STUDENT FACTORS AFFECTING SPANISH LANGUAGE ACHIEVEMENT

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ABSTRACT

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by Richard M. Piper

As audio-lingual foreign language learning programs become more numerous and more sophisticated, it becomes of greater importance to identify some of the variables which constitute foreign language learning aptitude. In this study, two groups of junior high school students of Spanish were administered a group of tests after which the results were inter-correlated. Two relatively independent groups of variables were found, a group of intelligence variables and a group of auditory variables, both of which seem to be related to success in audio-lingual Spanish programs. There was an attempt to develop a prediction equation but the attempt was not successful. The reasons for this are discussed.

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STUDENT FACTORS AFFECTING SPANISH LANGUAGE ACHIEVEMENT

Many investigators have studied student factors affecting foreign language achievement. Intelligence, specific aptitudes, motivation, age, sex, and personality are the more important ones that have been identified to date. This array of elements suggests that foreign language achievement is a complex process. With the elements mentioned above, investigators have been able to account for about 35 percent of the variance in foreign language achievement. With 65 percent of the variance unaccounted for, much work remains to be done (Sawyer, 1964, p. 203).

Let us look now at some of the work done to date. Intelligence is one factor that has rather consistently shown a moderate positive correlation with foreign language achievement. Pimsleur, Mosberg, and Morrison, in a review of the older literature in the area, summarize the results in this way: ". . . the studies correlating intelligence with achievement in foreign language learning lead to the not unexpected conclusion that intelligence is a significant factor. Correlations ranging from .21 to .65 have been reported with many correlations falling around .45" (1962, p. 161).

More recently, while studying verbal ability in bilinguals and monolinguals, Lerea and Kohut (1961) noted that there was a significant correlation between a foreign language acquisition task and intelligence. Similarly, Anisfeld and Lambert administered the Verbal Reasoning test from the DAT battery and the Otis Self-Administering Tests of Mental Ability to a group of students studying Hebrew. These correlated .49 and

.55 respectively with comprehension and .38 and .32 respectively with oral skill. Correlations with measures such as fluency, pronunciation, accuracy, and purity of accent tended to be much lower. The investigators concluded that "this finding appears to support the view that intelligence plays a differential role in various language domains, with success in the more cognitive tasks . . . being more dependent on intelligence than success in tasks involving mainly oral production" (1961, pp. 526-527).

While it is true that general intelligence as such has been shown to have a moderate to large effect on foreign language achievement, investigators have also been interested in trying to identify a specific language aptitude factor independent of measures of general intelligence. The tendency now is to think of this in the plural. Says Haugen, "Individuals differ in language aptitude which is probably not one single skill, but a complex of several . . ." (1961, p. 406). Let us turn to look at some of these language specific aptitude factors.

In a review of older literature, Pimsleur, Mosberg, and Morrison, found that there is a verbal factor which is reflected not only in mastery of a second language but also in mastery of one's own native language. They say, ". . . verbal ability in one's own language is positively correlated with success in learning a foreign language. However, the extent of this correlation has often been found to be rather modest and to be quite variable depending on the foreign language in question and on the degree of advancement of the course" (1962, p. 163).

Carroll (1958, pp. 18-19), in a factor analytic study, administered a four-hour test battery to two groups of Air Force trainees before they took an intensive course in Chinese. After the course was completed, achievement tests were given. The pre-test data and the criterion data were then factor analyzed.

The following factors were identified and described:

Factor A: Verbal Knowledge. Knowledge of the vocabulary and structure of one's native language. This is usually identified as Factor V.

Factor B: Linguistic Interest (?). This is tentatively identified as an increment of test performance ascribable to a specific motivation, interest on facility with respect to linguistic materials.

Factor C: Associative Memory. This is probably the factor usually identified as Factor M.

Factor D: Sound-Symbol Association. This factor is conceived as representing the extent to which the individual possesses a knowledge of sound-symbol correspondences in language, or can learn a novel set of such correspondences. It is proposed that this is the same as what has previously been identified as Factor W ("Word Fluency") and that the description of the factor as sound-symbol association ability is more accurate and descriptive than "word fluency".

Factor E: Inductive Language Learning Ability. This is the ability to induce the grammatical rules and properties of a language when suitable learning materials are presented. It is uncertain whether this factor can be cross-identified with the inductive reasoning factors found by other investigators.

Factor F: Grammatical Sensitivity or Syntactical Fluency. Sensitivity to the functions of words in sentences and facility in producing syntactically coherent verbal materials.

Factor G: Probably to be cross-identified with French's Speed of Association factor.

In a more recent piece of work Carroll (1963, pp. 1088-1089) summarizes what is known about prediction of success in foreign language on the basis of certain aptitude factors:

1. . . . facility in learning to speak and understand a foreign language is a fairly specialized talent (or group of talents), . . . relatively independent of those traits ordinarily included under 'intelligence' . . .

2. It is possible to predict success in intensive language courses with high validity by means of certain tests. These tests can be effectively supplemented by further screening procedures such as interviews and short "trial" courses.

3. Data from tables of norms and from expectancy tables showing the probabilities of success in intensive language courses for given levels of measured aptitude suggest that a relatively small fraction of the general population, perhaps one-third to one-half, has a good chance of success (achieving satisfactory grades) in these courses.

4. Language aptitude as measured by tests seems to consist of at least four identifiable abilities: (a) phonetic coding--"the ability to code auditory phonetic materials in such a way that this material can be recognized, identified, and remembered over something longer than a few seconds". (b) grammatical sensitivity--the ability to recognize the grammatical functions of words in sentence contexts; (c) rote memorization ability--the ability to learn a large number of associations in a relatively short time; (d) inductive language learning ability--the ability "to infer linguistic forms, rules, and patterns from new linguistic content itself with a minimum of supervision or guidance".

5. The traditional "verbal" or vocabulary knowledge factor is not of great importance in predicting success in elementary language training where audio-lingual skills are stressed.

6. Phonetic discrimination ability--the ability to learn to distinguish foreign sounds--does not seem to be susceptible to reliable measurement and is probably not a useful predictor of success over and above tests of "phonetic coding ability" as described above.

7. Foreign language aptitude is not specific to particular languages; the same battery of tests predicts success in languages as diverse as German and Chinese with approximately the same degree of validity.

8. Some evidence indicates that a battery of language aptitude tests can provide information useful in forecasting and diagnosing particular types of learning difficulties.

In a more recent study of the factor analytic type, Gardner and Lambert (1965) administered several tests to a group of students of French. The tests yielded a total of 24 variables. Seven factors were extracted: (1) linguistic reasoning defined as a facility with unusual linguistic materials, (2) French vocabulary knowledge, (3) school French achievement, (4) oral French reading skill, (5) relative French sophistication defined as the ability to perform as though one understood the language with a minimum of translation to the more familiar English, (6) intelligence, and (7) verbal knowledge.

In the literature one occasionally encounters suggestions that certain factors not yet mentioned relate to foreign language achievement in a positive way. One such factor is pitch discrimination. Pimsleur, Mosberg, and Morrison (1962) report that in language studies involving pitch discrimination as an independent variable, results have not been consistent. There is the hint, however, that measures of pitch discrimination and of intelligence both correlate significantly with foreign language achievement while the correlation between them is quite low.

Another such factor is music aptitude. Unfortunately, the literature on this subject does not give unqualified guidance. Haugen is skeptical. He says, "There is a popular notion to the effect that language aptitude is related to musical talent, but the evidence on this point is scarcely convincing." (1961, p. 397). Nevertheless, during a year of full-time study at the Spanish Language School in San Jose, Costa Rica, the writer noticed that those students who were talented in vocal and instrumental music were frequently the people who most successfully mastered the tasks of speaking and hearing Spanish. There was a rather wide-spread feeling among students and faculty that this relationship was both positive and significant.

To this point, it has been noted that general intelligence and some language specific aptitude factors have a positive relation to foreign language achievement. This is also true of motivational factors. Lambert (1962) has tried to develop a theory of motivation for second-language learning. Positive motivation is said to be of two kinds, instrumental and integrative. It is said to be instrumental if the learner reflects a desire to get ahead in his occupation by means of learning a second language. It is said to be integrative if the learner reflects a desire to learn more about the other language community as though he wished to become a member of it.

Peal and Lambert (1962) put this theory to the test. They used 14 measures of attitude. The study gave striking support to the hypothesis that mastery of a second language is highly related to one's attitude toward the second-language community. It did not, however, make any distinction between what Lambert called instrumental versus integrative motivations.

In an article cited earlier, Pimsleur, Mosberg, and Morrison state that ". . .interest in languages in general and/or in the particular language being studied, correlates positively with achievement. The influence of this variable appears to be modest but consistent from the scanty evidence. In communities where large numbers of foreign language speakers live, the attitude toward these speakers seems to be important in determining how well their language will be learned in school. No evidence is available to show whether this attitude variable is also important when no considerable number of foreign speakers live in the community" (1962, p. 167).

