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Montreal high school students studying French as a second language completed a battery of tests including measures of linguistic aptitude, verbal intelligence, and various attitudinal and motivational characteristics. Analysis of the intercorrelations of these tests yielded two orthogonal factors equally related to ratings of achievement in French: a "linguistic aptitude" and a "motivational" factor. It was also found that maximum prediction of success in second-language acquisition was obtained from tests of: verbal intelligence, intensity of motivation to learn the other language, students' purposes in studying that language, and one index of linguistic aptitude. (Author)

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MOTIVATIONAL VARIABLES IN SECOND-LANGUAGE ACQUISITION[1]

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MOST RESEARCH on second-language acquisition has been concerned with the measurement of an "ability for languages," the assumption being that achievement is largely due to a linguistic aptitude. However, when measures of aptitude are correlated with grades in language courses, the validity coefficients show considerable variability from situation to situation even with tests developed through factor analytic methods (2), suggesting that variables other than linguistic aptitude are involved. Researchers have mentioned that motivation and interest probably play important roles in second-language acquisition (4, 5, 8, 16, 18), but perhaps because of difficulties in measuring them, these aspects have not been given systematic attention.

Theoretical attempts to explain how the child learns his first language have emphasized a particular type of motivation. Mowrer's theory (11) suggests that language acquisition is motivated by a desire to be like valued members of the family and, later, of the whole linguistic community. Ervin (6) has extended this view, suggesting that emotional dependence or respect for another individual may account for some instances of marked success in second-language achievement. Support for this extended interpretation has been found in recent studies where (*a*) fluency in the second language was found to depend upon an active interest in members of the other linguistic community (19); (*b*) both extent of bilingualism (12) and advanced level of language study (7) were associated with lower *F*-scores; (*c*) dominance in the acquired language was related to personal dissatisfactions with one's own group (9). In line with this latter finding, adults electing to study French conversational courses scored higher on Srole's Anomie Scale (14) than students enrolled in the more grammatical courses, suggesting that adults

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dissatisfied with their position in their own cultural group are seeking to learn, as rapidly as possible, those aspects of the other language which will allow them to become members of a new group (7).

It is our contention then that achievement in a second language is dependent upon essentially the same type of motivation that is apparently necessary for the child to learn his first language. We argue that an individual acquiring a second language adopts certain behaviour patterns which are characteristic of another cultural group and that his attitudes towards that group will at least partly determine his success in learning the new language. Our use of attitude as a motivational construct presupposes an intention on the part of students to learn the language with various aims in mind, and to pursue these aims with varying degrees of drive strength. Our test battery consequently included indices of motivational intensity and orientation. The "Orientation Index" classifies purposes in one of two ways: "integrative," where the aim in language study is to learn more about the language group, or to meet more and *different* people; "instrumental," where the reasons reflect the more utilitarian value of linguistic achievement. The "Motivational Intensity Scale" measures the amount of effort and enthusiasm students show in their attempt to acquire the language.

The present research was designed to determine the comparative importance of linguistic aptitude and certain motivational variables[2] in learning a second language. The intercorrelations of a battery of tests administered to high school students were analysed to determine the factorial structure and to see how the criterion variable, skill in speaking and understanding French, related to this structure.

Method

Subjects

Forty-three male and thirty-two female English-speaking Grade XI high school students acted as Ss. They had already completed an average of about 7 years of formal training in French.

Materials

Scores on the following tests were obtained:

(1) Achievement ratings: The French instructor of each class was asked to rate the students on each of two attributes: oral skills (ability to imitate French word sounds) and aural comprehension (understanding of spoken French). Ratings were made on a 5-point scale from poor (1) to excellent (5). Since these 2 ratings were highly correlated, they were combined, then standardized, to arrive at the achievement rating, Variable 1.

Variables 2–6 are the five sub-scales from Carroll's "Psi-Lambda Foreign Language

[2]Copies of these scales can be obtained from the authors at McGill University.

Aptitude Battery" (3). They include: (2) number learning, (3) phonetic script, (4) spelling clues, (5) words in sentences, and (6) paired associates.

Variables 7 and 8 are two subscales from the A.C.E. College Entrance Examination, 1943 edition. Those used were: (7) same-opposites, and (8) verbal analogies.

