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ABSTRACT

This study represents several years' work on devising tests to measure children's relative proficiency in two languages or speech varieties. A preliminary oral proficiency test in English and Spanish was administered to 45 bilingual students, of whom 41 took both versions. On the basis of difficulty and significant tendencies, 32 items were selected as the revised version of the vocabulary test and 16 items as the revised version of the grammar test. Five independent variables (grade, sex, years of schooling in the United States, place of birth, and reported language use with family) were used in a univariate analysis of test scores in order to determine whether they contributed significantly to the variance in those scores. In most cases the significant contribution of the independent variables were in the expected direction (e.g., performance in English increased with grade). Modification of the grammar test is required in order to focus students' responses on the intended grammatical structures. Administration of both parts of the proficiency test on grammar to larger and different samples of pupils, and the correlation of test results with other independent variables, are needed to establish the validity of the test. (Author/AM)

STANFORD CENTER
FOR RESEARCH AND DEVELOPMENT
IN TEACHING

Research and Development Memorandum No. 120

A PILOT STUDY CONCERNING THE DEVELOPMENT OF A SPANISH/ENGLISH ORAL PROFICIENCY TEST

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Introductory Statement

The Center's mission is to improve teaching in American schools. Its work is carried out through five programs:

- Teaching Effectiveness
- The Environment for Teaching
- Teaching Students from Low-Income Areas
- Teaching and Linguistic Pluralism
- Exploratory and Related Studies

This study, which represents part of several years' work on devising tests to measure children's relative proficiency in two languages or two speech varieties, began under the Program on Teaching Students from Low-Income Areas and will be continued by the Program on Teaching and Linguistic Pluralism.

Acknowledgments

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Contents

Abstract

A preliminary version of an oral proficiency test in English and Spanish for bilingual speakers was developed. The original item pool used parallel English and Spanish versions of a vocabulary test (91 items) and a grammar test (38 items). The vocabulary items were chosen to represent four different domains (home, neighborhood, church, school), the grammar items to elicit English responses likely to contain constructions subject to inter- or intralinguistic interference.

A preliminary test using the whole item pool was administered to 45 bilingual students (18 first graders, 17 fifth graders, 10 ninth graders) of whom 41 took complete versions of both tests in English and in Spanish. On the basis of difficulty and significant tendencies shown (dominance of Spanish over English in grammar and in the three domains of vocabulary other than school), 32 items (8 for each domain) were selected as the revised version of the vocabulary test and 16 items as the revised version of the grammar test. The tests based on these items had considerable reliability (Cronbach α for Spanish vocabulary .86; for English vocabulary .94; for Spanish grammar .94; for English grammar .96).

Five independent variables (grade, sex, years of schooling in the United States, place of birth, and reported language use with father, mother, siblings, and friends) were used in a univariate analysis of test scores in order to determine whether they contributed significantly to the variance in those scores. In most instances the significant contribution of the independent variables seemed to be in the expected direction, e.g., performance in English increased with grade, years of schooling in the United States, and use of English with siblings. Most of the subjects reported speaking Spanish with their parents (mother, 36; father, 34). Language use with the father showed no significant relation to the test results. Children who reported using Spanish with their mother performed better on the neighborhood and school domains of the Spanish vocabulary test; those reporting use of English with their mother performed better on the neighborhood domain of the English vocabulary test.

Modification of the grammar test is required in order to focus students' responses on the intended grammatical structures. Administration of both parts of the proficiency test on grammar to larger and different samples of pupils, and the correlation of test results with other independent variables are needed to establish the validity of the test as an instrument for diagnosis and for the measurement of achievement.

A PILOT STUDY CONCERNING THE DEVELOPMENT OF A SPANISH/ENGLISH ORAL PROFICIENCY TEST

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Purpose of the Study

The institution of bilingual education programs has necessitated the development of tests that allow us to assess the language abilities of young children in English (e.g., see Brengelman & Manning, 1964) as well as their relative proficiency in two languages. Several attempts have been made to measure the language abilities of the same individual in English and Spanish. In general, it has been easier to construct reliable tests measuring auditory comprehension (e.g., Carrow, 1973; Cervenka, 1967), which are easily scored, than to develop tests of language production.

One of the most ambitious attempts to measure the language production of bilingual children was undertaken in conjunction with the development of the Michigan Oral Language series (Michigan Oral Language Productive Test, 1970). A discrete item production test was devised for the purpose. It elicits, by a combination of pictures and verbal cues, specific features of standard English grammar often missed by speakers of nonstandard dialects and/or speakers whose dominant language is Spanish. The test is designed for the kindergarten and early grade levels. It requires a fairly elaborate scoring system because of the obvious difficulty of eliciting the expected response by a combination of pictures and verbal stimuli. In addition, it has been criticized for using pictorial cues (such as a fishing pole) which may be outside the cultural experience of many children and thus influence the results.

Burt and Dulay (n.d.), who are among the people who have raised this criticism of the Michigan test, developed a promising Bilingual Syntax Measure of their own. Their test assesses primarily the syntactical complexity of sentences produced by children in English and Spanish. It has been tried out with children from kindergarten to third grade. Like the Michigan Oral Language Test, the Bilingual Syntax Measure relies

on a combination of pictures and verbal cues for eliciting oral responses. Pictures and oral cues are chosen in order to produce certain English and Spanish constructions. The choice of construction is influenced by the sequence in which grammatical morphemes appear in first language acquisition (see Brown, 1973). However, any appropriate response given by a subject is accepted and analyzed according to a formula that establishes a ratio between the semantic feature used in the child's response and the corresponding adult version as well as the ratio of functors used by the child to those that would be used by an adult who speaks standard English (or Spanish). The test promises to be a useful research instrument, but, as of the moment at least, the scoring system appears rather complex.

The problem of complex scoring procedures for unpredictable responses also besets other bilingual language tests that combine assessment of cognitive and language development in elementary school children. Thus the language section of the LCT, Language-Cognition Test (Stemmler, 1967), relies on analyzing the subject's responses according to basic sentence types, fundamental transformations, type of verb constructions, and adjectival usage.

The sociolinguistic concept of language dominance by domains (e.g., Fishman, 1972) was introduced recently to the testing situation. Some evaluators (Cohen, forthcoming) have used children's ability to name words associated with different domains such as home, neighborhood, church, school. A test for oral proficiency which recognizes different domains has been used in New Mexico schools in bilingual education programs and was recently described by the experimenters involved in its development (Spolsky, Murphy, Holm, & Ferrel, 1972). This particular test, however, was designed for general classification rather than precise testing and used a rating scale evaluation of communicative competence and self-reporting on the part of the students. It is not a scorable, discrete item instrument. Such an instrument is represented by the Language Use (Uso del Lenguaje) test produced by the Guidance Testing Associates (Cooperative Inter-American Tests, n.d.). However, this instrument does not directly test and score the production of language; nor do its three subscores (active vocabulary, expression, and total) relate in any way to the question of dominance by domain.

There is, then, still a need to develop tests measuring production of Spanish and English which will meet the following requirements.

1. The test should expand present efforts and measure productive ability not only in the primary grades but also at the higher levels.
2. It should be relatively easy to score.
3. It should measure in such a way that Spanish and English scores are comparable and thus be capable of demonstrating imbalance in favor of either language.
4. It should give information concerning dominance by domains. Sociolinguistic research has amply demonstrated that knowledge of vocabulary varies according to domain in practically every bilingual speaker. A "general test" of vocabulary knowledge is thus likely to give a fragmentary and probably biased picture of the real language ability of a bilingual speaker.

The test for this pilot study was designed to meet these four requirements.

Administration of the Item Pool

The method used in the development of the test was to construct separate vocabulary and grammar tests based on an item pool larger than the test itself. The vocabulary item pool was based on eight pictures (see Appendix A). Each picture illustrated a variety of nouns and verbs, and subjects were asked to identify each item in response to the sample question: What is this (he, she)? or What is (are) he (she, they) doing? The same picture was used for the English and Spanish versions of the test. The actions, persons, or objects in each picture were chosen to illustrate different domains of linguistic usage.

Home:	Pictures I and II
Neighborhood:	Pictures III and IV
Church:	Pictures V and VI
School:	Pictures VII and VIII

The specific vocabulary items illustrated and asked for by each picture were the following.

