Using Social-psychological Variables to Predict The Use of Language Learning Strategies

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ABSTRACT *Much of the interest in language learning strategies stems from the findings that such strategies facilitate language learning and may be teachable; however, several authors have concluded that students do not use as many strategies as they could. A recent social-psychological model proposes that strategy use depends on knowledge of appropriate strategies, having a reason to use them, and having nothing to prevent their use. The present study attempted to use variables defined by this model to predict the frequency of use for 50 language learning strategies. Results showed that, on average, the model accounted for 60 percent of the variance in strategy use and that all three components of the model were supported for 72 percent of the strategies. Further analyses revealed that integrative motivation and language anxiety play a role in overall strategy use and the use of certain types of strategies, as well as the ratings of knowledge, effectiveness, difficulty, and anxiety caused by strategy use.*

Learning strategies are commonly defined as steps taken to facilitate the acquisition, storage, retrieval, and use of information (Ehrman and Oxford 1989). Even a cursory examination of the list of potential language learning strategies suggests that almost any tactic or plan that a learner believes will assist her/him in acquiring some part of the language, or in managing the language learning process, can be considered a strategy (MacIntyre 1994). The topic of language learning strategies has received considerable attention in recent years. Several reviews of the literature are available for teachers and researchers (Chamot and Kupper 1989; Cohen 1990; Oxford and Crookall 1989; Oxford, Lavine, and Crookall 1989) and language learners (Brown 1989; Rubin and Thompson 1982). The most enduring conclusion from these various sources is that a variety of language learning strategies have the potential to facilitate language learning.

Language learning strategies cover a wide range of behavior. For example, the Strategy Inventory for Language Learning (Oxford 1990) lists 80 items, each of which is a different strategy. A basic distinction can be made between direct and indirect strategies. Oxford (1989) defines direct strategies as "... those behaviors which directly involve the target language and directly enhance language learning" (449). Such strategies are used to facilitate the recall of vocabulary items, the processing of language input, and preparing for language output and allow one to "fill in the gaps" in knowledge. Indirect strategies are defined as "... those behaviors which do not directly involve the target language but which are nevertheless essential for effective language learning" (450). These strategies help manage the process of learning, control emotions, attitudes, and motivation, and encourage learning with others.

A more detailed classification scheme has been presented by Oxford (1989). According to this scheme, direct strategies encompass memory (e.g., rhyming, imagery), cognitive

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(e.g., analyzing, summarizing), and compensation strategies (e.g., guessing meaning, using gestures). Indirect strategies are comprised of metacognitive (e.g., planning tasks, monitoring errors), affective (e.g., anxiety reduction, self-reward), and social strategies (e.g., asking questions, increasing cultural awareness). Oxford and Burry-Stock (forthcoming) review a number of studies that have used the 50-item ESL/EFL version of the Strategy Inventory for Language Learning (SILL) that will be used in the present study. Whereas they observed variations depending on culture and learning context, overall, using these six groups of strategies appears to be a useful way of classifying strategies.

