Investigating a causal model of second language acquisition: Where does personality fit?

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ABSTRACT

The purpose of this study was to determine the role of personality variables in second language acquisition and then to integrate such variables into an adapted version of Gardner's socio-educational model which was tested using LISREL causal modeling. A total of 88 first-year university students of French were assessed on measures of language aptitude, attitudes, motivation, French achievement, self-perceptions of proficiency in French, and personality traits. The latent variables in the model included Language Aptitude, Self-Confidence with the second language, Integrativeness, Attitude towards the Learning Situation, Motivation, Situational Anxiety, and two personality constructs labelled Analytic Orientation and Seriousness. The final model is discussed in light of previous models of second language acquisition.

A considerable amount of research has demonstrated the relation of language aptitude, motivation, and attitudes to achievement in a second language (see, for example, Gardner & Lambert, 1972). Although personality traits have also been hypothesized to be important, past research has produced equivocal results. This article considers the possible role played by personality variables in second-language acquisition,and provides an empirical test of a causal model linking personality variables with language aptitude, attitudes, motivation and second language achievement.

A number of studies have examined the role of personality variables in second language learning (see bibliography by Hodge, 1978). Early discussions of potential personality characteristics of successful second language learners tended to discern two types, the introvert and the extrovert (Dunkel, 1947; Kawczynski, 1951; Valette, 1964). Studies examining this implied dimension of sociability, however, have provided *no consistent pattern of results concerning the role of* sociability in second language acquisition (see Chastain, 1975; Naiman, Frolich, Stern & Todesco, 1978; Pritchard, 1952; Smart, Elton & Burnett, 1970; Swain & Burnaby, 1976).

Other studies focusing on personality variables have generally yielded mixed results. Variables receiving the bulk of attention have been empathy (see, for example, Guiora & Acton, 1979), anxiety (for a review see Scovel, 1978),

creativity (Chastain, 1975), field dependence/independence (Hansen & Stanfield, 1981; Naiman et al., 1978) and deliberateness and emotionality (Oskarsson, 1975). Such variables have often been included in studies investigating a number of personality measures simultaneously, and relationships for the same variables are not consistent from study to study. Based on such research, there is little reason to conclude that personality variables are directly implicated to any great extent in second language acquisition. This conclusion is reinforced by a study conducted by Leino (1972) who found that whereas a reasoning type of verbal ability accounted for 35% of the variance in English achievement, personality variables as a group accounted for only an additional 7%.

Some theorists have attempted to relate personality to attitudinal-motivational variables involved in second language learning. Both Krashen (1981), and Rivers (1964), postulated that personality factors would relate to motivational variables. Krashen suggests, for example, that an individual who has an "analytic orientation" should do better in conscious learning and should show a more favourable attitude towards the general language learning context than those without such an orientation. He also hypothesizes that traits relating to self-confidence (i.e., lack of anxiety, outgoing personality, self-esteem) will relate to second language acquisition. Clément (1980) adopts a similar position, proposing that self-confidence will be important in multicultural settings where contact with members of other ethnic groups is possible.

Following this lead, one purpose of the present investigation was to examine the correlations of a series of personality traits with measures of attitudes, motivation, language aptitude and second language achievement. Because of the past research, it was expected that few of the personality measures would correlate highly with indices of second language achievement. It did seem possible, however, that many of these personality traits would be related to attitudinal and motivational characteristics (cf., Krashen, 1981; Rivers, 1964). No predictions were possible with respect to the correlation of personality with language aptitude. By investigating the simple correlations of a series of personality traits with measures of second language achievement, attitudes, motivation, and language aptitude it was felt that more light would be thrown on the role of personality variables in second language learning.

The second and major purpose of this study was to test a causal model of second language acquisition integrating personality variables. The basis for the model was Gardner's (1979, 1981) socio-educational model of second language acquisition. This model posits two individual difference variables (Motivation, i.e., the individual's drive to learn the language, and Language Aptitude) to have direct causal influences on second language acquisition, while two attitudinal constructs (Integrativeness, i.e., a positive orientation toward the target language group and other groups in general, and Attitude toward the Learning Situation)

are seen as causes of motivation. These relationships have been demonstrated in a number of correlational studies and more recently in a causal modeling study (Gardner, Lalonde & Pierson, 1983). It was expected that personality variables would enter the model primarily as causes of attitudes and motivation. Although there are potentially many personality constructs that may be considered, attention was directed to two which may be important in this role. Both of these derive from Krashen's (1981) conceptualization of personality in second language acquisition.