Picture I

1. to eat; comer
2. to cook; cocinar
3. to feed the baby; dar de comer (al bebé)
4. to build a (home); hacer (construir) (una casa)
5. to cry; llorar

Picture II

1. mother; mamá
2. grandmother; abuela
3. child; niño
4. father; papá
5. sink; lavandero (fregadero)
6. kitchen; cocina
7. living room; sala
8. bedroom; cuarto (dormitorio; recamara; habitación)
9. chair; silla (sillon)
10. table; mesa
11. lamp; lámpara
12. carpet (rug); alfombra
13. refrigerator; refrigerador (hielera)
14. to wash (dishes); lavar (los platos)
15. to sew; coser
16. to sleep; dormir
17. to mow (cut) lawn (grass); cortar el pasto (zacate)

Picture III

1. girl; niña
2. boy; niño
3. man; señor (hombre)
4. boys; niños
5. sun; sol
6. run; correr
7. buy (ice cream); comprar (helado, nieve, paleta)
8. sell (ice cream); vender (helado)
9. fight (hit); pelear (golpear)
10. play (ball); jugar (a la pelota)
11. to swing; estar columpiando
12. shine; brillar

Picture IV

1. owner; dueño
2. apple; manzana
3. pear; pera
4. bread; pan
5. bananas; plátano
6. milk; leche

7. eggs; huevos
8. butcher; carnicero
9. broom; escoba
10. woman (lady); mujer (señora)
11. cash register; caja (registradora)
12. scales; balanza
13. slice (cut) (meat); cortar (rebajar, tajar) carne
14. sweep; barrer
15. pay; pagar
16. carry (a bag); llevar (una bolsa)
17. cart; carrito (cochecito)

Picture V

1. cross; cruz
2. altar; altar
3. priest; padre (cura)
4. altar boy; acólito (monacillo)
5. candles; velas
6. kneel; hincar (arrodillar)
7. praying; rezar
8. statue; la Virgen (santa; imagen)
9. celebrate (say) mass; celebrar (dar) la misa

Picture VI

1. bride; novia
2. groom; novio
3. bridesmaid; damas (madrinas)
4. veil; velo
5. flowers; flores (ramo)
6. singer (soloist); cantante
7. organ, piano; piano (órgano)
8. to get married; casarse
9. to marry; casar

Picture VII

1. class (room); clase (cuarto; sala; salón de clase)
2. teacher: maestra (profesora; señorita)
3. students (pupils); niños (estudiantes; alumnos)
4. blackboard; pizzarón (pizarra)
5. desk; escritorio
6. notebook (paper); cuaderno (papel)
7. books; libros
8. chalk; tiza
9. flag; bandera
10. to write; escribir
11. to read; leer
12. to sharpen (a pencil); sacar punta (un lápiz)
13. to draw; dibujar
14. to raise (a hand); levantar (la mano; alzar)

Picture VIII

1. to sing; cantar
2. to watch; mirar
3. to dance; bailar
4. to play the guitar; tocar la guitarra
5. stage; escenario (foro; plataforma)
6. lights; luces (focos)
7. curtains; cortina
8. janitor; barrendero (barredor)

The grammar test items assumed that a series of questions related to particular pictorial stimuli would elicit responses containing grammatical structures known to contain some production problems for speakers of Spanish (see Politzer & Ramirez, 1973). The Spanish version of the test was simply a translation of the English test. In other words, the Spanish version was not based on a particular linguistic item but provided a general way of comparing proficiency in grammar in the two languages. Specifically, the grammatical problems and responses aimed at by the original 38 items developed for the grammar test were the following:

Indefinite Article

1.	It is a book.	Es un libro.
2.	It is an apple.	Es una manzana.

Definite Article

3.	It is the mother.	Es la mamá.
4.	She washes the dishes.	Ella lava los platos.

Third Person Singular of Verb

5.	He (the boy) eats at noon.	Come al mediodía.
6.	He goes to school.	Va a la escuela.
7.	He studies (reads) books.	Estudia. (Lee los libros.)
8.	What time is it?	¿Qué hora es? (¿Tiene la hora? ¿Qué horas son?)

Past Tense

9.	He washed his hands.	Se lavó las manos.
10.	He read books (studied).	Leía. (Estudiaba los libros.)

Verb Agreement

11. They dance (are dancing).	(Ellos) [illegible].
12. They watch (are watching) TV.	(El[illegible] televisión.
13. She reads (is reading) a story.	(Ella) lee cuento (libro).
14. They go (are going) to church.	(Ellos) van a la iglesia.

Passive

15. The car was hit (smashed, mashed).	(El coche) fue pegado (chocado, golpeado).

Negation

16. Don't hit the boy.	No pegues al niño. (No le pegues.)
17. (Because) she doesn't have any money.	(Porque) (ella) no tiene dinero.

Question

18. Do you want to play? (Is this your ball?)	Quieres jugar? (¿Es tu pelota?)
19. Did you break (who broke) the window?	¿Rompiste (quién rompió) la ventana?

Comparative

20. He (this one) is taller (bigger).	(Este) es más alto.
21. She (this one, girl) has more things.	(Esta, ella) tiene más cosas.

Possessive

22. The girl's.	De la niña (muchacha, ella).
23. The mother's (lady's woman's).	De la mamá (señora, mujer).

Progressive Form of Present Tense

24. He is swimming.	Está nadando.
25. He is laughing.	Está riendo.
26. He is drinking.	Está bebiendo (tomando).
27. He is sleeping.	Está durmiendo.

Pronouns (Reflexive, Personal)

28. At himself.	A sí mismo. (Se mira a él.)
29. No, he does (pays).	No, él (paga).

Preposition

30.	It is on the table (on top of).	Está en la mesa (encima de, sobre.
31.	In the bed (on, on top of).	En la cama (sobre, encima).
32.	Under the bed.	Debajo de la cama.
33.	Above the blackboard (on top of).	Arriba de la pizarra.

Verb + Verb Construction (Subordinate Clauses)

34.	He wants to open the door (go in, leave).	Quiere abrir la puerta (entrar, salir).
35.	He can't find his shoe.	No puede encontrar su zapato.
36.	(Because) he has to stay home.	(Porque) tiene que quedarse.
37.	So that he won't miss the bus (in order to catch the bus).	Para no perder el camión.
38.	So that the rain won't come in.	Para que no entrara la lluvia (el agua).

The vocabulary tests and grammar tests were administered to 45 bilingual students (18 first graders, 17 fifth graders, and 10 ninth graders; for further breakdown see test analysis below). Forty-one of the subjects took the complete Spanish and English versions of all tests. The tests were administered by five university students, themselves bilingual Mexican-Americans. The examiners were carefully instructed in how to administer each test orally and individually and how to mark the answer sheet provided for each pupil.

The items in the vocabulary test were marked correct if the subject produced the word envisaged or any other acceptable or appropriate vocabulary item that could be considered nonstandard or dialectal. Nonstandard Spanish vocabulary was accepted because the purpose of the test was to assess relative proficiency in Spanish and English, not to control for standard vs. nonstandard varieties of Spanish. A response to a vocabulary item was marked incorrect only if the student (a) attempted a circumlocution of a concept (e.g., "he is making the room clean" instead of "he sweeps"), (b) gave a response that did not describe the action or person or object, or (c) gave no response at all.

The examiners were instructed to score responses on the grammar test according to the following system: (a) A response that was totally grammatically correct and contained the grammatical construction aimed at by the test item was marked correct by simply putting a check mark next to the item on the answer sheet. (b) Any response that was both appropriate and grammatical was accepted as correct and written on the answer sheet by the examiner. (c) All responses that were either inappropriate or ungrammatical were incorrect and were jotted down on the answer sheet by the examiner. No response was counted as incorrect and the examiner left the answer space blank.

Preliminary Testing and Analysis

The preliminary analysis of the tests and test items was undertaken to determine (a) the degree of difficulty of the test and the items, and (b) the degree to which the tests and the individual items differentiated knowledge of Spanish and English. Table 1 shows the mean scores achieved by all subjects who took both the English and Spanish versions of the vocabulary and the grammar tests. In general, the subjects performed better in Spanish than in English with the exception of the vocabulary test based on Picture VII (school domain), where there is a significant difference in favor of English. Significant differences in favor of Spanish are shown by vocabulary tests based on Pictures I (home domain), IV (neighborhood), V and VI (church), and the grammar test. The results confirmed the expected dominance configuration.

The analysis of the responses to specific items (Tables 2 and 3) indicated that most items were very easy for these subjects. Therefore the items chosen for the revised test were those which (1) showed some degree of difficulty, and (2) discriminated between English and Spanish according to the tendencies shown by the test as a whole, e.g., in favor of Spanish for the grammar test and the home, neighborhood, and church domains of the vocabulary, and in favor of English in the school domain of the vocabulary test.