Carroll (1963) emphasized the fact that the desire to attain competence in communication with the spoken language is the prime motivation for students of a second language. Naturally, he recognizes that other motivations may exist. Haugen agrees when he says, ". . . the primary motivation is usefulness of communication, with function in social advance, emotional involvement, religious and literary-cultural values among the important additional ones" (1961, p. 407).

In summary, three clusters of factors, (1) general intelligence, (2) specific aptitudes, and (3) motivation, seem to have important effects on language learning. Other known factors could be discussed but their influence would be slight in comparison with these three.

In the present study we are partially interested in replicating some of the cited work. We are even more interested in pursuing the hypothesis that auditory factors are important for mastering the kinds of tasks presented in audio-lingual foreign language programs. We would hope to extend our understanding of the relationship between foreign language auditory achievement and specific factors such as musical aptitude and pitch discrimination. In keeping with these aims, the hypotheses to be tested are:

1. There is a significant positive correlation between general intelligence and aural Spanish achievement.
2. There is a significant positive correlation between musical aptitude and pitch discrimination.
3. There is a significant positive correlation between musical aptitude and aural Spanish achievement.
4. There is a significant positive correlation between pitch discrimination and aural Spanish achievement.
5. There is a significant positive correlation between aural Spanish aptitude and aural Spanish achievement.

METHOD

Students--There were 53 seventh grade subjects, 32 boys and 21 girls. All were enrolled in first semester Spanish at Central School in Okemos. They were divided into two groups. Group I (N=26) received instruction from September 1966 until January 1967 and Group II (N=27) from February 1967 until June 1967. The median age for Group I was 12:8. For Group II it was 13:3. Mean IQ for Group I was 124 as measured by the Lorge-Thorndike. For Group II it was 119 as measured by the California Test of Mental Maturity. Subjects were assigned to groups randomly.

Instrumentation--Four different tests were administered, a Spanish aptitude test, the pitch and loudness subtests of the Seashore Measures of Musical Talents, the first three subtests of the Wing Tests of Musical Intelligence, and a Spanish

achievement test. In addition, Lorge-Thorndike Intelligence scores for Group I subjects and CTMM scores for Group II subjects were obtained from the permanent records in the guidance office. For a few subjects Lorge-Thorndike and CTMM scores were not available. Aural Spanish aptitude was defined in terms of performance on the Spanish aptitude test; pitch discrimination was defined in terms of performance on the Seashore pitch test; music aptitude was defined in terms of performance on the Wing Tests of Musical Intelligence; aural Spanish achievement was defined in terms of performance on a Spanish achievement test. A brief description of the tests follows.

The Lorge-Thorndike for grades 4 and above yields three scores, verbal, nonverbal, and total. According to Cronbach, "The nonverbal items call mostly for general ability, independent of vocabulary and reading. Since the verbal and nonverbal scores correlate about .70, differences between the scores will not be significant for the majority of pupils" (1960, p. 231).

In order to give some notion of how the Lorge-Thorndike compares with the CTMM we include in the appendix a brief description of the tasks required of the subject on both tests. It is important to note in passing that the median correlation between the verbal sections of the Lorge-Thorndike and the CTMM is .79. The comparable figure for the nonverbal section is .74. No figure comparing the two total IQ measures was found.

The Spanish aptitude test was designed by the writer with the idea of getting a reliable and valid measure of aural Spanish aptitude. Since there were no models to guide in the development of such a specialized test, the items used were strictly experimental. Samples follow:

1. A paragraph is read in good Spanish by a native speaker. Following are ten test items of the type:

   No deje que salga el perro.

   No deje que salga el perro.

   in which one sentence is read in good Spanish and the other in Spanish with an American accent. Which sentence of each pair is spoken in good Spanish and which in corrupt Spanish is allowed to vary randomly. The subjects are asked to identify which sentence of each pair is spoken in good Spanish.

2. Another set of ten items is like the first except that the pair of sentences does not use identical content. In other words, not only does the pronunciation vary but also the very words which make up the sentences. Here is an example:

   Dońde vamos a cenar?

   Vamos a cenar en el centro.

   Once again subjects are asked to identify which sentences of each pair is spoken in good Spanish.

3. The third set of ten items is also given in pairs. Some pairs are identical both in content and in pronunciation. In other pairs, in the second sentence of the pair, one word is omitted. Subjects are asked to identify those pairs in which the second sentence is missing one word. An example:

   Este cesped es extenso.

   Este cesped extenso.

4. One exercise presents ten sets of words in triplets. Sometimes one word of the triplet is slightly different from the other two. Subjects are asked to tell which triplets are identical and which of them change a word. In addition, in those cases where one word is different, they are asked also to identify which it is. Note example:

   atacar, acatar, atacar

   To get credit for this item the subjects have to note that this triplet is not identical, that the second word is different from the other two. Of course, differences are allowed to occur in any one of the three positions.

5. The last set of ten items is simply a variation on the set just described. The difference is simply that now instead of giving sets of three words, subjects are given sets of three sentences. As before, the three can be identical or one might be different from the other two. Differences can occur in first, second, or third position. Obviously, this exercise has the effect of putting a large load on memory. Here is an example:

   El jabón es bueno.

   El jabón es bueno.

   El jamón es bueno.

Reliability for this test by K-R 20 was .70. Increasing the test from 50 to 100 items would give a reliability of .82 by the Spearman-Brown formula.

The Seashore Measures of Musical Talents include measures of pitch, loudness, rhythm, time, timbre, and tonal memory. For this study only the subtests of pitch and loudness were used. The reason for not using all the subtests was largely a matter of time. Understandably the classroom instructor preferred that the testing cut as little as possible into teaching time. This meant that the Wing and the Seashore had to be administered in the same class period. This had two undesirable effects: (1) it gave barely enough time to administer the Wing plus the above-mentioned Seashore subtests; (2) it also tended to cause fatigue among the subjects. By the time the subjects finished the Wing and got to the Seashore pitch and loudness tests the classroom instructor and the experimenter both felt that they were not trying their hardest. This set of circumstances probably accounts for the very low overall reliability of .23 for the two Seashore tests. There was a suspicion that most of the error occurred in the Group II administration. This was confirmed when it was shown that the reliability for Group I was .63 while for Group II it was .17. There was a further suspicion that most of the error for Group II occurred in the loudness subtest. This hypothesis was checked and confirmed. The overall

reliability for the pitch test was .86. For these reasons, the loudness subtest was dropped from the analysis. The pitch test was retained.

The Wing Tests of Musical Intelligence were developed because of the feeling that no so-called test of music aptitude had ever really been able to identify the musically gifted child. It is now claimed that with the seven tests of the Wing battery this can be done. A study by Bently (1955) has shown that one can get an acceptable measure of music aptitude by using only the following three subtests: (1) analysis of chords, (2) pitch discrimination, and (3) memory for pitch. In the interests of economy of time, Bently's suggestion has been followed in this study. A brief description of these three subtests follows.

1. Analysis of chords--Subjects are presented with thirty musical chords, each made up of from one to four notes. For any particular chord, it is necessary to identify the number of notes which make it up.

2. Pitch discrimination--Subjects are presented with thirty pairs of chords. The chords of a pair are identical in some cases, but in others one note in the second chord moves either up or down in relation to its position in the first. It is necessary to indicate whether the pair of chords is identical or whether there is movement, and if there is movement, whether it is up or down.

3. Memory for pitch--Subjects are presented with thirty pairs of melodies which vary in length from four notes to twelve notes. Each member of any pair of melodies is identical to the other except for one note in the second melody which varies from the note in the same position in the first melody. One must tell in what position the variation occurs.

In the present administrations of the Wing tests, the overall reliability as calculated by K-R was .71.

The achievement tests used in this study were developed by the writer from regular course materials studied by the subjects. In order to make the tests as consistent as possible with the purposes of this study, no attempt was made to assess reading, writing, or speaking competence. All the tasks were presented orally.

Two achievement tests were used. The original intention was to use the same test for both groups and then combine the groups for the analysis. Unfortunately, second-semester classes were out so long during a severe snow storm that Group II was able to cover only four of the six units of work that were covered by Group I. Since all the subtests of the original achievement tests assumed mastery of all six units, this test was not appropriate for Group II. Hence a new test was constructed for them. Though both tests had satisfactory reliability by K-R 20 (for test I, r=.80 and for test II, r=.81), for reasons we shall see, they were not considered equivalent. Therefore, for the main analysis, the data from the two tests were not pooled as had been the original intention. It became necessary to treat the work with Group II as a replication of the work with Group I. The data were analyzed under the compulsion of this circumstance. Nevertheless, in the interests of further exploration, the scores for both achievement tests were converted to T scores. Thus it is possible to combine all scores for both groups and to use these scores in a combined group analysis. It should be mentioned that interpretation of combined group data should be done with care if at all since it involves combining not only the scores from two different achievement tests, but also the scores from two different intelligence tests.

Let us now look at the first achievement test. Items are of the following types:

1. Vocabulary--Ten words are given in Spanish. Subjects write down the English equivalents.

2. Definite articles--Ten nouns are given in Spanish. Subjects indicate for each noun whether it requires the masculine or feminine definite article.