Krashen proposes that the individual with an "analytic orientation" will more readily process information dealing with the language, and thus develop more favourable attitudes towards the language learning context. This conceptualization suggests that two personality constructs will influence different attitudinal and motivational characteristics. On the one hand, the student who is serious about his/her education and about learning the language, will evidence heightened levels of motivation. Since this study involved university students it was expected that traits conducive to formal study in an academic setting would be causally linked to motivation. Personality attributes believed to underly such seriousness would include achievement motivation, a need for organization, responsibility, etc. On the other hand, Krashen's analysis suggests that individuals with an analytic orientation will be open to new ideas, flexible, broad minded, etc. It was thus expected that personality variables reflecting this aspect of the orientation would be related to attitudinal reactions involving the other language group as reflected in the concept of Integrativeness. This interpretation of Krashen's (1981) concept of analytic orientation and its relationship with attitudinal and motivational variables captures his later formulated affective filter hypothesis (Krashen, 1982) which postulates individual differences at an affective level which open or close the individual to input in the second language learning situation.

Also of interest in the model will be the individual's level of self-confidence in the second language learning situation. Though arguably not a personality trait as such, it is seen as having a significant influence on actual achievement (Clément, 1980; Krashen, 1981). This model will be more fully elaborated in the results section and will demonstrate where personality fits into second language acquisition.

METHOD

Subjects

A total of 88 subjects enrolled in one of three levels of introductory French at the University of Western Ontario participated in this study. Credits were given to students for whom participation in psychological experiments was required.

Procedure

Subjects were tested in small groups. They first completed the Modern Language Aptitude Test and

the French Listening Comprehension Test. These were followed by a series of timed French achievement measures (Variables 5-11), a questionnaire made up of measures of attitudes and motivation (Variables 15-23), items from Jackson's (1974) Personality Research Form (Variables 24, 25, 31, & 39), and measures of self-perceptions of French proficiency (Variables 12-14). The final questionnaire given was the Jackson Personality Inventory (1978).

Materials

Language aptitude was assessed using the short form of the Modern Language Aptitude Test (MLAT) (Carroll & Sapon, 1959). The short form consists of the following three subtests:
1. Spelling Clues (SPC): This 50-item test measures knowledge of English as well as sound-symbol association ability.
2. Words in sentences (WIS): This subtest consists of 45 items and measures grammatical sensitivity.
3. Paired associates (PDA): This subtest consists of 24 items and measures rote memory.
   The following tests assessed French achievement.
4. French Listening Comprehension Test (FLCT): The FLCT (1965) consists of 36 multiple choice items tapping aural skills.
5. Cloze test (CLZ): This test, designed to assess knowledge of vocabulary and sentence structure, consisted of a short paragraph (250 words) in French from which every fifth word was deleted. Ss wrote in the missing items.
6. Thing Category Test (TCT): This test was based on an English test developed by French, Ekstrom, and Price (1963). It required Ss to list as many things as possible belonging to a particular category (i.e., vegetables) and was used to measure French vocabulary knowledge and production.
   The following four measures were derived from a French equivalent of the "Theme Test" (French, et al., 1963). Ss had to write a composition on a given topic (i.e., summer) in a time period of 10 minutes.
7. Word production (WPR): The number of words written in the composition was counted and used as an index of vocabulary production.
8. Grammatical sensitivity and spelling (GRM): Each composition was rated on a 7-point scale from 1 (poor) to 7 (very good) for grammar (e.g., verb tense, gender, etc.) and spelling.
9. Writing style (STY): Compositions were rated on the same 7-point scale for sentence structure, clear presentation of ideas, and absence of redundancy.
10. Vocabulary knowledge (VOC): The compositions were rated on a 7-point scale assessing the extent and complexity of vocabulary.
11. Live French test (LIV): This test was developed in order to tap the interactive process which arises in a conversational setting. A series of questions of increasing difficulty were asked in French by the experimenter and the Ss had 10 seconds in which to give a short written response to each, in French.
    Variables 12 through 14 were self-perceptions of French proficiency as adapted from the CANDO scales (Clark, 1981). For each variable, Ss were presented with 5 hypothetical situations varying in difficulty and were asked to indicate on a 5-point scale how well they would perform (1: not at all, 5: quite easily).
12. Self-perception of speaking proficiency (SRS)
13. Self-perception of reading proficiency (SRR)
14. Self-perception of listening proficiency (SRL)
    The following seven variables were assessed by means of 7-point Likert scales which ranged from strong disagreement (-3) to strong agreement ($+3$). All scales were adapted from the Attitude and Motivation Test Battery (Gardner, Clément, Smythe & Smythe, 1979). Variables 15, 16, 18, 19, and 20 had an equal number of positively and negatively worded items.
15. Interest in Foreign Languages (IFL): This 10-item scale assessed an Ss interest in studying foreign languages in general.