An inspection of scores on the preliminary test for individual vocabulary items showed that in most cases in which vocabulary items did

TABLE 1

Means, Standard Deviations, and Significant Difference of Means on Preliminary Vocabulary Tests and Grammar Test (N = 41)

Test	Mean	S.D.	Difference of Mean	T-Value (2-Tail Prob)
Picture I				
Spanish	4.37	0.73	-0.54	-2.95**
English	3.83	1.18		
Picture II				
Spanish	14.49	1.87	-0.12	-0.30
English	14.37	2.51		
Picture III				
Spanish	10.83	1.47	-0.44	-1.57
English	10.39	1.80		
Picture IV				
Spanish	13.54	2.22	-1.61	-2.75**
English	11.92	3.02		
Picture V				
Spanish	6.22	1.79	-2.00	-5.19**
English	4.22	2.08		
Picture VI				
Spanish	6.32	1.82	-1.39	-3.40**
English	4.93	2.04		
Picture VII[a]				
Spanish	11.28	2.70	1.30	2.49*
English	12.58	2.11		
Picture VIII[a]				
Spanish	7.38	9.72	-0.63	-0.40
English	6.75	2.09		
Grammar Test				
Spanish	35.59	2.33	-2.22	-2.47**
English	33.37	5.37		

[a] N = 40

*p < .05

**p < .01

TABLE 2

Correct Responses and Balance Score (Spanish-English) for Items on Preliminary Vocabulary Test

Test	Spanish	English	Balance
Picture I			
1.	40	40	0
2.	34	30	+ 4
3.	39	35	+ 4
4.	41	27	+14
5.	40	39	+ 1
Picture II			
1.	39	38	+ 1
2.	38	40	- 2
3.	28	22	+ 6
4.	41	35	+ 6
5.	15	32	-17
6.	41	35	+ 6
7.	34	28	+ 6
8.	36	30	+ 6
9.	35	32	+ 3
10.	41	41	0
11.	39	38	+ 1
12.	34	36	- 2
13.	40	38	+ 2
14.	31	32	- 1
15.	35	32	+ 3
16.	35	39	- 4
17.	37	37	0
Picture III			
1.	42	40	+ 2
2.	40	41	- 1
3.	38	41	- 3
4.	40	39	- 1
5.	39	41	- 2
6.	39	34	+ 5
7.	38	36	+ 2
8.	25	24	+ 1
9.	39	37	+ 2
10.	38	40	- 2
11.	34	34	0
12.	25	26	- 1
Picture IV			
1.	19	19	0
2.	40	40	0
3.	41	38	+ 3
4.	40	37	+ 3
5.	36	41	- 5
6.	40	41	- 1
7.	41	41	0
8.	24	19	+ 5
9.	39	35	+ 4
10.	35	36	- 1
11.	10	16	- 6
12.	15	7	+ 8
13.	39	34	+ 5
14.	30	24	+ 6
15.	31	23	+ 8
16.	38	33	+ 5
17.	34	27	+ 7
Picture V			
1.	37	34	+ 3
2.	11	4	+ 7
3.	38	17	+21
4.	11	5	+ 6
5.	34	35	- 1
6.	36	31	+ 5
7.	32	29	+ 3
8.	27	8	+19
9.	30	10	+20
Picture VI			
1.	34	20	+14
2.	33	13	+20
3.	19	4	+15
4.	18	11	+ 7
5.	35	37	- 2
6.	19	30	-11
7.	37	39	- 2
8.	39	27	+12
9.	37	27	+10

TABLE 2 (continued)

Test	Spanish	English	Balance	Test	Spanish	English	Balance
Picture VII				Picture VIII			
1.	39	35	+ 4	1.	40	38	+ 2
2.	40	41	- 1	2.	29	22	+ 7
3.	40	41	- 1	3.	41	38	+ 3
4.	33	38	- 5	4.	31	34	- 3
5.	27	35	- 8	5.	6	32	-26
6.	37	38	- 1	6.	40	40	0
7.	40	41	- 1	7.	40	35	+ 5
8.	16	38	-22	8.	12	23	-11
9.	40	38	+ 2				
10.	34	40	- 6				
11.	39	40	- 1				
12.	26	40	-14				
13.	26	31	5				
14	37	37	0				

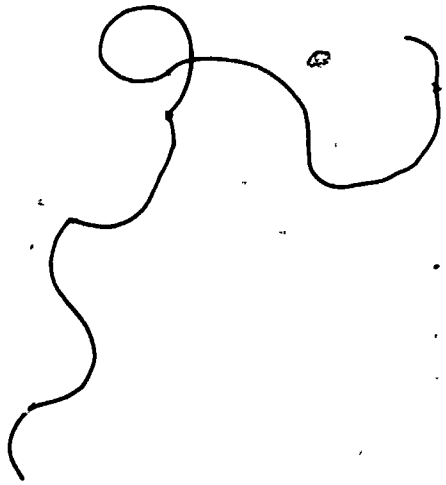


TABLE 3

Correct Responses and Balance Score (Spanish-English) for Items on the Preliminary Grammar Test

Item	Spanish	English	Balance
1	42	42	0
2	41	41	0
3	42	42	0
4	42	38	+ 4
5	40	37	+ 3
6	40	35	+ 5
7	39	39	0
8	41	40	+ 1
9	38	30	+ 8
10	34	35	- 1
11	41	39	+ 2
12	40	38	+ 2
13	38	37	+ 1
14	42	37	+ 5
15	37	32	+ 5
16	41	37	+ 4
17	41	31	+10
18	41	35	+ 6
19	36	34	+ 2
20	41	32	+ 9
21	40	38	+ 2
22	42	37	+ 5
23	42	39	+ 3
24	42	40	+ 2
25	42	41	+ 1
26	42	41	+ 1
27	41	42	- 1
28	39	35	+ 4
29	42	40	+ 2
30	42	41	+ 1
31	42	42	0
32	42	39	+ 3
33	40	36	+ 4
34	41	37	+ 4
35	42	34	+ 8
36	42	37	+ 5
37	39	33	+ 6
38	42	36	+ 6

not follow the general pattern indicated by the domain, the vocabulary item was not unambiguously associated with that domain. For example, in Picture VIII, items which showed dominance of Spanish over English within the school domain were: 1. sing, 2. watch, 3. dance, 7. curtains. In Picture VI (church domain), the items which showed some dominance of English are less directly related to the church setting than other items in the picture (5. flowers, 6. singer, 7. organ, piano). Finally, a few items were excluded because scoring had been ambiguous or erroneous. Thus item 3 on Picture V seems to be reasonably difficult in English and to discriminate well between Spanish and English. However, the low English score is due entirely to the rejection of the acceptable response father (for priest) in the initial scoring. Two final considerations influencing the choice of items for the test were to have an equal number of test items for each domain of the vocabulary and to produce a test that could be administered in a reasonably short time (about 40 minutes for the total test in both languages).

The test items chosen for the final testing were these:

Vocabulary Tests

1. Domain of Home

   Picture I: Items 2, 3, 4
   Picture II: Items 6, 7, 8, 9, 15

2. Domain of Neighborhood

   Picture III: None
   Picture IV: Items 8, 9, 12, 13, 14, 15, 16, 17

3. Domain of Church

   Picture V: Items 2, 8, 9
   Picture VI: Items 1, 2, 3, 4, 8

4. Domain of School

   Picture VII: Items 4, 5, 8, 10, 12, 13
   Picture VIII: Items 5, 8

Grammar Test

Items 6, 9, 14, 15, 16, 17, 18, 20, 22, 28, 33, 34, 35, 36, 37, 38.

Scores on these items were reanalyzed, and the results are given below.

Analysis of Revised Test

Reliability

Reliability was determined for the vocabulary tests (32 items each) as a whole and for the two grammar tests (see Table 4).

TABLE 4

Cronbach α Reliability

Test	α
Spanish Vocabulary	0.86
English Vocabulary	0.94
Spanish Grammar	0.94
English Grammar	0.96

Dominance by Domain

Since the test items had been selected on the basis of distinguishing dominance configurations shown by the larger preliminary item pools, the final test reflected, of course, the dominance differences indicated by the preliminary analysis. As can be seen from Table 5, three of the four sections of the vocabulary test (school is the exception) and the grammar test show significant dominance of Spanish over English ($p < .01$).

Variances in Test Results

The investigators felt that it would be of interest to determine whether variance in performance on the test was significantly influenced by certain factors. Information concerning some of these (grade, sex, years of schooling in USA, place of birth) was easily available. In addition, the subjects had been asked at the interview whether they used English, Spanish, or both languages with either of their parents, their friends, or their siblings.