3. Person and number of verbs--Ten sentences are presented in Spanish. Subjects locate the verb and indicate its person and number.

4. Choosing the best translation--Ten sentences are presented in Spanish. Subjects choose the best translation from four alternatives.

5. Choosing the best ending--Ten incomplete sentences are presented in Spanish. Subjects choose the best answer from among four alternatives.

6. Choosing the best answer--Ten questions are presented in Spanish. Subjects choose the best answer from among four alternatives.

A seventh exercise was given to the students but it was not scored since it contained many words not studied by the students.

When it became clear that a new achievement test would have to be made for the second group, there was an attempt to improve the second test on the basis of experience with the first as well as on the basis of further reading in the literature on foreign language achievement testing. The second test was lengthened to 100 items (the first contained only 60 items) and was made up of the following subtests:

1. Vocabulary--Twenty words are given in Spanish. Subjects write down the English equivalents.

2. Definite articles--Twenty nouns are given in Spanish. Subjects indicate for each noun whether it requires the masculine or feminine definite article.

3. Person and number of verbs--Twenty sentences are presented in Spanish. In each sentence the verb is missing. Subjects choose a verb from three alternatives to fill the blank. Notice that this verb exercise differs radically from that in the first achievement test.

4. Choosing the best translation--Twenty sentences are presented in Spanish. Subjects choose the best ending from three alternatives.

5. Choosing the best ending--Twenty incomplete sentences are presented in Spanish. Subjects choose the best ending from three alternatives. This exercise differs from its counterpart in the first achievement test in the manner of presenting alternative endings. In the first test, alternative endings were written on the answer sheet. In this second test, the alternative endings were presented orally.

Materials and equipment--Each of the four tests administered by the experimenter were recorded on magnetic tape. The tapes were played on a master tape deck. Sound was transmitted from the tape deck to individual student desks and was delivered to the students through standard head sets. In every case students were presented with a prepared answer sheet, samples of which are found in the appendix.

RESULTS AND DISCUSSION

The results will be presented in four parts: (1) relationships among variables for Group I, (2) relationships among variables for Group II, (3) relationships among variables for the combined groups, and (4) results relative to the prediction of future achievement.

Group one--We first note that, as would be expected, the verbal and non-verbal scores are both highly correlated with total IQ. However, the correlation between verbal and nonverbal is not as high as is usually reported. This may be a function of the fact that the group in general comes from the high end of the scales in comparison with the standardizing group, thus reducing the variability.

Next, it is interesting to note that both pitch and aural Spanish aptitude demonstrate a moderately high relationship with music aptitude. Pitch and aural Spanish aptitude are not related.

Finally, we see that verbal, nonverbal, total IQ, music aptitude, pitch, and aural Spanish aptitude are all related to aural Spanish achievement.

Thus, all five hypotheses are supported. The complete correlation matrix is found in Table I.

TABLE I

Group One Correlations
Among Selected Variables (N=26)[a]

	Verbal	Non-verbal	IQ Total	Music Aptitude	Pitch Discrimination	Aural Spanish Aptitude	Aural Spanish Achievement
Verbal	X						
Non-verbal	.44	X					
IQ Total	.81	.88	X				
Music Aptitude	.22	.36	.34	X			
Pitch Discrimination	.13	.30	.26	.67	X		
Aural Spanish Aptitude	.18	.26	.26	.60	.34	X	
Aural Spanish Achievement	.50	.49	.57	.50	.48	.43	X

[a] For N=26, the probability of $r > .32$ occurring by chance = .05; the probability of $r > .44$ occurring by chance = .01 (one-tailed).

Group two--We find that verbal and nonverbal correlate highly with total IQ while verbal and nonverbal are only moderately correlated with one another. This replicates the results for Group I.

Again, we find that both pitch and aural Spanish aptitude are moderately correlated with music aptitude. Pitch and aural Spanish aptitude are not related. These results replicate those for Group I.

Finally, verbal, nonverbal, total IQ, and aural Spanish aptitude are all related to aural Spanish achievement. These results replicate those for Group I. However, whereas in Group I, aural Spanish achievement is related both to music aptitude, and to pitch, in Group II this is not true. We therefore find that the results for Group II support hypotheses one, two, and five. Hypotheses three and four are not supported. The pertinent matrix of correlations is found in Table II.

TABLE II

Group Two Correlations
Among Selected Variables (N=27)[a]

	Verbal	Non-verbal	IQ Total	Music Aptitude	Pitch Discrimination	Aural Spanish Aptitude	Aural Spanish Achievement
Verbal	X						
Non-verbal	.49	X					
IQ Total	.82	.90	X				
Music Aptitude	.20	.08	.19	X			
Pitch Discrimination	.14	.11	.09	.42	X		
Aural Spanish Aptitude	.33	.03	.24	.48	-.07	X	
Aural Spanish Achievement	.72	.38	.62	.26	.09	.32	X

[a] For N=27, the probability of $r > .31$ occurring by chance = .05; the probability of $r > .43$ occurring by chance = .01 (one-tailed).

Combined groups--The differences between the two intelligence tests and the two achievement tests made it necessary to carry out separate analyses for Groups I and II. One disadvantage of this procedure was the reduction in the number of subjects included in the analysis. In some respects it would have been preferable to combine the groups in order to achieve a larger number of measures for single analysis. Reflection indicated that if achievement scores were converted to T scores and if it could be shown that the two groups come from the same population, the data could be combined and analysis of results could be made. This hypothesis was tested and it was discovered that the two groups were not significantly different on any variables except for achievement which was, of course, not evaluated. Results of this analysis are presented in Table III.

TABLE III

Analysis of Differences Between
Group I (N=26) and Group II (N=27)

	Group I		Group II		Group I	Group II
Verbal				Pitch Discrimination		
Mean	124.95		118.57	Mean	37.60	40.08
SD	12.65		12.68	SD	6.41	6.12
F		2.59		F	1.91	
P		.11		P	.17	
Non-verbal				Music Aptitude		
Mean	121.90		119.48	Mean	42.48	54.65
SD	15.00		16.89	SD	10.99	9.90
F		.23		F	1.46	
P		.64		P	.23	
IQ Total				Aural Spanish Aptitude		
Mean	123.62		118.84	Mean	38.64	37.50
SD	11.52		12.62	SD	4.46	5.85
F		1.69		F	.57	
P		.20		P	.46	

Having found that there were no significant differences between Groups I and II, and having converted the achievement scores to T scores, all variables were intercorrelated. The pattern of correlations for the combined groups quite consistently confirms that for Groups I and II separately. For instance, verbal and nonverbal scores are quite highly correlated with total IQ but only moderately correlated with each other. All independent variables are significantly related to aural Spanish achievement. Both pitch discrimination and aural Spanish aptitude are related to music aptitude but not to each other. The results provide confirmation for all five hypotheses. A finding which differs from the findings for separate groups is that aural Spanish aptitude is related both to verbal and total IQ. The pertinent matrix is presented in Table IV.

In interpreting these results, we shall want to use some kind of decision rule to help us decide whether or not a relationship between two variables does in fact exist. Since we prefer a conservative approach in the first stages, at least, we shall say that a relationship exists if and only if there is a significant positive correlation between the two variables in all three matrices simultaneously, that for Group I, that for Group II, and that for the combined groups. If we use this as our rule, we find that we have confirmation for hypotheses one, two, and five. We find that:

1. there is a significant positive relation between general intelligence and aural Spanish achievement.

2. there is a significant positive relation between musical aptitude and pitch discrimination.

TABLE IV

Combined Group Correlations
Among Selected Variables (N=53)[a]

	Verbal	Non-verbal	IQ Total	Music Aptitude	Pitch Discrimination	Aural Spanish Aptitude	Aural Spanish Achievement
Verbal	X						
Non-verbal	.47	X					
IQ Total	.82	.89	X				
Music Aptitude	.13	.15	.19	X			
Pitch Discrimination	.10	.18	.13	.55	X		
Aural Spanish Aptitude	.26	.13	.27	.51	.10	X	
Aural Spanish Achievement	.58	.41	.57	.32	.26	.35	X

[a] For N=50, the probability of $r > .23$ occurring by chance = .05; the probability of $r > .32$ occurring by chance = .01 (one tailed).

3. there is a significant positive relation between aural Spanish aptitude and aural Spanish achievement.

In addition to the hypothesized relationships, it was also found that certain other relationships appeared consistently:

1. there is a significant positive relation between verbal aptitude and aural Spanish achievement.