16. Attitude towards French Canadians (AFC): The scale consisted of 10 items, and a high score indicated positive attitudes.

17. Integrative Orientation (INO): Four positively worded items emphasized the importance of studying French in order to enhance interaction with the French Canadian community.

18. Attitude towards Learning French (ALF): Ten items assessed this attitude.

19. Motivational Intensity (MI): This measure consisted of 10 items which were designed to measure the effort expended to learn French in terms of work done for classroom assignments, etc.

20. French Class Anxiety (FCA): Six items assessed the degree of discomfort while participating in the French class.

21. Degree of Instrumentality (INS): Four items emphasized the pragmatic or instrumental value of learning French.

Two additional measures were based on semantic differential ratings.

22. Evaluation of the French Course (COU): General evaluative reactions were assessed with 10 semantic differential scales.

23. Evaluation of the French Instructor (TEA): Ratings on 10 items assessed the student's general evaluative reactions to the French teacher.

Personality measures were taken from the Jackson Personality Inventory (Jackson, 1978) and the Personality Research Form (Jackson, 1974). Variables 24, 25, 31, 39 were taken from the PRF and were shortened and transformed into Likert format. Most of the following scales are self-descriptive and detailed descriptions along with concurrent validity coefficients involving self and peer ratings may be found in Jackson (1974, 1978).

24. Achievement (ACH): This trait is indicative of someone who maintains high standards and who is motivated to attain excellence.

25. Aggression (AGG): The individual possessing this trait is quarrelsome, antagonistic and re-vengeful.

26. Anxiety (ANX): The person having this trait tends to be easily upset, tense and restless.

27. Breadth of interest (BOI): Such an individual is motivated to participate in a wide variety of activities and learning situations.

28. Complexity (CPX): This individual is interested in intricate problems and is impatient with oversimplification.

29. Conformity (CFT): This trait is representative of someone who is susceptible to social influence and group pressures.

30. Energy level (ENL): This measure is representative of an active and spirited individual who does not tire easily.

31. Impulsivity (IMP): This trait is characteristic of an uninhibited person who acts on the spur of the moment.

32. Innovation (INV): This individual is creative, motivated to develop novel solutions to problems, and values new ideas.

33. Interpersonal affect (IAF): This measure depicts someone who identifies closely with other people and their problems.

34. Organization (ORG): This trait portrays the efficient and systematic individual.

35. Responsibility (RES): The responsible individual feels a strong obligation to be honest and has a sense of duty.

36. Risk-taking (RSK): This trait is indicative of someone who is venturesome, daring, rash, and who enjoys taking chances.

37. Self-esteem (SES): Such a person is self-assured and confident.

38. Social adroitness (SCA): This individual is skilful at persuading others to achieve a particular goal.

39. Social desirability (SD): The person with this trait tends to respond to items presenting a favourable picture of him/herself.

40. Social participation (SPT): This trait represents the sociable, friendly, and gregarious individual.
41. Tolerance (TOL): This individual accepts people even though their beliefs and customs may differ from his/her own.
42. Value orthodoxy (VAO): The person possessing this trait is traditional, moralistic, and conventional.