TABLE 5

Means, Standard Deviations, and Significant Difference of Means for 4 Vocabulary Subtests and Grammar Test (N = 41)

Domain	Mean	S.D.	Difference of Mean	T-Value (2-Tail Prob)
Home				
Test 1a Spanish	6.68	1.11	1.12	3.52**
Test 1b English	5.56	2.03		
Neighborhood				
Test 2a Spanish	6.02	1.53	1.46	3.59**
Test 2b English	4.56	2.13		
Church				
Test 3a Spanish	5.07	1.99	2.66	6.64**
Test 3b English	2.41	2.04		
School				
Test 4a Spanish	4.24	1.91	-2.24	-4.05**
Test 4b English	6.49	2.09		
Grammar Test				
Spanish	15.63	0.77	1.12	2.72**
English	14.51	2.64		

**$p < .01$

Since the sample of pupils was small (only the 41 students who had completed all portions of both tests were included in the analysis), only a univariate analysis of variance was undertaken to determine to what extent each of these independent variables influenced the test scores. Tables 6 to 10 summarize the findings of this analysis. A significant ($p < .05$) variance due to the particular independent variable for that

table is indicated by a box around the means and standard deviations reported in the tables. The analysis of variance tables reporting the F ratios on which the findings of significance are based are shown in the Appendix B. Only the analysis of variance tables showing significant variance are reported.

Influence of grade. Grade in school influenced performance on the Spanish vocabulary subtests 1 (home), 3 (church), and 4 (school) with performance obviously increasing from grade to grade as is shown in Table 6. On the English tests, grade contributed significantly to variance except on subtest 2 (neighborhood). However, it should be noted that on all English tests the performance of the ninth graders was, in fact, lower than that of the fifth graders. The number of ninth graders tested was only seven, and two were recent arrivals from Mexico.

The difference between the means of fifth and ninth graders in the English grammar test is significant only at the 0.1 level: T-value 1.77, degrees of freedom 6.14.

Years of schooling in the United States. Most of the children tested in this study were not born in the United States (see Table 8). (Even for those born in the United States the ties with Mexican culture were very strong.) None of the ninth graders had all of their schooling in the United States. Table 7 shows that years of schooling within the United States affected performance on two of the English vocabulary subtests (home and church) and on the grammar test in the expected direction: i.e., performance increased in proportion to schooling in the United States. Influence of schooling in the United States on the English grammar test barely reached significance ($p < .05$). However, we must keep in mind that total variance on the grammar test was rather small.

Place of birth. Table 8 shows that the only test significantly affected by place of birth (U.S.A. vs. Mexico) was the Spanish vocabulary subtest 3a (church) in which--not unexpectedly--those who were born in Mexico performed better than subjects born in the United States.

Sex. None of the test scores showed significant variance due to sex of subjects (see Table 9).

TABLE 6

Means and Standard Deviations of Vocabulary Subtests
and Grammar Test, by Grade

Grade		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
		Spanish Test									
		1a		2a		3a		4a		Grammar Test	
1	(N=18)	6.17	1.10	5.79	1.52	3.83	1.51	3.33	1.75	15.50	1.04
5	(N=16)	7.19	0.91	6.19	1.28	5.50	1.82	4.69	1.92	15.69	0.48
9	(N= 7)	6.86	1.07	6.29	2.14	7.29	0.95	5.51	1.13	15.86	0.38
		English Test									
		1a		2a		3a		4a		Grammar Test	
1	(N=18)	4.16	1.72	4.17	1.95	1.33	0.39	6.33	2.17	14.78	1.99
5	(N=16)	7.25	1.12	5.38	1.78	3.56	2.19	7.44	1.09	15.31	0.79
9	(N= 7)	5.29	2.69	3.71	2.93	2.57	2.76	4.71	2.56	12.00	4.93

TABLE 7

Means and Standard Deviations of Vocabulary Subtests and Grammar Test, by Years of Schooling in USA

Years of Schooling		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
		Spanish Test									
		1a		2a		3a		4a		Grammar Test	
0	(N=3)	6.67	1.53	5.33	3.05	5.67	3.22	6.67	1.53	16.00	--
1	(N=13)	6.62	0.96	6.15	1.46	4.77	1.74	3.85	1.91	15.05	0.38
2	(N=7)	6.29	1.38	6.57	1.27	5.14	1.35	4.43	1.40	15.43	0.79
3	(N=3)	6.67	1.53	5.00	1.73	5.00	3.00	3.67	2.52	15.67	0.58
4	(N=1)	8.00	--	8.00	--	8.00	--	7.00	--	16.00	--
5	(N=1)	7.00	--	8.00	--	8.00	--	5.00	--	16.00	--
6	(N=5)	6.40	1.40	5.20	1.10	3.60	1.67	3.20	1.64	15.40	0.55
7	(N=5)	7.40	0.55	6.00	1.00	6.00	0.71	4.80	1.92	15.80	0.45
		English Test									
		1b		2b		3b		4b		Grammar Test	
0	(N=3)	3.67	2.52	2.67	2.08	2.00	2.65	4.33	3.51	9.67	6.03
1	(N=13)	4.69	1.55	3.85	2.04	1.15	0.90	6.39	1.94	14.77	2.20
2	(N=7)	3.07	1.99	3.71	2.36	1.42	0.79	5.71	2.63	13.71	2 43
3	(N=3)	7.00	1.00	4.67	2.31	1.67	1.15	5.67	1.16	15.67	0.57
4	(N=1)	8.00	--	5.00	--	3.00	--	8.00	--	15.00	--
5	(N=1)	8.00	--	7.00	--	4.00	--	7.00	--	16.00	--
6	(N=5)	7.20	0.84	6.00	1.14	3.40	1.67	7.80	0.45	15.40	0.55
7	(N-5)	7.80	0.45	5.60	1.52	5.20	2.17	8.00	--	15.80	0.45

TABLE 8

Means and Standard Deviations of Vocabulary Subtests and Grammar Test, by Place of Birth

Place of Birth	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
					Spanish Test					
	1a		2a		3a		4a		Grammar Tes.	
Mexico--24	6.79	1.06	6.25	1.54	5.88	1.63	4.71	1.83	15.79	0.51
U.S.A.--16	6.63	1.14	5.81	1.47	4.12	1.86	3.75	1.81	15.63	0.50
					English Test					
	1b		2b		3b		4b		Grammar Test	
Mexico--24	5.41	2.25	4.25	2.15	2.21	2.25	6.33	1.88	14.50	2.41
U.S.A.--16	5.94	2.18	5.13	2.09	2.81	1.72	6.94	2.27	14.69	3.03

TABLE 9

Means and Standard Deviations of Vocabulary Subtests and Grammar Test, by Sex

		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
		Spanish Test									
		1a		2a		3a		4a		Grammar Test	
Male	(N=22)	6.73	1.08	6.18	1.47	5.18	2.06	4.32	1.84	15.68	0.57
Female	(N=19)	6.63	1.17	5.84	1.61	4.95	1.96	4.16	2.04	15.58	0.96
		English Test									
		1a		2a		3a		4a		Grammar Test	
Male	(N=22)	5.45	2.30	4.36	2.26	2.18	2.20	6.41	2.04	15.00	2.00
Female	(N=19)	5.68	2.14	4.79	2.02	2.68	1.86	6.58	2.19	13.94	3.18

Reported language use. Most of the 41 subjects who took all the tests reported that they spoke English with their parents (36 with the mother, 34 with the father). The chances of finding significant variance due to different language use with parents were therefore rather small. Table 10 shows that language use with the father showed in fact no significant relation to the test results. Language use with the mother did contribute significantly to variance in three instances and in the expected direction. Those speaking Spanish with their mothers did better on the Spanish vocabulary subtests 2 (neighborhood) and 4 (school). Those speaking English did better on the English vocabulary subtest 2 (neighborhood).

Language spoken with siblings evidently had no influence on the performance on the Spanish tests, but it did contribute to significant variance in all but one (vocabulary test 3, church) of the English tests, and again in the expected direction. Those who spoke English with their siblings scored higher on the English tests.

Reported language use with friends shows that those who spoke Spanish with their friends had lower scores on two English vocabulary subtests, 2 (neighborhood) and 4 (school)--a finding which is certainly not unexpected. A bit puzzling is the finding that a small but significant variance on the Spanish grammar test appears to be related to reported language use with friends. Those who reported speaking English or Spanish with friends received better scores than those who reported speaking both languages. The highest Spanish grammar test score was achieved by those who reported speaking English with their friends! In view of the vagueness of the questions asked of the subjects (e.g., whom did they perceive as their "friends") and the small variance which appears on the Spanish grammar test as a whole, this finding certainly should not be overinterpreted. If the use of both Spanish and English in everyday life influences Spanish proficiency, why was reported language use with siblings not a significant variable? More research using a larger sample showing more variance in Spanish is necessary to answer this question and to confirm these preliminary findings.