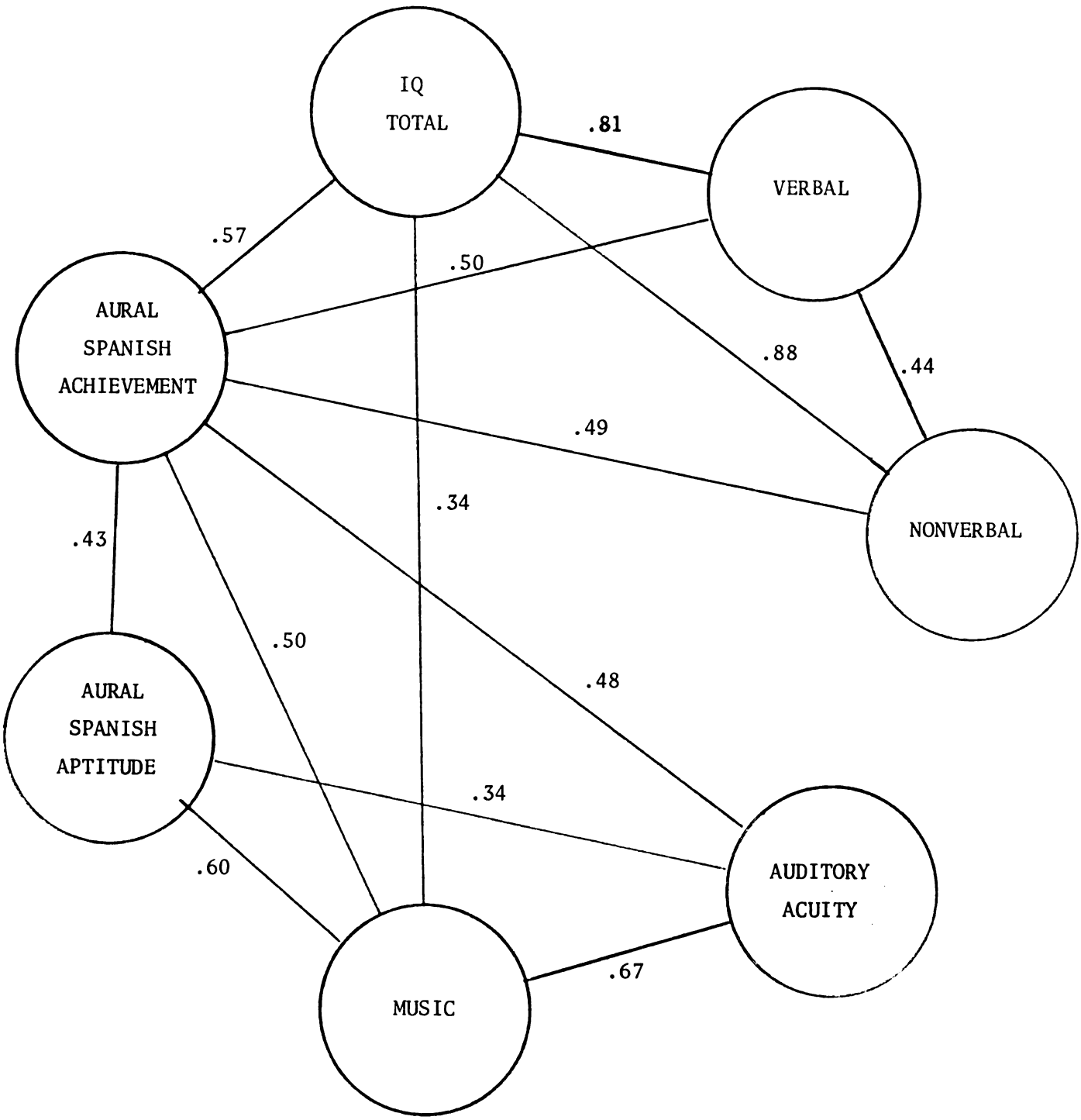
2. there is a significant positive relation between nonverbal aptitude and aural Spanish achievement.

3. there is a significant positive relation between aural Spanish aptitude and music aptitude.

But this may be too conservative. We may be missing important relationships by insisting on triple confirmation. Why not adopt a rule of this form: a relationship between two variables exists if and only if there is a significant positive correlation between the two variables in the matrix for combined groups? The rationale for this rule would be that increasing the size of N has the effect of increasing the range within which relations are judged to be significant. If we were willing to use this rule in a rigorous way then hypotheses three and four as well as hypotheses one, two, and five would appear to receive confirmation. This in fact is exactly the procedure we would have followed in Groups I and II had taken identical tests throughout the testing period. Since they did not, we are forced to use this less rigorous rule not as confirming the hypothesized relationships but rather as suggesting possible relationships to be investigated in future research. Using the rule in this way, we would say, for instance, that the value of the correlation coefficient between music aptitude and aural Spanish aptitude suggests but does not confirm, the relationship. As it is, we must leave this matter where Haugen left it, in a state of indeterminacy. The same is true for the supposed relationship between pitch discrimination and aural Spanish achievement.

In a discussion of this kind it is easy to lose track of the numerous relationships discussed. For this reason, we present Figure I, a graphic representation of relationships demonstrated in Group I data. One of the most striking features is the fact that we seem to have two clusters of related measures which are relatively independent of each other. That is to say, aural Spanish aptitude, music aptitude, and pitch discrimination are all

Diagram showing the relationships among variables for Group I.

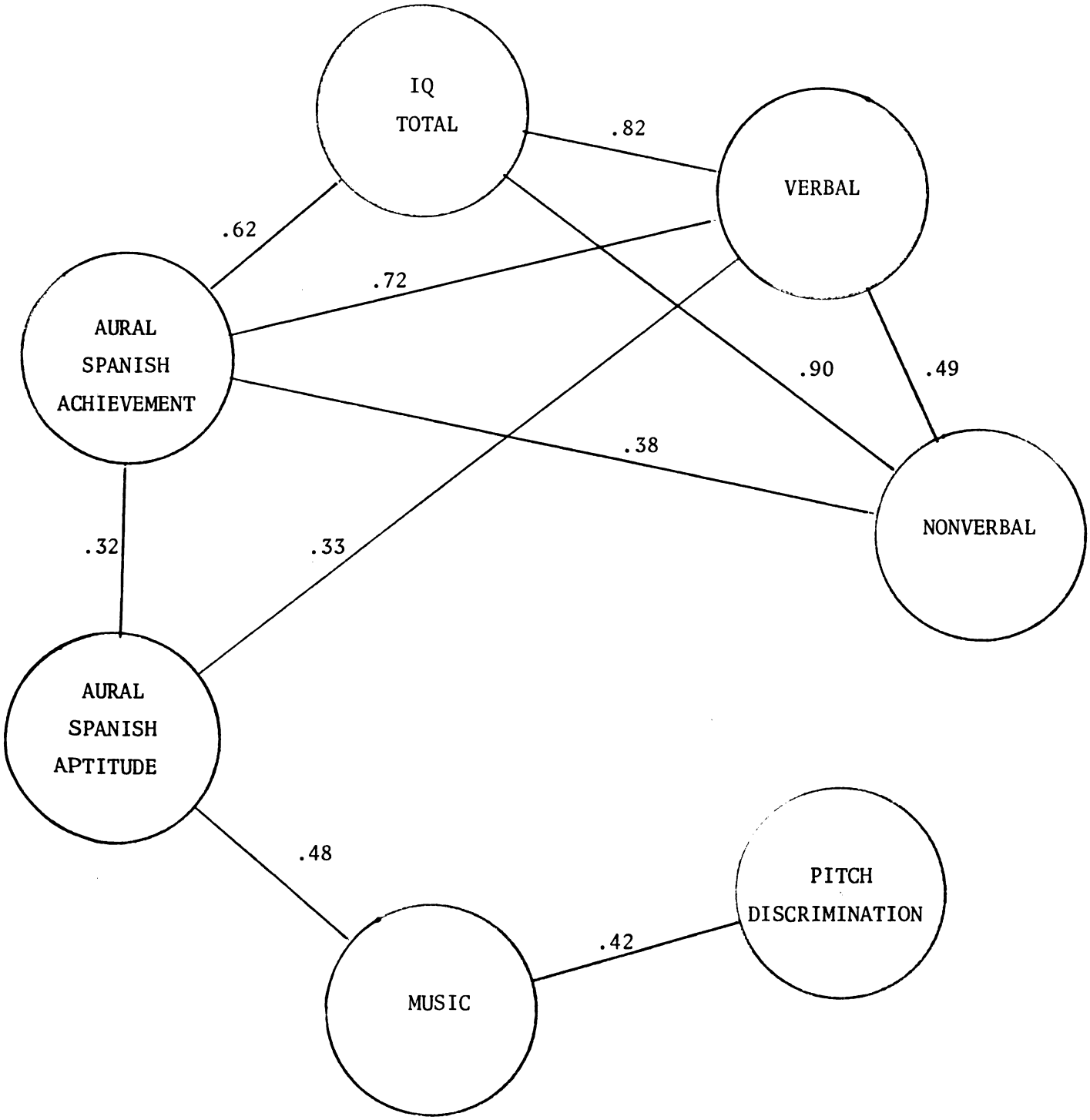


fully interrelated but as a group are relatively independent of nonverbal aptitude, verbal aptitude, and total IQ, which also are fully interrelated. We say "relatively" independent because there is a significant positive relation between music aptitude and total IQ and between music aptitude and nonverbal aptitude. This may mean that in second language learning there are at least two relatively independent factors, an intelligence factor and an auditory factor, both of which influence success in aural Spanish achievement.