RESULTS AND DISCUSSION

Correlational Analysis
Scores were standardized within courses to eliminate differences due to course level. In order to assess the relationship between personality variables and French achievement, language aptitude, attitudes and motivation, these latter measures were collapsed into composites. French achievement refers to the sum of scores on the eight objective measures of French achievement; Self-Perception of French Proficiency is the sum of the CANDO measures; and Aptitude is the sum of the three subtests of the MLAT. The three composite measures of attitudes and motivation have been used previously as important predictors of second language proficiency (Gardner et al., 1979). They are Integrativeness (the sum of scores on Interest in Foreign Languages, Attitude towards French Canadians, and Integrative Orientation), Motivation (Attitude towards Learning French plus Motivational Intensity), and Attitude towards the Learning Situation (the sum of teacher and course evaluations).

As can be seen in Table 1, there is a general lack of relationship between personality variables and objective measures of French achievement, self-ratings of French proficiency or language aptitude. The only significant relationship with achievement was a negative correlation with innovation, while only organization and self-esteem correlated significantly with self-perceptions of proficiency. None of the personality variables correlated significantly with language aptitude.

Krashen (1981) and Rivers (1964) have proposed that some personality variables would relate to some attitudinal/motivational variables and this is supported by the results in Table 1. Nine personality variables correlate significantly with Integrativeness. Individuals high on Integrativeness tend also to be high on Achievement, Breadth of interest, Complexity, Organization, Responsibility, Self-esteem, and Social desirability, and low on Conformity and Impulsivity. Of these, Breadth of interest and Complexity reflect the concept of "analytic orientation", since an individual possessing such traits is interested in experiencing new things and enjoys complex analysis and abstract thought. Similarly, conformity appears to reflect the negative aspect of an analytic orientation.

Eight personality measures correlate significantly with Motivation. Individuals who are highly motivated to learn French tend also to be high on Achievement, Breadth of interest, Organization, Responsibility, Self-esteem, and Social desirability, and low on Aggression and Impulsivity. Four of these traits (i.e., achievement, low impulsivity, organization and responsibility) appear to reflect

TABLE 1

Correlations between personality variables and composite measures

	ACH	SPP	APT	INT	MOT	ALS
Achievement	.03	.06	.10	.43**	.41**	.16
Aggression	.06	.08	−.00	−.19	−.25*	−.30**
Anxiety	−.08	−.03	−.14	−.09	−.04	−.08
Breadth of Interest	−.18	.01	.09	.40**	.23*	.14
Complexity	−.16	−.12	.08	.37**	.08	−.08
Conformity	−.03	−.12	−.15	−.27**	−.15	−.04
Energy Level	−.12	.07	.08	.18	.17	.03
Impulsivity	−.00	−.15	−.09	−.26*	−.31**	−.15
Innovation	−.36**	−.11	−.00	.18	.14	−.05
Interpersonal Affect	−.16	−.11	.12	.20	.14	.01
Organization	.18	.41**	−.13	.24*	.40**	.23*
Responsibility	−.09	.07	.17	.31**	.37**	.18
Risk Taking	−.07	.01	−.12	−.17	−.15	−.29**
Self Esteem	−.13	.24*	.08	.23*	.26*	.02
Social Adroitness	.15	.15	.09	.08	.10	.11
Social Desirability	.06	.17	.18	.42**	.50**	.22*
Social Participation	.02	−.12	.11	−.12	−.04	.11
Tolerance	−.02	−.11	.17	.14	.11	.02
Value Orthodoxy	−.10	.09	−.13	.09	.18	.20

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

NOTE: Boldface correlations are those which are significant at the .05 level when controlling the type I error familywise using a multistage Bonferroni procedure treating each composite measure as a family (cf., Larzelere & Mulaik, 1977).

ACH = Total Achievement; SPP = Self Perceptions of Proficiency; APT = Aptitude; INT = Integrativeness; MOT = Motivation; ALS = Attitude towards the Learning Situation.

what was earlier termed the seriousness dimension underlying Krashen's concept of analytic orientation. That is, individuals with these attributes would use time and energy effectively, work hard, strive for excellence, not act hastily, and feel an obligation towards their work.

Four personality variables correlated significantly with Attitudes toward the Learning Situation. Students with favourable attitudes tended to be high on Organization and Social desirability and low on Aggression and Risk taking.

This correlational analysis demonstrates very little relation between personality traits and measures of French achievement, self-perceptions of French proficiency, or language aptitude, though there were many meaningful relations with measures of attitudes and motivation. Furthermore, there were two clusters of personality attributes which seem to account for the bulk of the relationships. These were tentatively labelled as analytic orientation and seriousness. Their potential role in the second language learning process will be investigated more fully in the following causal model.