TABLE 10

Means and Standard Deviations of Vocabulary Subtests and Grammar Test, by Reported Language Use

		Spanish Test								Grammar Test	
		1a		2a		3a		4a			
		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Language spoken with mother											
Spanish	(N=36)	6.89	1.09	6.25	1.46	5.31	1.93	4.53	1.83	15.69	0.79
English	(N= 4)	6.25	1.26	4.75	0.50	3.75	1.89	2.50	1.00	15.25	0.50
Both	(N= 1)	8.00	--	3.00	--	2.00	--	1.00	--	15.00	--
Language spoken with father											
Spanish	(N=34)	6.76	1.08	6.06	1.46	5.41	1.88	4.44	1.83	15.74	0.75
English	(N= 2)	6.00	--	5.50	2.12	4.50	0.71	2.00	--	14.50	0.71
Both	(N= 4)	6.75	1.50	6.25	2.36	3.50	1.92	4.25	2.50	15.50	0.58
Language spoken with siblings											
Spanish	(N=13)	6.39	1.33	5.77	1.74	5.62	1.98	4.92	1.75	15.92	0.27
English	(N=13)	6.77	0.93	5.77	1.09	4.39	1.51	3.46	1.27	15.69	0.48
Both	(N=13)	6.93	1.12	6.62	1.71	5.39	2.44	4.46	2.47	15.23	1.16
No siblings	(N= 2)	6.50	0.71	5.50	0.71	4.00	--	3.30	0.71	16.00	--
Language spoken with friends											
Spanish	(N=11)	6.64	1.12	6.18	1.41	5.82	2.09	4.73	2.01	15.82	0.41
English	(N=17)	6.65	1.12	6.18	1.33	4.71	1.57	3.88	1.50	15.88	0.33
Both	(N=13)	6.77	1.17	5.69	1.89	4.92	2.36	4.31	2.32	15.15	1.14

TABLE 10 (continued)

		English Test								Grammar Test	
		1b		2b		3b		4b			
		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Language spoken with mother											
Spanish	(N=36)	5.36	2.27	4.33	2.03	2.25	2.01	6.36	2.15	14.39	2.79
English	(N= 4)	7.25	0.50	7.25	0.50	4.25	1.71	8.00	--	15.50	0.58
Both	(N= 1)	6.00	--	2.00	--	1.00	--	5.00	--	15.00	--
Language spoken with father											
Spanish	(N=34)	5.50	2.29	4.59	2.08	2.41	2.08	6.47	2.14	14.41	2.83
English	(N= 2)	4.50	3.54	4.50	4.95	3.50	3.54	5.50	3.54	13.50	2.12
Both	(N= 4)	6.00	--	3.75	1.50	1.50	1.00	6.75	1.50	15.50	0.58
Language spoken with siblings											
Spanish	(N=13)	4.07	2.32	3.77	2.59	1.31	1.49	5.31	2.50	13.00	4.04
English	(N=13)	6.85	1.41	6.07	1.04	3.23	1.59	7.85	0.38	15.69	0.48
Both	(N=13)	5.93	1.98	3.77	1.88	2.77	2.59	6.15	2.08	14.62	1.50
No siblings	(N= 2)	4.50	2.12	5.00	--	2.00	1.41	7.50	0.71	16.00	--
Language spoken with friends											
Spanish	(N=11)	5.00	2.61	3.55	2.43	1.54	1.37	5.36	2.73	13.36	3.96
English	(N=17)	5.88	1.83	5.47	1.73	2.71	2.02	7.35	1.32	15.29	1.57
Both	(N=13)	5.62	2.36	4.23	2.06	2.77	2.32	6.30	1.93	14.46	2.18

Conclusion

The test discussed in this report is obviously in need of further refinement and should be subjected to further experimentation. While in practically all cases it was relatively easy to score a response as either correct or incorrect (i.e. inappropriate or containing an error), Table 11 (responses on the grammar test) indicates quite clearly that many test items did not elicit the expected grammatical patterns. If the grammar test is to be maintained in the present form, as a discrete item test based on areas of expected inter- or intralingual interference, then a

TABLE 11

Distribution of Responses for Items on Revised Grammar Test

Item	Spanish Test				English Test			
	a	b	c	d	a	b	c	d
6	38	2	1	1	33	2	5	2
9	28	10	4	-	28	2	10	2
14	29	13	-	-	35	2	4	1
15	2	35	5	-	6	26	7	3
16	34	7	1	-	32	5	2	3
17	33	8	1	-	20	11	9	2
18	38	3	1	-	31	4	6	1
20	28	13	1	-	21	11	5	5
22	35	7	-	-	35	2	5	-
28	28	11	2	1	31	4	3	2
33	24	16	1	1	21	15	4	2
34	36	5	-	-	34	3	1	1
35	20	22	-	-	19	15	8	-
36	29	13	-	-	31	6	3	2
37	14	25	3	-	7	26	5	3
38	11	31	-	-	8	29	3	2

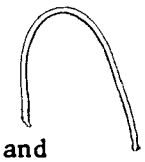
Note: Responses were counted for all students (N=41) who completed both the Spanish and English sections of the grammar test.

a = correct (expected response)
b = correct (not expected response)
c = incorrect (inappropriate response)
d = no response

way must be found to focus student response on the expected grammatical pattern. Perhaps it would be possible to do this by supplying at least the initial word of expected answers. For example, grammar test item 38:

Why does the girl open the window? So that....

¿Porque obre la ventana? Para que....



Even the decision on what to accept as correct in grammar and especially in vocabulary can at times be difficult to make. It was explained earlier that the test does not intend to judge dialectal (e.g., Mexican-American) Spanish as "incorrect." However, at what point does borrowing from English cease to become "acceptable Mexican-American Spanish?" Even the possible guideline that speech should be accepted as dialectal (Mexican-American) if it is used in the community in which the pupil lives is not as clear and unambiguous as it first appears. Borrowings from English used by Spanish-speaking children may be innovations in their dialect--who is to say that they are "errors"? Maquina de lavar, washing machine, rather than lavadora, can now be considered regular Mexican-American Spanish, but at one time it must have been an innovation. Perhaps a better way to define "correctness" would be to accept any kind of grammatical performance or vocabulary item that follows the grammatical rules and word formation procedures of the subject's dialect. Such a decision would probably necessitate providing test scorers with a range or choice of acceptable correct answers.

Finally, additional studies concerning the validity of the tests reported here (and of the Spanish/English balance measurement for which they can be used) are needed so that the test can serve as a useful instrument for diagnostic purposes and for measuring language achievement.