(9) Orientation index: Ss were presented with four alternative reasons for studying French and asked to rank them as to their personal relevance. They indicated that a knowledge of French would: (1) be useful in obtaining a job, (2) be helpful in understanding the French-Canadian people[3] and their way of life, (3) permit meeting and conversing with more and varied people, and (4) make one a better-educated person. A fifth alternative, "any other personal reason," was supplied in case an individual thought the alternatives given were inadequate. Ss who ranked either alternative (2) or (3) as most relevant were classified as "integratively oriented." Those choosing alternatives (1) or (4) were classified as "instrumentally oriented." Those choosing alternative (5) were not classified.

(10) Attitude scale: Twenty positively worded statements about French-Canadians were presented and S was asked to indicate his degree of disagreement or agreement on a 7-point scale. A sample item is: "The French-Canadian has every reason to be proud of his race and culture."

(11) Motivational-intensity scale: Eight multiple choice statements were designed to measure intensity of motivation in terms of: work done for assignments, preference for and comparative ease of the course, opportunities taken to improve speaking and reading French, future intentions to study or make use of the language, and importance attributed to a knowledge of the language. Ss were asked to choose, in each case, the alternative most descriptive of themselves.

(12) California *F*-scale: Twenty-five items from forms 45 and 40 (1).

(13) Sex: This was included as a separate variable to account for sex differences.

(14) Audience sensitivity scale: This scale (13) is a measure of the typical anxiety responses made by the individual in a variety of social situations. It was included in the present battery because it was thought that such anxiety might deter a student from practising the second language.

Results and Discussion

Product-moment intercorrelations were computed for twelve of the tests, and the correlations of these twelve with variables 9 and 13 were computed as biserial correlation coefficients. The correlation between variables 9 and 13 is a *phi*-coefficient. The correlation matrix is given in Table I.

[3]The term "French-Canadian" instead of "French" was used to make Ss think in terms of the language group with which they come into contact in Montreal. Although the courses use Standard French with little or no reference to any French-Canadian modifications, the French learned in school can be used with no difficulty by English-speaking students in the province of Quebec. It may be true that a few Ss were motivated to learn French because of its possible value to them in the European French community and these Ss will tend to reduce the relationships of the orientation index and attitude scale (see below) with other measures.

TABLE I

CORRELATION MATRIX*

	1	2	3	4	5	6	7	8	9†	10	11	12	13‡	14
1. Achievement ratings	—	.22	.28	.28	−.01	.18	.16	.42	.34	.10	.40	.08	−.06	−.08
2. Number learning		—	.33	.04	.10	.25	.22	.41	−.24	−.18	.13	.03	−.18	−.07
3. Phonetic script			—	.47	.31	.58	.34	.44	.21	.13	.22	.15	.28	.05
4. Spelling clues				—	.29	.43	.48	.40	−.04	.23	.20	−.02	.08	−.08
5. Words in sentences					—	.13	.30	.21	.17	.15	.04	−.07	.22	.03
6. Paired associates						—	.37	.53	.08	.32	.22	.13	.43	−.37
7. Same-opposites							—	.56	−.14	.16	.01	−.14	.24	.08
8. Verbal analogies								—	.14	−.05	.12	−.19	.12	.00
9. Orientation index									—	.42	.44	−.02	.01	−.04
10. Attitude scale										—	.44	.27	.28	−.03
11. Motivational-intensity											—	.24	.04	−.10
12. California *F*-scale												—	.31	.04
13. Sex													—	.14
14. Audience sensitivity scale														—

*It was not possible with the testing time given us to have *Ss* complete all parts of the Foreign Language Aptitude Test (Variables 2–6). A different test of the battery was omitted for each school class. Consequently, the total *N* is reduced by approximately 20 for all correlations involving these variables.

†Biserial correlations are positive if the integratively oriented *Ss* obtained a higher mean score on the continuous variables than did those instrumentally oriented.

‡Biserial correlations are positive if the females scored higher on the tests.

Four factors (see Table II) were extracted by Thurstone's centroid method (17). Graphical representations of these factors plotted two at a time indicated that no meaningful rotation could be obtained with the fourth factor, and this factor was subsequently omitted in the rotations. Examination of the plots of the first three factors suggested that an orthogonal solution was warranted, and that little could be gained with oblique rotations. The rotated factor loadings are given in Table III.