Investigation of a causal model

The model involves nine concepts. As initially formulated, two major person-

ality constructs, an analytic orientation and seriousness,[1] are believed to under-score attitudes and motivation associated with second language learning. Specif-ically, it was expected that an analytic orientation would be causally linked with integrativeness while seriousness would be causally associated with motivation. As in Gardner's (1979, 1981) socio-educational model, motivation is seen to be caused by integrativeness and attitudes towards the learning situation.[2] In the present version it was further hypothesized that high levels of motivation would cause both an absence of French classroom anxiety and an increase in self-confidence with French, and that this self-confidence, along with language apti-tude, would be directly responsible for individual differences in French achieve-ment.

The notion of self-confidence is not treated in Gardner's model though it is an important construct in the models of Clément (1980) and Krashen (1981). Clément has discussed self-confidence in terms of the quantity and quality of contact with members of the target language group in a multicultural setting and he sees self-confidence as influencing an individual's motivation to learn the language. Krashen views self-confidence as a reflection of various personality traits. In the present context, self-confidence is treated simply as a self-report of French proficiency. The concept differs, therefore, from Clément's formulation of self-confidence as a motivational support and from Krashen's concept of a personality composite.
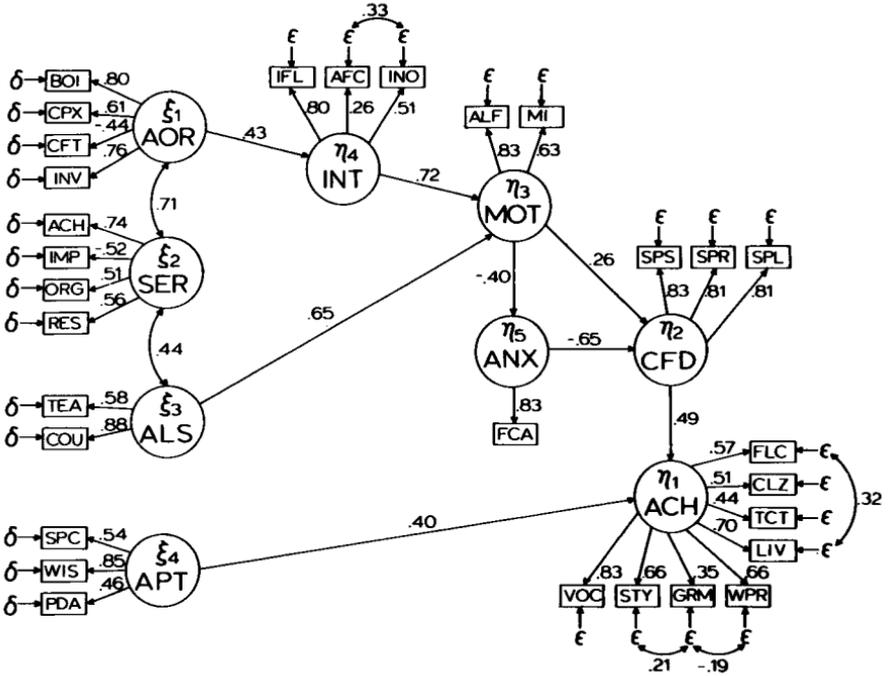
The adequacy of this model was assessed using causal modeling procedures (Joreskög & Sorbom, 1978). In this approach, the various measures (referred to as indicator variables) are hypothesized to assess different constructs. These constructs are then hypothesized to form a particular causal pattern, as described above, which is referred to as the structural model. In order to test this model, the correlations among the 30 indicator variables were analyzed using the LIS-REL IV program (Joreskög & Sorbom, 1978). The program was used following a procedure recommended by Lomax (1982) which enables the researcher to generate an optimal measurement model in terms of the initially hypothesized model, and then to determine systematically any changes which may be needed in the structural model to improve its fit to the data.

The final model is presented in Figure 1, with summary statistics and a legend

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[1] The indicator variables for these latent variables were chosen in part on the basis of factor analyses examining the relationships of personality measures used in this study. Some of these data are reported in Lalonde, R. (1982). *Second language acquisition: A causal analysis.* Unpublished master's thesis, University of Western Ontario, London, Canada.