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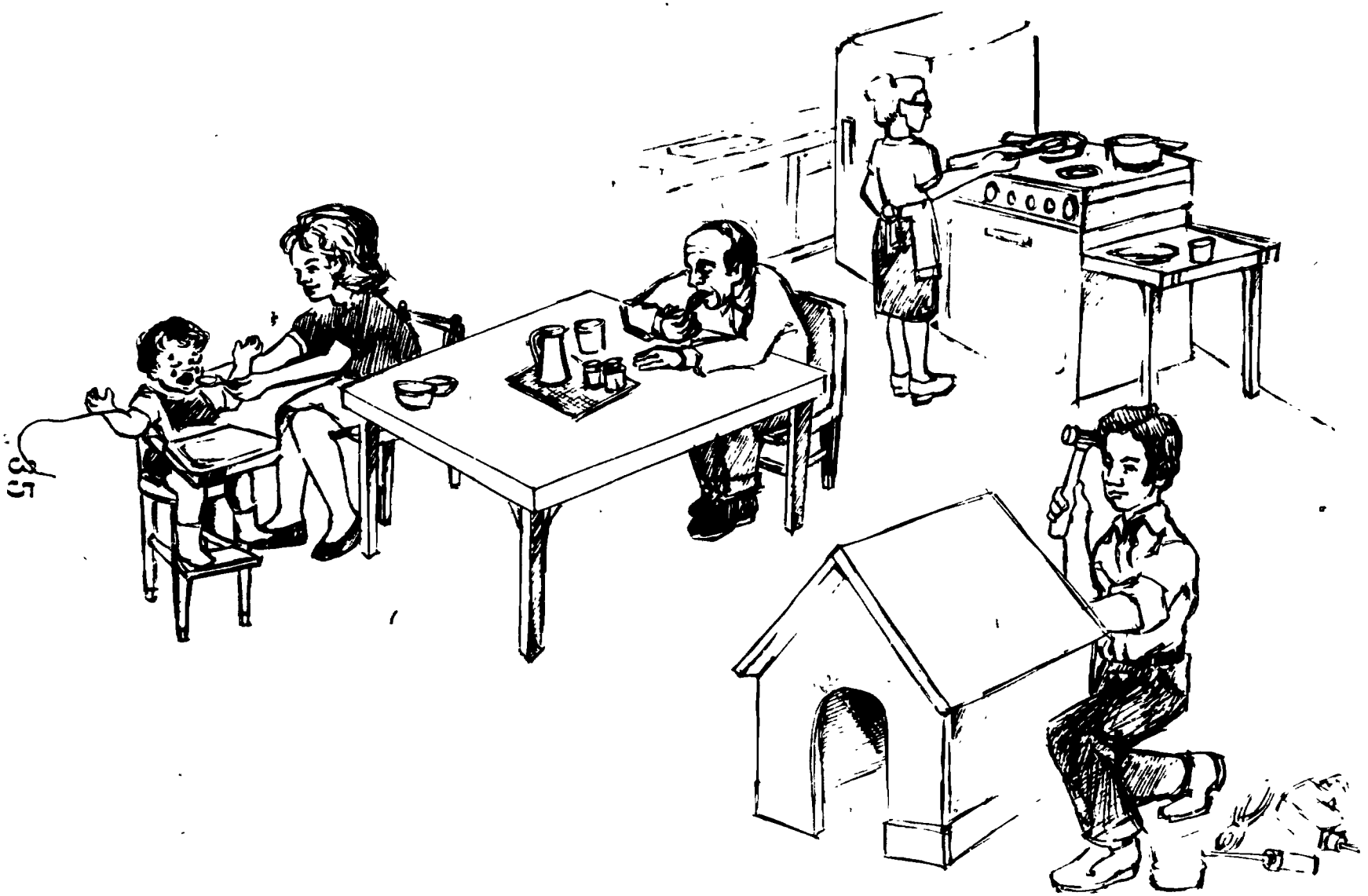
APPENDIX A



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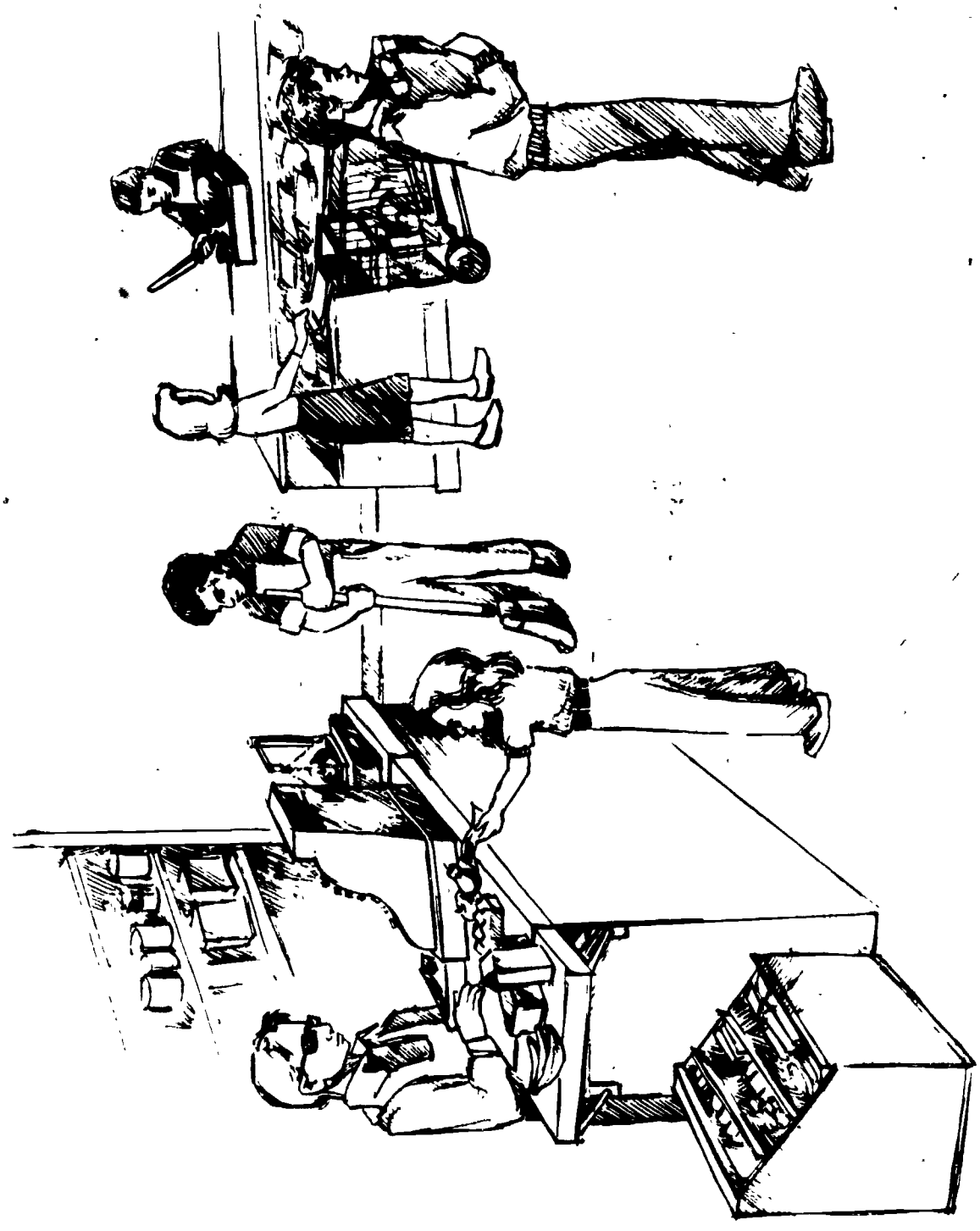

