Adjectives-exact	17.9%	6.9%	7.7%	6.2%	3.853	.039	0.532	.197
Verbs-exact and substitute	58.9%	62.7%	13.5%	25.4%	-0.415	.011	0.274	.103
Adjectives-exact and substitute	63.2%	83.7%	12.9%	14.3%	-2.828	.074	-0.748	-.272

APPENDIX B

SUMMARY OF PAIRED COMPARISONS OF SPANISH/ENGLISH

TEST SCORES - NINTH GRADE STUDENTS ONLY (10)

X_i , Spanish scores
 Y_i , English Scores

TEST & CRITERIA

	<u>\bar{X}</u>	<u>\bar{Y}</u>	<u>S_x</u>	<u>S_y</u>	<u>$t(x-y)$</u>	<u>r^2</u>	<u>$t(r)$</u>	<u>r</u>
Verbs-exact	12.1%	26.8%	7.3%	9.6%	-3.612	.022	-0.423	-.148
Adjectives-exact	12.7%	4.7%	12.2%	5.4%	2.478	.311	1.902	.558
Verbs-exact and substitute	54.4%	56.8%	24.0%	14.1%	-0.248	.055	-0.681	-.234
Adjectives-exact and substitute	61.5%	86.5%	21.8%	7.3%	-3.112	.130	-1.095	-.361

APPENDIX C

NAME _____

They made wide circles over Barrow for an hour and a half before the pilot announced they would try once more to find an opening in the fog, then head back to Fairbanks. Julie _____ her nose pressed tightly to the window, for she _____ the long threads that _____ of a clearing. Suddenly, Barrow _____ below, its houses huddled against the ice-piled shore like a cluster of lonely birds.

As the plane _____ its descent into Barrow, Julie _____ in the distance the towers of the Distant Early Warning System that _____ the presence of the military in Barrow, and a narrow road along the coast that _____ to a group of buildings. The pilot _____ that they _____ to the Navy and the University of Alaska. "The Arctic Research Laboratory," he _____, "where scientists _____ the Arctic. People from all over the world _____ a lot about living in the cold."

The wheels _____ the runway and the plane _____ up by a small wooden house on the tundra, the terminal building. For a moment Julie _____ misgivings about her fate; then the stewardess _____ her coat and _____ her to the door. She _____ down at two people she _____ must be Naka and his wife, Nusan. Daniel _____ hiding behind them. Slowly Julie _____ down the steps, _____ the stretch of macadam

and _____ Naka's hand. He _____ dressed in a Navy
Arctic field jacket and his eyes _____ dark and smiling.
She _____ those eyes from her color wheel of memories and
she _____ better.

Nusan was dressed in a kuspuch trimmed with Japanese lace flowers
and she was smiling at Julie.

George, Jean Craighead. Julie Of The Wolves.
New York: Harper and Row, 1972, 91-92.

APPENDIX C

NOMBRE _____

Una vez era un príncipe que quería casarse con una princesa, pero con una princesa de sangre real. _____ por todo el mundo en busca de una, pero todas las que _____ algún defecto. Las princesas _____, pero se _____ difícil descubrir si verdaderamente _____ de sangre real. El príncipe _____ a su patria muy decepcionado y _____ triste y pesaroso, porque _____ con toda su alma una princesa real.

Cierta noche se _____ una horrible tempestad; _____ a torrentes y el cielo _____ un infierno de truenos y rayos. ¡ _____ espantoso! De pronto, _____ a la puerta de la ciudad y el mismo rey _____ a ver quién _____.

Con gran asombro _____ que _____ delante a una princesa. Pero, ¡Dios mío! ¡En qué lastimoso estado _____ con aquel tiempo horroroso! Toda empapada de lluvia, _____ por cabellos y vestidos; _____ el agua su calzado y se le _____ por los talones. Más _____ una fuente que una princesa, aunque ella _____ que lo _____.