[2] It should be noted that these three latent variables are not identical with the composite variables of the same name used previously. A composite variable is a sum of the components defining it, whereas a latent varible is a factor identified by the weighted components.

Final obtained model of second language acquisition

describing the model in Table 2.[3] Paths indicated were the only ones which were significant. Before a discussion of this model is undertaken in any detail, a comparison with the initial model seems necessary.

Only one path of the proposed model was not found in the final model, that being the path linking seriousness to motivation. Although many of the correlations between indicator variables defining these two latent variables were significant, it appears that these reflect an indirect relationship between seriousness and motivation rather than a direct one. This indirect relationship results because of the significant correlation between seriousness and analytic orientation ($\phi = .71$, $p < .01$), as well as between seriousness and attitude towards the learning situation ($\phi = .44$, $p < .01$). Although analytic orientation is not directly linked with motivation, it is causally related to integrativeness which in turn affects motivation. Thus, both latent personality variables have indirect causal connections with motivation, supporting Krashen's (1981) view that "personality factors are interrelated with motivational factors" (p. 23). The final model therefore does not differ substantially from the proposed model, and the

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[3] The correlation matrix of the 30 indicator variables is available upon request to the first author.

TABLE 2

Factor-standardized parameter estimates

Measurement model parameters			
Indicator variables	Latent variable	Factor loading	Error variance
Independent variables			
Breadth of Interest		.80**	.37
Complexity	Analytic Orientation	.61**	.63
Conformity		−.44**	.81
Innovation		.76[a]	.42
Achievement		.74**	.48
Impulsivity	Seriousness	−.52	.74
Organization		.51	.75
Responsibility		.56**	.70
Instructor Evaluation	Attitude towards	.58**	.67
Course Evaluation	Learning Situation	.88	.23
Spelling Clues		.54**	.71
Words in Sentences	Aptitude	.85	.28
Paired Associates		.46**	.79
Dependent variables			
French Listening Comprehension Test		.57**	.68
Cloze Test		.51**	.75
Thing Category Test		.44**	.81
Live French Test	French Achievement	.70	.52
Word Production		.66**	.57
Grammatical Sensitivity & Spelling		.35**	.87
Style		.66**	.57
Knowledge of Vocabulary		.83**	.32
Self-Perception Speaking	Self-Perceptions	.83	.29
Self-Perception Reading	Proficiency	.81**	.32
Self-Perception Listening		.81**	.32
Attitude towards Learning French			
Motivation		.83	.21
Motivational Intensity		.63**	.54
Interest in Foreign Languages		.80	.36
Attitude towards French Canadians	Integrativeness	.26*	.93
Degree of Integrativeness		.51**	.74
French Class Anxiety	Situational Anxiety	.83	.30

Structural model parameters		
Parameter	Regression coefficient	Critical ratio
β12	.49	3.99**
β23	.26	2.23
β25	−.65	−4.82
β34	.72	4.78**
β53	−.40	−2.97**
γ14	.40	2.85**
γ33	.65	5.26**
γ41	.43	2.91**
	Correlation	
φ12 (CC × SER)	.71	3.26**
φ23 (SER × ALS)	.44	2.83**

TABLE 2 (Continued)

Factor-standardized parameter estimates

Parameter	Structural model parameters Regression coefficient	Critical ratio
θε (FLC × LIV)	.32	3.81**
θε (WPR × GRM)	−.19	−2.33*
θε (GRM × STY)	.21	2.38*
θε (AFC × INO)	.33	3.18**

*p < .05.
**p < .01.
[a] Factor loading with significance levels not indicated were fixed in the analysis and standardized in the final solution.

proposed relationship between seriousness and motivation still exists but in a mediated fashion.

It can be seen in Figure 1 as well as in Table 2 that all factor loadings of indicator variables on their respective latent variables are significant, indicating that all measured variables are representative of the construct to which they are linked.[4] With regard to the obtained structural model, both attitudinal constructs (ALS & INT) were causally linked to motivation, thus supporting the proposition that social attitudes are relevant to second language acquisition primarily because they serve as motivational supports (Gardner, 1981). The same causal links were also found in a previous causal modeling study (Gardner et al., 1983). The model also demonstrates that personality variables cause social attitudes. This is demonstrated by the causal link between analytic orientation and integrativeness, as well as suggested by the correlation between seriousness and attitude towards the learning situation. The above relationships demonstrate the complex interplay of variables involved in second language acquisition, and indicate how misleading it can be to study personality in a paradigm where only the relationship with second language achievement is examined.