In similar fashion, we present Figure II, a graphic representation of relationships demonstrated in Group II data. We note once again that IQ, verbal aptitude, and nonverbal aptitude are fully interrelated and that they are all related to aural Spanish achievement. Thus we have a replication of the pattern of relationships noted for this group of variables in Group I data. This occurs in spite of the fact that Groups I and II took different intelligence tests.

At this point, some of the similarities between the Group I and Group II patterns disappear. It is true that aural Spanish aptitude and pitch discrimination are still both related to music aptitude. But strangely, pitch discrimination and aural Spanish aptitude are not related, this in spite of the fact that both require only listening with no knowledge of language at all. This absence of relationship is difficult to explain and seems only to confirm what was written by Pimsleur, Mosberg, and Morrison (1962), that in language studies involving pitch discrimination as an independent variable, results have not been consistent. Probably in any future work in this area, measures of pitch discrimination could be omitted.

Diagram showing the relationships among variables for Group II.



Another difference between groups is that for Group II, neither pitch discrimination nor music aptitude are related to aural Spanish achievement. We might argue that the reason for this is the fact that the relationship is a weak one and that if N had been large enough, these relations would have been significant. Combined group data seems to support this contention.

For any future research in this area, it would be well to give the music aptitude - aural Spanish achievement relation, if it exists, a better chance to show up by administering the full battery of Wing tests. In the present study, only the first three subtests were used.

A final difference in the pattern of correlations between groups is that for Group II, verbal aptitude shows a significant positive relation to aural Spanish aptitude. This is very strange since the CTMM verbal aptitude test depends heavily on semantic factors in English whereas the aural Spanish aptitude test makes no use of semantic factors at all. This correlation can probably be safely attributed to chance.

Regression analysis--In order to be able to identify that pattern of test variables which might best predict achievement in programs where aural Spanish performance is an important ingredient for success, a step-wise deletion multiple regression analysis was calculated for six independent variables with aural Spanish achievement as the criterion. This was done for Groups I and II separately.

In a step-wise deletion multiple regression, the best multiple-correlation between all predictors and the criterion is first computed. For Group I, the multiple correlation was .69, accounting for 48% of the variance in aural Spanish achievement. The analysis then deletes one predictor variable at a time, in an increasing order of their contribution to the prediction. The amount of

variance accounted for at each step is represented by R^2, the squared multiple correlation coefficient. The pertinent data for Group I are found in Table V. Inspection of this table shows that music aptitude, pitch discrimination, and total IQ account for very little of the total variance. The largest part of the variance is accounted for by nonverbal aptitude.

TABLE V

Multiple Regression Analysis of Group I Data for Prediction of Achievement in Audio-Lingual Spanish Programs Using Six Variables as Predictors (N=18) with Variables Listed in the Order in which They Were Deleted

Variable	R^2 Before deletion
Music aptitude	.48
Pitch discrimination	.48
IQ total	.46
Aural Spanish aptitude	.44
Verbal	.36
Nonverbal	.26

It is important to note that in the particular multiple regression program used for this analysis, subjects with incomplete data cannot be used. Unfortunately, because of absences during testing, there were eight subjects from Group I with incomplete data who had to be eliminated from the analysis. Since it was necessary to know how this would affect the regression analysis, we tested for differences between means on all predictor and criterion variables for the group with incomplete data ($N \leq 8$) and the group with complete data (N=18). There were no significant differences. (From now on, we shall adopt the convention of referring to the reduced group on which this regression analysis was performed as Group I'). The appropriate analysis is found in Table VI.

TABLE VI

Group I

Comparison of Group with Incomplete Data (N ≤ 8)

Against Group with Complete Data (N = 18)

	Complete		Incomplete		Complete		Incomplete
Verbal				Music Aptitude			
Mean	125.39		121.00	Mean	42.50		42.43
SD	13.29		12.73	SD	11.54		11.22
F		0.02		F		0.00	
P		0.66		P		0.99	
Non-verbal				Aural Spanish Aptitude			
Mean	123.39		108.50	Mean	39.06		37.37
SD	15.14		14.85	SD	4.93		3.51
F		1.75		F		0.52	
P		0.23		P		0.48	
IQ Total				Aural Spanish Achievement			
Mean	124.61		117.67	Mean	50.32		50.67
SD	11.94		11.02	SD	9.44		9.59
F		0.88		F		0.01	
P		0.36		P		0.94	
Pitch Discrim-ination							
Mean	37.28		38.43				
SD	6.19		7.85				
F		0.15					
P		0.70					

Another attempt to check the effects of eliminating subjects with incomplete data from the analysis was made by recalculating the correlations among all variables for Group I'. This matrix of intercorrelations is found in Table VII. There was no attempt to make a statistical assessment of the degree of relationship between the correlations for Group I and Group I', but visual comparison of Tables I and VII will show that the correlations are quite similar. This, together with the analysis of differences between means, suggests that the regression analysis would not have been significantly different even if it had been possible to use all the subjects in the analysis.

TABLE VII

Group I' Correlations

Among Selected Variables (N=18)[a]

	Verbal	Non-verbal	IQ Total	Music Aptitude	Pitch Discrimination	Aural Spanish Aptitude	Aural Spanish Achievement
Verbal	X						
Non-verbal	.40	X					
IQ Total	.80	.87	X				
Music Aptitude	.25	.43	.42	X			
Pitch Discrimination	.20	.43	.40	.67	X		
Aural Spanish Aptitude	.12	.20	.20	.62	.48	X	
Aural Spanish Achievement	.49	.51	.60	.39	.37	.39	X

[a] For N=18, the probability of $\underline{r} > .38$ occurring by chance = .05; the probability of $\underline{r} > .52$ occurring by chance = .01 (one-tailed).

In order to check the findings for Group I, the same kind of analysis was performed on Group II. First, nine subjects were eliminated because of incomplete data. This reduced Group II to eighteen subjects. We shall refer to this reduced group as Group II'. Next, a test was made to see whether there were any differences between Group II' and the group of nine subjects who were eliminated. The only difference was on pitch discrimination where the mean for Group II' was significantly lower. This analysis is presented in Table VIII.

TABLE VIII

Group II

Comparison of Group with Incomplete Data (N ≤ 8)

Against Group with Complete Data (N = 19)

	Complete		Incomplete		Complete		Incomplete
Verbal				Music Aptitude			
Mean	116.89		126.00	Mean	45.83		47.86
SD	13.82		7.62	SD	9.68		9.79
F		1.59		F		0.22	
P		0.22		P		0.64	
Non-verbal				Aural Spanish Aptitude			
Mean	121.56		115.00	Mean	38.22		34.80
SD	18.28		10.80	SD	5.60		7.76
F		0.47		F		1.24	
P		0.50		P		0.28	
IQ Total				Aural Spanish Achievement			
Mean	119.39		118.67	Mean	50.58		49.05
SD	14.19		9.77	SD	10.77		8.79
F		0.01		F		0.10	
P		0.91		P		0.76	
Pitch Discrimination							
Mean	39.28		44.43				
SD	5.65		2.23				
F		5.36					
P		0.03					

In addition to this, a new group of correlations was computed for Group II'. The pertinent matrix is found in Table IX. Comparison of this matrix with that for Group II (Table II) reveals that differences due to reducing the size of the group are small.

TABLE IX

Group II' Correlations

Among Selected Variables (N = 18)[a]

	Verbal	Non-verbal	IQ Total	Music Aptitude	Pitch Discrim-ination	Aural Spanish Aptitude	Aural Spanish Achievement
Verbal	X						
Non-verbal	.57	X					
IQ Total	.85	.91	X				
Music Aptitude	.06	-.14	-.07	X			
Pitch Discrim-ination	.08	-.003	.03	.33	X		
Aural Spanish Aptitude	.31	.01	.15	.44	.13	X	
Aural Spanish Achieve-ment	.79	.32	.59	.10	.05	.34	X

[a] For N=18, the probability of r > .38 occurring by chance = .05; the probability of r > .52 occurring by chance = .01 (one tailed).

Finally, a step-wise deletion multiple regression was calculated for Group II'. Results differ widely from those for Group I'. Now the verbal score is the single largest contributor to total variance. IQ contributes a little more and no variable contributes any more beyond verbal and total IQ scores. The complete results are presented in Table X.