--Pronto lo _____ -- _____ la reina. Y, sin decir nada a nadie, _____ al dormitorio, _____ todos los colchones y ropa de la Cama y _____ en el fondo de ésta un guisante, encima del cual _____ veinte colchones y, sobre ellos, veinte edredones.

La princesa _____ que dormir toda la noche in esta cama
 monumental. Al día siguiente le _____
 cómo _____.

-- ¡Oh! ¡Pésimamente! --le _____. --En toda la noche
 apenas _____ cerrar los ojos. Dios _____ lo
 que _____ en la cama. _____ una cosa dura que
 me _____ de cardenales todo el cuerpo. ¡Qué horrible!

La princesa y el quisante. In Antología de la Literatura Infantil
 Universal - Tomo I. Carmen Bravo - Villasante. Spain: Doncel -
 Perez Ayuso, 20, 1954, 42-44.

APPENDIX C

NAME _____

Miss Slighcarp had not yet arrived, and the children beguiled the time by wandering round the room and looking at the many beautiful pictures that hung on its walls; then, as the governess still did not appear, Bonnie took Sylvia through a door leading out of the school-room into her toyroom.

This was a _____ and _____ apartment, carpeted in blue, its walls white, its ceiling all a-sparkle with _____ stars. In it was every _____ toy, and many that Sylvia never had imagined even in her most _____ dreams. Occupying the place of honor in the middle of the floor was a _____ rocking horse covered with real _____ horsehair, and so cunningly carved that he seemed alive. His _____ eyes shone with intelligence.

"That's Dolphus," said Bonnie, giving him a _____ hug as she passed. "Then those are all the dolls, in that row of _____ chairs. The largest is Miranda, the smallest, at this end (she's my favorite) is Conchita."

Sylvia's hand curled lovingly round Anabelle, hidden in her pocket, but she resolved not to introduce her to this galaxy of beauties until the _____ pattern had accomplished per promise and made a _____ dress for her from _____ piece of _____ material. Then, Sylvia thought, Anabelle would be _____ presentable, and some of the _____ dolls did not look at all proud.

"This is the _____ house," Bonnie said. "Grown-ups aren't allowed inside, but you can come in, of course, Sylvia, whenever you like."

Aiken, Joan - The Wolves of Willoughby Chase.
New York: Dell Publishing Co., Inc., 1963, 63-64.

APPENDIX C

NOMBRE _____

Éste era un sastre que a principios del siglo diez y nueve vivía en una pequeña ciudad andaluza. La historia no nos cuenta el nombre de ésta, pero es lo cierto que no era ni Córdoba ni Sevilla, sino _____ ciudad mucho más _____.

El sastre tenía un _____ negocio, pues era muy _____ en su ramo. Sabía cortar los géneros según el _____ figurín de París, y sabía confeccionar los trajes de una manera tan _____ y tan _____ que parecían hechos de molde para los clientes que se los encargaban. Siempre había en su tienda, además, un _____ surtido de _____ géneros de legitma lana _____. Por consiguiente la _____ parte de la genta _____ de la ciudad acudía a su sastrería por lo menos una vez al año para encargarle la confección del traje _____. Y los _____ vanidosos pasaban por allí _____ o _____ veces al año.

Esa clientele le pagaba bien, por lo general -- y lo que es más, le pagaba al contado. De manera que pocos le debían dinero y el _____ del sastre, para quien la economía era una virtud de las _____ apreciables, pudo ahorrar un dineral _____ año hasta que, andando el tiempo, llegó a ser una persona de consideración en la ciudad, universalmente respetado y, pues era muy _____, hasta amado de todos.

Este _____ sastre tenía una hija, muchacha de diez y siete años, sumamente _____ según cuenta la historia, de ojos _____ y _____, de tez _____ y _____ como el terciopelo. Tenía el pelo negro, tan negro como una noche de invierno sin estrellas.

Un Novio Para la Nina. In J.K. Leslie (Ed), Cuentos Y Risas - New York: Oxford University Press, 1952, 116-117.