Although it was demonstrated that the individual difference variable of language aptitude was causally linked to French achievement, the relationships existing between motivation and achievement as well as between situational anxiety and achievement are more complex than Gardner (1979) proposed. As was hypothesized for the present model, both motivation and situational anxiety were mediated by self-confidence in French in their relationship with French achievement. The present data therefore suggest that motivation and situational

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[4] Correlated measurement errors are also observed, as indicated by the bidirectional arrows linking the epsilons (ε, measurement errors for the endogenous indicator variables). Correlated measurement error was allowed only where indicator variables shared common method variance. The critical ratios for the correlations between the epsilons were significant and can be found in Table 3.

anxiety determine the way students feel about their level of proficiency, and this confidence influences French achievement. The causal link between motivation and anxiety suggests, furthermore, that the more motivated individual will feel less anxious about the French learning situation and therefore have more self-confidence in his/her capabilities.

Contrary to the present results, the Gardner et al. (1983) causal modeling study found motivation to be a direct cause of French achievement. In their study a "Self-rating of French Skills" measure was used as one of the indicators of French achievement. It is possible, therefore, that the causal association between motivation and achievement which was obtained was due to a confounding of French achievement with self-confidence. One possible implication of these divergent results will be that future studies should distinguish self-perceptions of proficiency from direct assessments of achievement.

In addition to estimating coefficients and their levels of significance for the various components in the proposed model, the LISREL IV program provides a χ^2 test of goodness of fit. The present model has a χ^2 value of 554.99 at 392 df ($p < .001$), suggesting that the model does not completely account for the correlation matrix. Wheaton, Muthen, Alwin and Summers (1977) suggest, however, that if the ratio of χ^2 to degrees of freedom is less than 5.0, the model provides an adequate fit. The χ^2/df ratio for the present analysis was 1.42, indicating a relatively good fit, although other models may be proposed which also provide an adequate fit of the data. The presented model is also supported by the fact that many of the significant paths found replicate the Gardner et al. (1983) study.

The model therefore supports previous theoretical formulations concerning second language acquisition, but expands on them by demonstrating the role that personality variables play. The present results have important implications for future research examining personality in the second language acquisition context. Hypothesizing personality traits to be directly related to second language achievement may lead researchers to obtain less than encouraging results, and as a consequence the role of such variables may be underestimated. When these traits are examined along with other variables relevant to the learning process (i.e., attitudes and motivation), encouraging results are obtained.

The resulting causal analysis has two implications with regard to future research. From a methodological viewpoint, it has demonstrated that causal modeling is a useful tool when conducting multivariate analyses and testing theoretical models. From a substantive point of view, it has suggested that objective measures of French achievement, and self-report indices are tapping constructs which are sufficiently distinct to warrant them being considered uniquely. Future research should give serious attention to the process of construct identification involving such variables. The results of this study clearly demonstrate that causal modeling procedures can provide us with a more complete understanding of

second language acquisition, while allowing us to consider both conceptual and measurement issues simultaneously.

RESUME

Le but de cette étude était de déterminer le rôle de variables de personnalité dans l'acquisition d'une langue seconde et d'intégrer ces variables dans une adaptation du modèle socio-pédagogique de Gardner. Le modèle fut testé utilisant le programme LISREL. Les mesures suivantes furent prises de 88 étudiants universitaires en première année de francais: l'aptitude langagier, la motivation, les attitudes, la performance en francais, l'auto-évaluation de la compétence en français, et plusieurs traits de personnalité. Les variables latentes définissant 'le modèle étaient, l'aptitude langagier, la confiance en soi dans la langue seconde, le désir d'intégration, l'attitude à l'égard du milieu d'apprentissage, la motivation, l'anxiété situationnelle, et deux construits de personnalité, soit, une orientation analytique et le degré de serieux. Le modèle finale est discuté dans le cadre de modèles antécédents traitants de l'acquisition d'une langue seconde.

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