TABLE X

Multiple Regression Analysis of Group II Data for Prediction of Achievement in Audio-Lingual Spanish Programs Using Six Variables as Predictors (N = 19) with Variables Listed in the Order in which They Were Deleted

Variable	R^2 Before Deletion
Music Aptitude	.66
Nonverbal	.66
Pitch Discrimination	.66
Aural Spanish Aptitude	.66
IQ Total	.66
Verbal	.63

The differences in results for the two groups clearly present the problem of attempting to explain why they happened. We could say that it is all due to random error thus ending the discussion. We could also say that it is due to the differences in the intelligence tests and the achievement tests used. The latter seems to be a hypothesis that is worth exploring. Specifically, we would like to know why in Group I the nonverbal aptitude scores account for 26% of the variance and the verbal aptitude scores account for 10% of the variance while in Group II the verbal scores account for 63% of the variance, the total IQ scores account for 3% of the variance and the other variables account for nothing more. It seems that the really crucial issue is the possible differential functioning of the verbal and nonverbal sections of the Lorge-Thorndike versus the CTMM. If one examines the various subtests of these two instruments, he will notice some striking differences. For instance, comparing the nonverbal sections, he will note that:

1. the Lorge-Thorndike has no opposites subtest; the CTMM does

2. the Lorge-Thorndike has no numerical values subtest; the CTMM does

3. the Lorge-Thorndike has an ordered numbers subtest; the CTMM does not

4. both have an analogies subtest but they differ in the types of figures used; the Lorge-Thorndike uses abstract figures whereas the CTMM uses figures of objects encountered in everyday life

5. both have a similarities subtest but they differ in the types of figures used exactly as in the analogies subtest

Large differences also occur in the verbal sections. For instance:

1. the Lorge-Thorndike has a sentence completion subtest; the CTMM does not

2. the Lorge-Thorndike has a subtest which requires the subject to think how three words are related and add a fourth word that relates to three words in the same way; the CTMM does not

3. the Lorge-Thorndike has no memory subtest; the CTMM does

4. the two verbal sections are alike only in that they both have arithmetic word problems

We note then that although the median correlation between the two nonverbal sections is .74 and between the two verbal sections is .79, from the standpoint of content, they are quite different.

Taking these differences into consideration, let us look at some of the puzzling things about the results of this study. What, for instance, can we make of the rather high correlation (.72) between verbal aptitude and aural Spanish achievement for Group II? Could this be a function of the memory tasks required both by the aural Spanish achievement tests and the CTMM memory subtest? In both cases the stimuli are delivered orally and must be remembered over a short span of time. It would be interesting to investigate this.

One of the chief interests of this study was the relationship between musical aptitude and aural Spanish achievement. It was hypothesized that there would be a significant positive correlation. Results were not consistent. If there is a relationship it is not a strong one.

It is interesting to note that the measures of intelligence correlate with the aural achievement test to about the same degree that other intelligence measures correlate with paper and pencil achievement tests. This attests once again to the remarkable consistency and worth of measures of general intelligence.

As noted in the results sections, the pitch test performed rather inconsistently in relation to aural Spanish aptitude and aural Spanish achievement. It was consistently uncorrelated with verbal aptitude, nonverbal aptitude, and total IQ. These results give a rather striking confirmation for the studies reviewed by Pimsleur, Mosberg, and Morrison.

One additional fact about the pitch test is worthy of note. It showed a consistent moderate correlation with the Wing test. There are those who have asserted that the Seashore test does not really measure musical aptitude whereas the Wing test does. The correlation between the Seashore pitch test and Wing test suggests that the two tests may not be different after all. Further comparisions would have to be made in which the whole Seashore test is compared with the whole Wing test before we could be confident.

The performance of the Spanish aptitude test was encouraging. Its relation to aural Spanish achievement together with its independence from general intelligence seems to indicate that it is measuring a factor not normally caught by the usual predictive measures. It needs to be improved by making better use of those English-Spanish phonetic contrasts which are known to be difficult for speakers of English to discriminate. Such contrasts have been identified by linguists and could well be used in exercises IV and V. An example would be the hard sound of English "d" in initial position as over against the soft wound of Spanish "d". With such improvements the test could be a very useful instrument for selecting students to participate in intensive audio-lingual Spanish language programs.

The prediction of aural achievement on the basis of the present results has been hindered by the lack of parallel intelligence tests and parallel criterion tests. The prediction equations developed would be of little use.

A word about generalizability. This study was not done with a random sample. Both groups were well above the general population in mean IQ. One would probably not like to generalize back to any population except the one from which the sample was drawn, namely, seventh graders at Central School. Furthermore, since the target language for this study was Spanish, the results should not be generalized to all foreign languages. Intuitively, it would seem that what has held for Spanish would as a matter of fact probably hold for all spoken language. But this is a matter for further study.

APPENDIX

TABLE XI

K-R 20 Reliabilities of Some of the Tests Used in This Study

Test	K-R 20
Aural Spanish Aptitude Test	.70
Group I Aural Spanish Achievement Test	.80
Group II Aural Spanish Achievement Test	.81
Wing Tests of Musical Intelligence	.71
Seashore Pitch Test	.86

AURAL SPANISH APTITUDE TEST

Name _____

Date _____

Exercise I

Directions: If the pure Spanish pronunciation occurs in the first sentence of a pair, blacken the space under "A". If it occurs in the second sentence of a pair, blacken the space under "B".

	A	B		A	B
1.	"	"	6.	"	"
2.	"	"	7.	"	"
3.	"	"	8.	"	"
4.	"	"	9.	"	"
5.	"	"	10.	"	"

Exercise II

Directions: If the pure Spanish pronunciation occurs in the first sentence of a pair, blacken the space under "A". If it occurs in the second sentence of a pair, blacken the space under "B".

	A	B		A	B
1.	"	"	6.	"	"
2.	"	"	7.	"	"
3.	"	"	8.	"	"
4.	"	"	9.	"	"
5.	"	"	10.	"	"

Exercise III

Directions: If any pair of sentences is exactly the same, shade in the space under "S". If in any pair a word has been left out of the second sentence that was present in the first sentence, blacken the space under "D".

Example 1

El señor cambió la llanta del auto.

El señor cambió la llanta del auto.

S D

" "

Example 2

La señora que vende leña vino ayer.

La señora vende leña vino ayer.

S D

" "

- -

Begin the exercise when you are instructed to do so.

	S	D
1.	"	"
2.	"	"
3.	"	"
4.	"	"
5.	"	"
6.	"	"
7.	"	"
8.	"	"
9.	"	"
10.	"	"

Exercise IV

Directions: If the three words of any given set are the same, blacken the space under "S". If one word of any given set is different from the other two, decide which it is, the first, the second, or the third, and blacken the corresponding space.

Example 1

medio, medio, medio

S	1st	2nd	3rd
"	"	"	"

Example 2

diga, diga liga

S	1st	2nd	3rd
"	"	"	"

- -

Begin the exercise when you are instructed to do so.

	S	1st	2nd	3rd
1.	"	"	"	"
2.	"	"	"	"
3.	"	"	"	"
4.	"	"	"	"
5.	"	"	"	"
6.	"	"	"	"
7.	"	"	"	"
8.	"	"	"	"
9.	"	"	"	"
10.	"	"	"	"

Exercise V

Directions: If the three sentences of any given set are the same, shade in the space under "S". If one sentence of any given set is different from the other two, decide which it is, the first, the second, or the third, and shade in the corresponding space.

Example 1

El dueño es bueno.
El sueño es bueno.
El dueño es bueno.

S	1st	2nd	3rd
"	"	"	"

Example 2

Vio a su padre.
Vio a su padre.
Vio a su padre.

S	1st	2nd	3rd
"	"	"	"

- -

Begin the exercise when you are instructed to do so.

	S	1st	2nd	3rd
1.	"	"	"	"
2.	"	"	"	"
3.	"	"	"	"
4.	"	"	"	"
5.	"	"	"	"
6.	"	"	"	"
7.	"	"	"	"
8.	"	"	"	"
9.	"	"	"	"
10.	"	"	"	"

GROUP I AURAL SPANISH ACHIEVEMENT TEST

Name _____

Date _____

How Well Do You Know Spanish?

I. Vocabulary

Instructions: In this exercise you will hear ten Spanish words. Write the English meaning of each word in the space provided.

1. _____ 6. _____
2. _____ 7. _____
3. _____ 8. _____
4. _____ 9. _____
5. _____ 10. _____

II. Definite article

Instructions: In this exercise you will hear ten Spanish words. Listen carefully to each word to see if it is masculine or feminine. Circle the appropriate definite article.

1.	el	la	6.	el	la
2.	el	la	7.	el	la
3.	el	la	8.	el	la
4.	el	la	9.	el	la
5.	el	la	10.	el	la

III. Gender and number of verbs

Instructions: You have learned the difference between singular persons (I, you, he, she, it) and plural persons (we, you, they). In the following ten sentences you should listen for the verb of each sentence, marking whether it is first, second, or third person singular or first, second, or third person plural by circling the correct response.

1.	Singular	Plural	3.	Singular	Plural
	1st person	1st person		1st person	1st person
	2nd person	2nd person		2nd person	2nd person
	3rd person	3rd person		3rd person	3rd person

2.	Singular	Plural	4.	Singular	Plural
	1st person	1st person		1st person	1st person
	2nd person	2nd person		2nd person	2nd person
	3rd person	3rd person		3rd person	3rd person

5.	Singular	Plural
	1st person	1st person
	2nd person	2nd person
	3rd person	3rd person

6.	Singular	Plural
	1st person	1st person
	2nd person	2nd person
	3rd person	3rd person

7.	Singular	Plural
	1st person	1st person
	2nd person	2nd person
	3rd person	3rd person

8.	Singular	Plural
	1st person	1st person
	2nd person	2nd person
	3rd person	3rd person

9.	Singular	Plural
	1st person	1st person
	2nd person	2nd person
	3rd person	3rd person

10.	Singular	Plural
	1st person	1st person
	2nd person	2nd person
	3rd person	3rd person

IV. Recognizing verbs

Instructions: In this exercise you will hear ten Spanish sentences. Each sentence has one and only one verb. In the space provided on your answer sheet write down the verb that you hear. You may write it in the form you hear it or in the infinitive form. Either way is acceptable. Following the verb, write down its meaning. Notice the first sentence. It is done for you as an example. Listen. Do not write.