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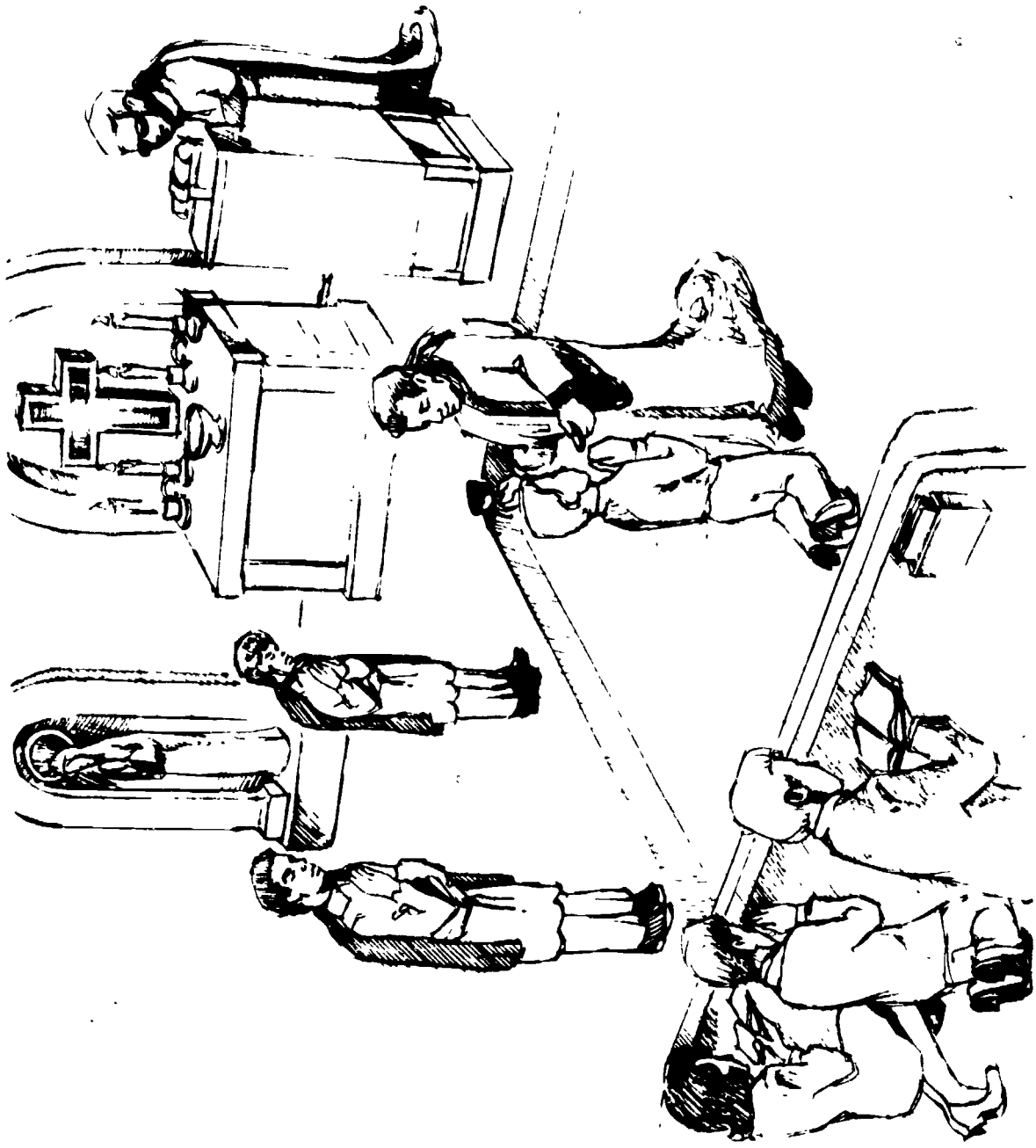
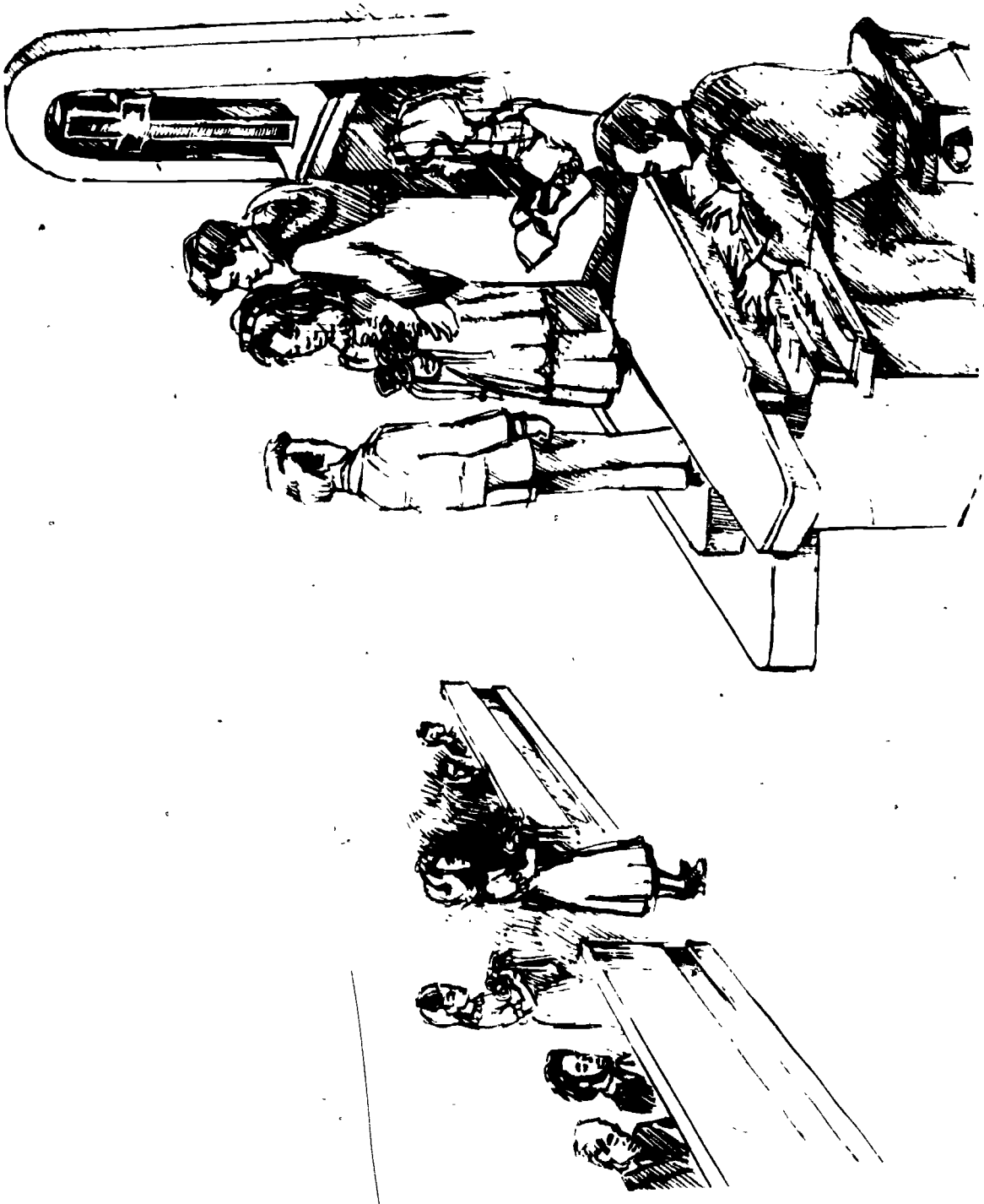
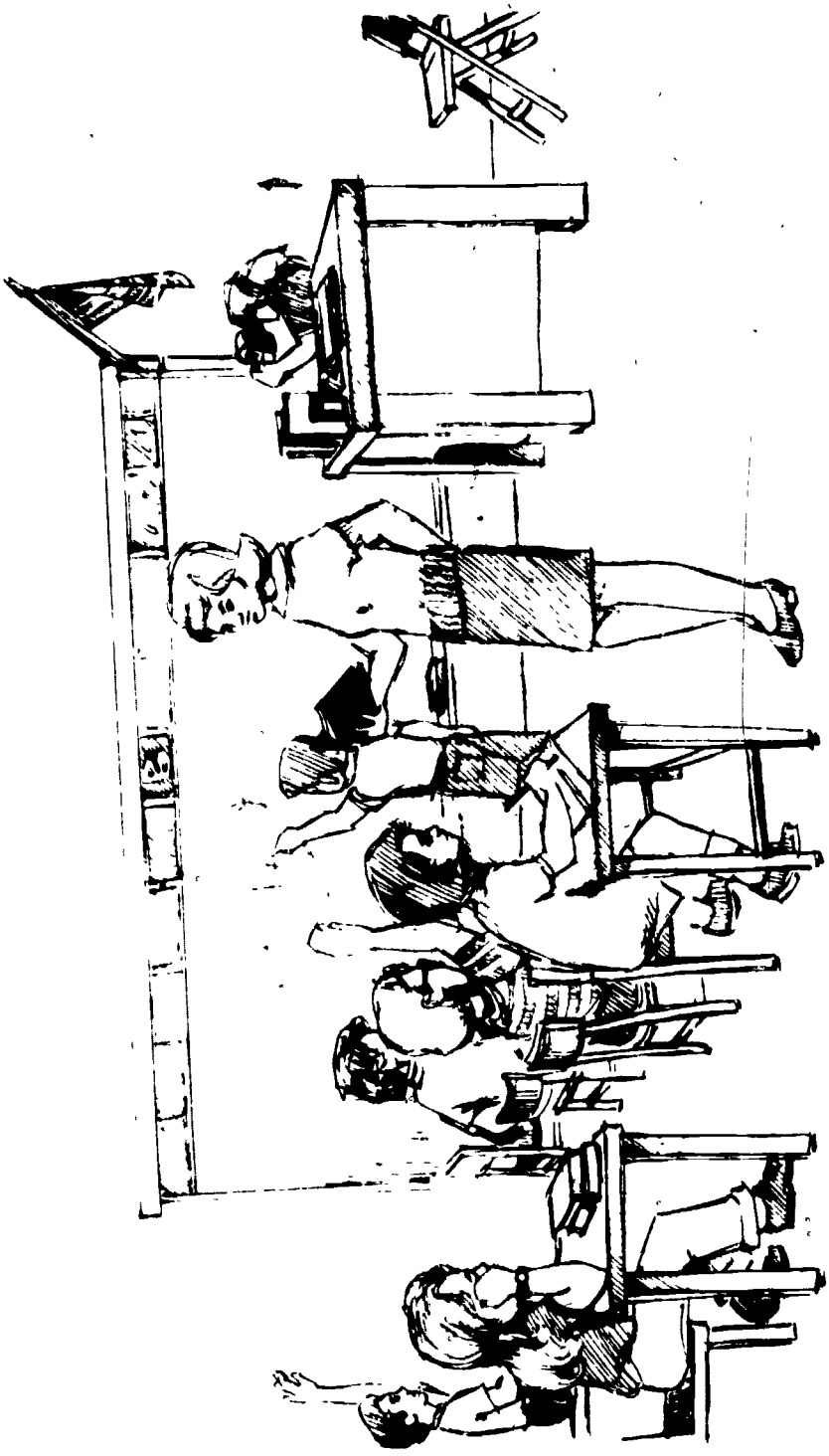
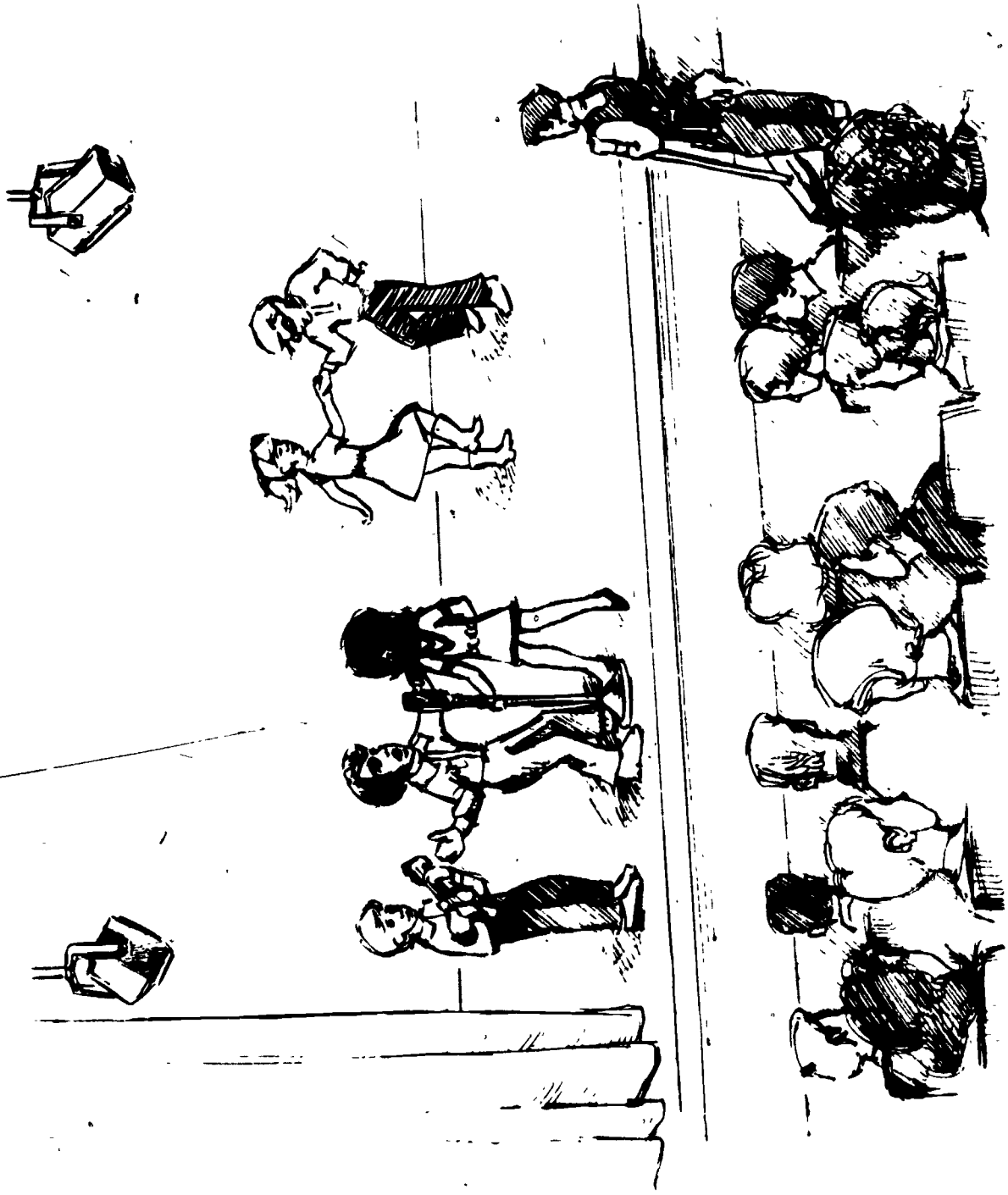