TABLE II

CENTROID FACTOR MATRIX

Measures	I	II	III	IV	Communalities
1. Achievement ratings	.47	.11	−.46	.20	.49
2. Number learning	.26	−.39	−.27	.30	.39
3. Phonetic Script	.70	−.17	.10	.13	.55
4. Spelling clues	.56	−.26	.18	−.16	.44
5. Words in sentences	.35	−.13	.16	−.09	.17
6. Paired associates	.76	−.22	.11	−.12	.65
7. Same-opposites	.50	−.40	.20	.10	.46
8. Verbal analogies	.60	−.41	−.24	.22	.64
9. Orientation index	.30	.46	−.26	−.25	.43
10. Attitude scale	.45	.48	.24	−.30	.58
11. Motivational-intensity	.50	.46	−.30	−.08	.55
12. California *F*-scale	.17	.40	.24	.26	.31
13. Sex	.34	.11	.55	.17	.46
14. Audience sensitivity scale	−.13	.09	.19	.42	.24

TABLE III

ROTATED FACTOR MATRIX
(ORTHOGONAL)

Measures	I	II	III	IV	Communalities
1. Achievement ratings	.30	.55	−.23	.20	.49
2. Number learning	.45	.00	−.31	.30	.39
3. Phonetic script	.66	.21	.24	.13	55
4. Spelling clues	.60	.20	−.08	−.16	.43
5. Words in sentences	.36	.02	.20	−.09	.17
6. Paired associates	.73	.20	.24	−.12	.64
7. Same-opposites	.64	−.10	.18	.10	.46
8. Verbal analogies	.73	.15	−.19	.22	.64
9. Orientation index	−.05	.60	.03	−.25	.43
10. Attitude scale	.05	.47	.52	−.30	.59
11. Motivational-intensity	.10	.73	.06	−.08	.55
12. California *F*-scale	−.12	.26	.41	.26	.31
13. Sex	.19	.00	.62	.17	.45
14. Audience sensitivity scale	−.16	−.10	.16	.42	.24

The factor analysis indicates that two independent factors are related to achievement in French. Factor I has its highest loadings on Tests 1–8. Test 1 is the criterion, suggesting that the others measure some component related to achievement in French. Tests 7 and 8 are the two indices of verbal intelligence while Tests 2–6 are the subscales from the language aptitude battery. Factor I, therefore, is clearly a *linguistic aptitude* factor.

It should be noted that the high loadings of the verbal intelligence tests on this factor lend support to the findings of Wittenborn and Larsen (**20**) that intelligence and language aptitude are factorially similar.

Factor II derives its highest loadings from Tests 1, 9, 10, and 11. Since the criterion is substantially loaded on this factor, the latter three variables must be considered important for the successful acquisition of a second language. Examination of these three variables suggests that Factor II should be defined as a *motivation* factor. It should be emphasized however that this denotes a motivation of a particular type, *characterized by a willingness to be like valued members of the language community.*

These results indicate, therefore, that two components are related to second-language achievement. That this is not an artifact of the factorial rotations is substantiated by examining those tests which produce the maximum multiple correlation with the criterion. Four tests (8, 11, 9, and 5) were selected by the Wherry-Doolittle test selection technique (**15**) which yielded the maximum multiple correlation of 0.558. These tests are equally divided between the two factors indicating the bidimensional character of the variables associated with second-language achievement.

In an exploratory study such as this, it is not advisable to pay too much attention to relatively small differences in the magnitude of specific factor loadings. The important result is that two factors, not one as previously presumed, are associated with second-language achievement. Furthermore, the variables constituting the "new" factor have an empirical as well as a theoretical basis. The significant positive correlation between the orientation index and achievement in French indicates that the integratively oriented students are generally more successful in acquiring French than those who are instrumentally oriented. Further, the students with the integrative orientation have more favourable attitudes towards members of the French group and are more strongly motivated to acquire their language. Although we favour the view that a strong motivation to learn a second language follows from a desire to be accepted as a member of the new linguistic community (cf. **12**), the correlation technique does not permit us to be completely certain of such an interpretation. However, with the demonstration presented here of the importance of the "motivational factor," further study of the integrative orientation can incorporate experimental procedures to determine the actual causal sequence of events.

Summary

Montreal high school students studying French as a second language completed a battery of tests including measures of linguistic aptitude, verbal intelligence, and various attitudinal and motivational characteristics. Analysis of the intercorrelations

of these tests yielded two orthogonal factors equally related to ratings of achievement in French: a "linguistic aptitude" and a "motivational" factor. It was also found that maximum prediction of success in second-language acquisition was obtained from tests of: verbal intelligence, intensity of motivation to learn the other language, students' purposes in studying that language, and one index of linguistic aptitude.

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