1. vamos - we go or it - to go
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

V. Choosing the best translation

Instructions: In this exercise you will hear ten Spanish sentences. For each sentence three suggested translations are given on your answer sheet. Please put an "X" in front of the translation that best matches what you hear. If none of the translations match, put an "X" in front of the response which says, "none of the above". We are now ready to begin.

1. _____ Do you prefer to go to the movies on Saturday or on Sunday?
   _____ Do you prefer to go to the library with your girl or with your brother?
   _____ Do you prefer to go to school with your friends?
   _____ None of the above.

2. _____ Robert, my brother, has the record player at school.
   _____ Robert, my friend, has the record player in the house.
   _____ Robert, my brother, has the record player in the house.
   _____ None of the above.

3. _____ Do you want to read now?
   _____ Do you want to leave now?
   _____ Do you want to eat now?
   _____ None of the above.

4. _____ Is today Monday or Tuesday?
   _____ Is today Thursday or Friday?
   _____ Is today Tuesday or Wednesday?
   _____ None of the above.

5. _____ Paul, which do you prefer to read, novels or the newspaper?
   _____ Paul, which do you prefer for lunch, potatos or rice?
   _____ Paul, which do you prefer to play, chinese checkers or records?
   _____ None of the above.

6. _____ She likes to study in the afternoon.
   _____ She likes to read in the house.
   _____ She likes to play chinese checkers.
   _____ None of the above.

7. _____ Mom wants me to wait for her at the store.
_____ Mom wants me to look for her at the store.
_____ Mom wants me to go with her to the store.
_____ None of the above.

8. _____ Gosh! I forgot the ice cream.
_____ Gosh! I left the book.
_____ Gosh! I lost the notebook.
_____ None of the above.

9. _____ We must go with my mother.
_____ We must look for my sister.
_____ We must wait for my brother.
_____ None of the above.

10. _____ John is waiting for a good friend in the library.
_____ John is reading a good novel in the library.
_____ John is looking for a good book in the library.
_____ None of the above.

VI. Choosing the best ending

Instructions: In this exercise you will hear ten Spanish sentences. Every sentence is incomplete. On your answer sheet you will find some suggested endings for each of the ten sentences. Put an "X" in front of the ending that best completes the sentence. If none of the endings fits, put an "X" in front of the response which says "none of the above". We are now ready to begin.

1. _____ mi silla.
_____ mi papel.
_____ mi amiga.
_____ None of the above.

2. _____ de la mesa.
_____ de la iglesia.
_____ de la noche.
_____ None of the above.

3. _____ en la tienda.
_____ españoles.
_____ de la biblioteca.
_____ None of the above.

4. _____ son chicas guapas.
_____ están en la biblioteca.
_____ leen muy bien.
_____ None of the above.

5. _____ al futból?
_____ la carne?
_____ muy frío?
_____ None of the above.

6. _____ a la escuela.
_____ en la mesa.
_____ de la carne.
_____ None of the above.

7. _____ al gusto.
_____ al español.
_____ al cine.
_____ None of the above.

8. _____ está descompuesto.
_____ hace frío.
_____ es un libro.
_____ None of the above.

9. _____ cinco.
_____ trece.
_____ quince.
_____ None of the above.

10. _____ chico?
_____ pan?
_____ sábado?
_____ None of the above.

VII. Choosing the best answer.

Instructions: In this exercise you will hear ten Spanish questions. For each question there are three suggested answers on your answer sheet. Put an "X" in front of the best answer. If none of the answers makes sense put an "X" in front of the response which says, "None of the above". Each sentence will be repeated twice. We are now ready to begin.

1. _____ I'm going downtown
_____ I don't know what they are going to do
_____ I hope they do.
_____ None of the above.

2. _____ She lives in Lansing.
_____ She goes to Okemos High School.
_____ She studies in the library.
_____ None of the above.

3. _____ They go on week-ends.
_____ She goes on Friday nights.
_____ I go every Saturday.
_____ None of the above.

4. _____ When we go to school
_____ I prefer five of them
_____ They plan to go.
_____ None of the above.

5. _____ No, the bank closes at four.
_____ No, I prefer green.
_____ Yes, it is O.K.
_____ None of the above.

6. _____ I don't care as long as it's good.
_____ I hope it doesn't take too long.
_____ I wish it were more interesting.
_____ None of the above.

7. _____ No, it's too sweet.
_____ Yes, it's very interesting.
_____ Maybe, if it isn't too late.
_____ None of the above.

8. _____ No, they don't dance very well.
_____ No, I would rather dance.
_____ No, dancing is too hard.
_____ None of the above.

9. _____ I can't go today.
_____ I would rather have some tomorrow.
_____ Yesterday would have been better.
_____ None of the above.

10. _____ Paul is quite well.
_____ It is nine o'clock.
_____ You will find him at the store.
_____ None of the above.

GROUP II AURAL SPANISH ACHIEVEMENT TEST

Name _____

FIRST EXERCISE

VOCABULARY

In this exercise you will hear twenty vocabulary words. Each word is spoken twice. Then a short pause follows during which you may write the English meaning in the space provided. We are now ready to begin.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____

SECOND EXERCISE

DEFINITE ARTICLES

In this exercise you will hear twenty words. Listen carefully to each word to see if it is masculine or feminine. If it is masculine, circle el in the proper space. If it is feminine, circle la.

1. el la
2. el la
3. el la
4. el la
5. el la
6. el la
7. el la
8. el la
9. el la
10. el la
11. el la
12. el la
13. el la
14. el la
15. el la
16. el la
17. el la
18. el la
19. el la
20. el la

THIRD EXERCISE

GENDER AND NUMBER OF VERBS

You have learned the differences between singular persons, (I, you, he, she, it) and plural persons (we, you, they). In the following twenty sentences you should listen for the blank space and mark on your answer sheets which of the three verb forms should be used to fill the blank. Listen to the example and look at your answer sheet.

Example:

Nosotros (blank) en la casa.

Nosotros _____ en la casa.

A. queda
B. quedamos
C. quedan

Notice that the subject nosotros is the first person plural and so requires a verb ending in amos. Therefore "B" on your answer sheet is marked as the correct answer. Listen carefully now and indicate which verb form goes in the blank.

1. A. estoy
   B. estás
   C. está

2. A. estudian
   B. estudiamos
   C. estudiáis

3. A. buscamos
   B. busca
   C. buscan

4. A. está
   B. estás
   C. estoy

5. A. estoy
   B. estás
   C. está

6. A. espera
   B. esperáis
   C. espero

7. A. andan
   B. andamos
   C. anda

8. A. contestan
   B. contesto
   C. contesta

9. A. jugamos
   B. juegan
   C. jugáis

10. A. llevan
    B. lleva
    C. llevo

11. A. importa
    B. importan
    C. importo

12. A. están
    B. estáis
    C. estamos

13. A. pasan
    B. pasamos
    C. pasa

14. A. estudia
    B. estudiamos
    C. estudian

15. A. estudiamos
    B. estudiáis
    C. estudian

16. A. llama
    B. llaman
    C. llamas

17. A. gustas
    B. gustan
    C. gusta

18. A. llaman
    B. llamamos
    C. llamáis

19. A. quedan
    B. queda
    C. quedo

20. A. damos
    B. dan
    C. doy

FOURTH EXERCISE

CHOOSING THE BEST TRANSLATION

In this exercise you will hear twenty Spanish sentences. For each sentence three suggested translations are given on your answer sheet. Please put an "X" in front of the translation that best matches what you hear. Each sentence will be given twice. We are now ready to begin.

1. ___ Do you prefer to go to the movies on Saturday or on Sunday?
   ___ Do you prefer to go to the library with your girl or with your brother?
   ___ Do you prefer to go to school with your friends?

2. ___ Robert, my brother, has the record player at school.
   ___ Robert, my friend, has the record player in the house.
   ___ Robert, my brother, has the record player in the house.

3. ___ Do you want to read now?
   ___ Do you want to leave now?
   ___ Do you want to eat now?

4. ___ Is today Thursday or Tuesday?
   ___ Is today Thursday or Friday?
   ___ Is today Thursday or Wednesday?

5. ___ Paul, which do you prefer to read, novels or the newspaper?
   ___ Paul, which do you prefer for lunch, potatos or rice?
   ___ Paul, which do you prefer to play, chinese checkers or records?

6. ___ She likes to study in the afternoon.
   ___ She likes to read in the house.
   ___ She likes to play chinese checkers.

7. ___ Gosh! I forgot the ice cream.
   ___ Gosh! I left the book.
   ___ Gosh! I lost the notebook.