VI A



VII



VIIIA

APPENDIX B: ANALYSIS OF VARIANCE TABLES

TABLE B-1

Significant Contributions to Variance by Grade

	Sum of squares	df	Mean square
	Test 1a		
Between Groups	9.08	(2)	4.54
Within Groups	[illegible]	(38)	1.05
Total	48.87	(40)	
F = 4.34*			
	Test 3a		
Between Groups	64.85	(2)	32.47
Within Groups	93.93	(38)	2.47
Total	158.78	(40)	
F = 13.12**			
	Test 4a		
Between Groups	30.41	(2)	15.20
Within Groups	115.15	(38)	3.03
Total	145.56	(40)	
F = 5.02*			
	Test 1b		
Between Groups	81.17	(2)	40.58
Within Groups	112.93	(38)	2.97
Total	194.10	(40)	
F = 13.66**			
	Test 3b		
Between Groups	42.30	(2)	21.15
Within Groups	123.65	(38)	3.25
Total	165.95	(40)	
F = 6.50**			

TABLE B-1 (Continued)

	Sum of squares	df	Mean square
	Test 4b		
Between Groups	36.88	(2)	18.44
Within Groups	137.37	(38)	3.61
Total	174.25	(40)	
F = 5.10*			
	Grammar Test (English)		
Between Groups	55.70	(2)	27.85
Within Groups	222.55	(38)	5.86
Total	278.25	(40)	
F = 4.76*			

*p < .05
**p < .01

TABLE B-2

Significant Contributions to Variance by Years of Schooling in USA

	Sum of squares	df	Mean square
	Test 1b		
Between Groups	104.75	(7)	14.96
Within Groups	70.75	(30)	2.36
Total	175.50	(37)	
F = 6.35**			
	Test 3b		
Between Groups	75.30	(7)	10.76
Within Groups	60.07	(30)	2.00
Total	135.37	(37)	
F = 5.37**			
	Test 4b		
Between Groups	94.43	(7)	13.49
Within Groups	173.07	(30)	5.77
Total	267.50	(37)	
F = 2.24*			

*p < .05
**p < .01

TABLE B-3

Significant Contributions to Variance by Place of Birth

	Test 3a		
	Sum of squares	df	Mean square
Between Groups	29.40	(1)	29.40
Within Groups	112.38	(38)	2.95
Total	141.78	(39)	
F = 9.94**			

**p < .01

TABLE B-4

Significant Contributions to Variance
by Language Spoken with Mother

	Sum of squares	df	Mean square
	Test 2a		
Between Groups	17.48	(2)	8.74
Within Groups	75.50	(38)	1.99
Total	92.98	(40)	
F = 4.40*			
	Test 4a		
Between Groups	25.59	(2)	12.79
Within Groups	119.97	(38)	3.16
Total	145.56	(40)	
F = 4.05*			
	Test 2b		
Between Groups	37.35	(2)	18.67
Within Groups	144.75	(38)	3.81
Total	182.10	(40)	
F = 4.90*			

*p < .05

TABLE B-5

Significant Contributions to Variance
by Language Spoken by Siblings

	Sum of squares	df	Mean square
	Test 1b		
Between Groups	54.06	(3)	18.02
Within Groups	140.04	(37)	3.78
Total	194.10	(40)	
F = 4.76**			
	Test 2b		
Between Groups	46.56	(3)	15.52
Within Groups	135.54	(37)	3.67
Total	182.10	(40)	
F = 4.24*			
	Test 4b		
Between Groups	45.59	(3)	15.20
Within Groups	128.65	(37)	3.48
Total	174.24	(40)	
F = 4.37**			
	Grammar Test (English)		
Between Groups	52.40	(3)	17.47
Within Groups	225.85	(37)	6.10
Total	278.25	(40)	
F = 2.86*			

*$p < .05$
**$p < .01$

TABLE B-6

Significant Contributions to Variance
by Language Spoken with Friends

	Sum of squares	df	Mean square
	Grammar Test (Spanish)		
Between Groups	4.42	(2)	2.21
Within Groups	19.09	(38)	0.50
Total	23.51	(40)	
F = 4.40*			
	Test 2b		
Between Groups	26.83	(2)	13.41
Within Groups	155.27	(38)	4.09
Total	182.10	(40)	
F = 3.28*			
	Test 4b		
Between Groups	27.05	(2)	13.52
Within Groups	147.20	(38)	3.87
Total	174.25	(40)	
F = 3.49*			

*$p < .05$