8. ___ We must go with my mother.
___ We must look for my sister.
___ We must wait for my brother.

9. ___ John is waiting for a good friend in the library.
___ John is reading a good novel in the library.
___ John is looking for a good book in the library.

10. ___ John waits for his good friend in the library.
___ John looks for his good friend in the library.
___ John calls for his good friend in the library.

11. ___ Gloria prefers to eat at home.
___ Gloria prefers to read at home.
___ Gloria prefers to live at home.

12. ___ I take my books to school.
___ I take my books to the library.
___ I take my books to class.

13. ___ I wish to eat bread and butter.
___ I wish to eat potatos and meat.
___ I wish to eat potatos and butter.

14. ___ I have to read the novel for tomorrow.
___ We have to read the novel for tomorrow.
___ They have to read the novel for tomorrow.

15. ___ It seems very cold this week.
___ It seems very cold today.
___ It seems cold this month.

16. ___ Where does she keep the dessert?
___ Where do you keep the dessert?
___ Where do they keep the dessert?

17. ___ Robert says that the teacher lives near his house.
___ Robert says that his friend lives near his house.
___ Robert says that his girl lives near his house.

18. ___ What time is it now?
___ How's the weather today?
___ How are things going today?

19. ___ We read Spanish day and night.
___ We study Spanish day and night.
___ We speak Spanish day and night.

20. ___ The door of our house is opposite the church.
___ The door of the school is opposite the church.
___ The door of the library is opposite the church.

FIFTH EXERCISE

COMPLETION OF SENTENCES

In this exercise you will hear twenty Spanish sentences. Every sentence is incomplete. After each sentence you will hear three suggested completions, A. B. and C, only one of which will make any sense. On your answer sheet you will circle the letter which goes with the best ending. Here is an example.

Example:

Pedro y yo somos . . . . .
Pedro y yo somos . . . . .

A. amigos
B. papas
C. libros

You can easily see that Peter and I can be neither potatos or books. Peter and I are friends. Therefore you will find that the letter "A" corresponding to "friends" has been marked. We are now ready to begin. Are there any questions?

1. A. B. C.
2. A. B. C.
3. A. B. C.
4. A. B. C.
5. A. B. C.
6. A. B. C.
7. A. B. C.
8. A. B. C.
9. A. B. C.
10. A. B. C.
11. A. B. C.
12. A. B. C.
13. A. B. C.
14. A. B. C.
15. A. B. C.
16. A. B. C.
17. A. B. C.
18. A. B. C.
19. A. B. C.
20. A. B. C.

INTELLIGENCE TESTS

Lorge-Thorndike

The verbal section has three subtests of the following types:

I. One word has been left out of each sentence on these two pages. Choose the word that will make the best, the truest, and the most sensible complete sentence.

1. A red cow gives good

A. company B. pasture C. color D. warmth E. milk 25 items

II. Think in what way the words on the top line go together. Then find the word on the line below that belongs with them.

1. cake bread crackers

A. flour B. cereal C. wheat D. cookies E. corn 25 items

III. Word problems

1. Sam bought an 8¢ ball and a 3¢ pencil. How much did he spend for both?

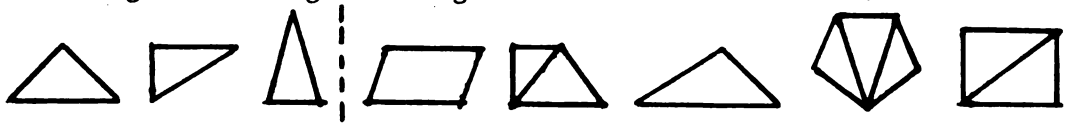
A. 5¢ B. 11¢ C. 24¢ D. 38¢ E. None of these 15 items

IV. Choose the word which has the same meaning, or most nearly the same meaning, as the word in italic type at the beginning of the line.

1. *look* A. see B. try C. hurry D. fasten E. dive 25 items

The nonverbal section has three subtests of the following types:

I. The first three drawings in a row are alike in a certain way. Find the drawing at the right that goes with the first three.

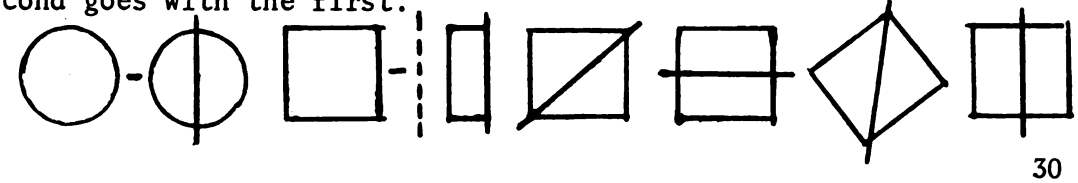
1. 

25 items

II. The numbers at the left are in a certain order. Find the number at the right that should come next.

1. 2a 4a 6a 8a A. 10a B. 12a C. 14a D. 16a E. 18a 28 items

III. The first two drawings go together in a certain way. Find the drawing at the right that goes with the third drawing in the same way that the second goes with the first.

1. 

30 items

California Test of Mental Maturity

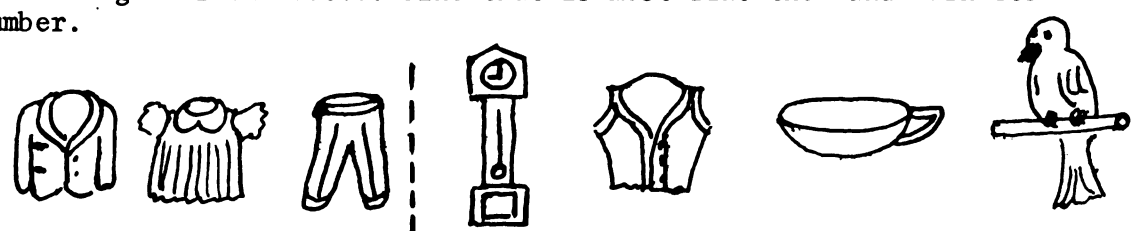
The CTMM is a widely accepted current test. It yields both a language and a nonlanguage I.Q. Cronbach (1960, p. 229) thinks that "there is little evidence to indicate the practical significance of differences between the two IQ's". A review of the contents of the language and nonlanguage portions of the test follows.

The nonlanguage section has four subtests using the following types of problem:

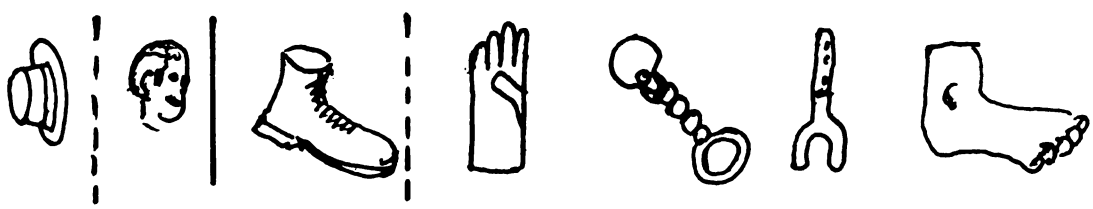
I. Opposites. Directions: In each row there is one picture that shows something which is the opposite of the first picture. Find it and mark its number.

1. 

II. Similarities. Directions: The first three pictures in each row are alike in some way. Decide how they are alike and then find the picture to the right of the dotted line that is most like them and mark its number.

1. 

III. Analogies. Directions: In each row, the first picture is related to the second. The third picture goes with one of the four pictures to the right of the second dotted line in the same way. Find the related picture and mark its number.

1. 

IV. Numerical values. Directions: Each problem tells you that a certain number of coins will add up to a certain amount of money. You are to find the correct number of coins of each kind-cents, nickles, dimes, quarters, and half-dollars. Four possible answers are found beneath each problem. These refer to combinations of coins at the bottom of this page from which to select the correct answer. Work the problem mentally and find the letter of the answer you get among those at the bottom of the page.

1. 6 coins - 10 cents

a b c d

The verbal section has three subtests using the following types of problem:

I. Number problems. Directions: Work these problems. Use scratch paper if necessary. Mark the letter of each correct answer.

1. If you earned $5.00 and spent $3.00, how many dollars would you have left?

a. $1.00
b. $2.00
c. $3.00
d. $5.00

II. Verbal comprehension. Directions: Mark the number of the word that means the same or about the same as the first word.

1. blossom 1. tree 2. vine 3. flower 4. garden

III. Delayed recall. The test administrator has earlier read a story aloud to the group. Directions: Read the following items. Mark the number or letter of each correct answer according to the story.

1. The story read to you awhile ago was concerned with

1. politics
2. conversation
3. fire prevention
4. international relations

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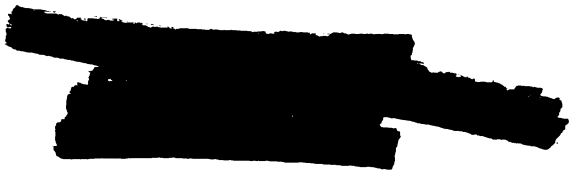

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