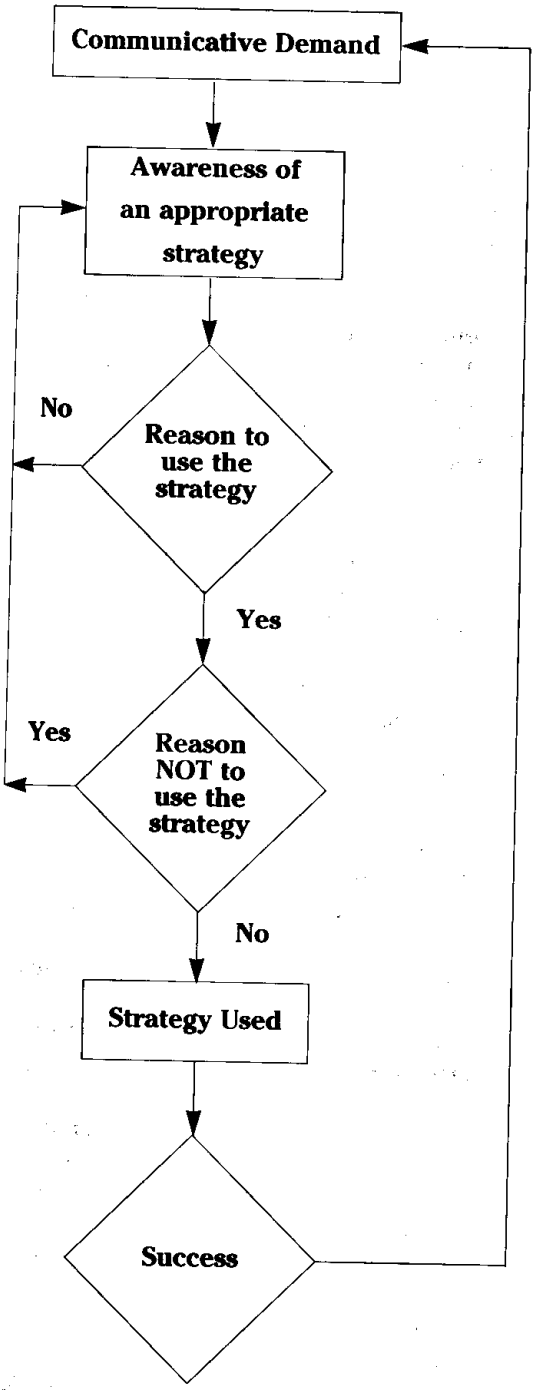
With a strong conceptual and empirical basis for strategy research, there appears to be little doubt that the use of learning strategies tends to facilitate language learning (Oxford and Crookall 1989). Much of the interest in this topic stems from the possibility of training language learners to use specific strategies that will facilitate the language learning. There is evidence that strategies can be taught and that such teaching increases performance in the second language process (Chamot 1990; for a review, see Dörnyei 1995). However, it is a truism that *strategies cannot be effective if learners do not use them.* Given this, several authors have reached an interesting, and somewhat unfortunate, conclusion: typically, students are not using the full range of appropriate strategies and are not aware of the available strategies that they could be using (Cohen 1990; Ehrman and Oxford 1989; Oxford and Crookall 1989). Therefore, one focus in the literature has been on the factors that contribute to, or detract from, the use of language learning strategies.

The use of any given strategy likely depends on several factors, such as gender (Oxford, Nyikos, and Ehrman 1988), intelligence, aptitude, and exposure to the language (Oxford 1990). Chamot (1990) suggests that cultural background or prior educational experiences also may influence the use of certain strategies. In addition, Gardner and MacIntyre (1992) argue that "... affective attributes are quite likely responsible for the use of both direct and indirect strategies" (219). Consistent with this suggestion, Oxford and Nyikos (1989) found that motivation was the best predictor of strategy use in a large-scale study of university students.

A recent model has proposed that social-psychological variables play a key role in the use of language learning strategies (MacIntyre 1994). The model is shown in Figure 1. According to this social-psychological model, strategy use primarily depends on three general factors: knowledge of the strategy, having a reason to use it, and not having a reason not to use it. *Knowledge* refers to the observation that strategies are tactics or plans that are employed in an attempt to aid language learning. Therefore it is necessary that the student be aware of the strategy and feel that s/he understands how to use it, before it can be used and considered a strategy.[1] Knowledge of strategies will depend on a learner's intelligence, aptitude, and language learning experience. *Having a reason to use it* refers to the requirement that there must be an expectation a strategy will be successful in helping to learn the language. A student's willingness to expend effort to learn the language, having prior success with the strategy, and a facilitating set of attitudes and motivations will help to create the expectation that a strategy will be effective. The final item in the model is *not having a reason not to use it;* that is, there is nothing which prevents the use of the strategy. Even a well-known, effective strategy might still be neglected because it is difficult to use, it causes the learner to feel uneasy or self-conscious, or its use is actively discouraged (for example, some language teachers ask that students infer meanings from context rather than use a dictionary).

The present study was designed primarily as a test of this model. In order to operationalize the components of the model, specific definitions were given to each of the terms shown in Figure 1. For the present investigation, knowledge specifically refers to the degree to which the learners are familiar with a strategy and its use. The major reason to use a

FIGURE 1



strategy appears to be that it would assist language learning, that is, the strategy must be seen as effective. Thus, a rating of "effectiveness" was taken as the reason to use the strategy. It is clear that there can be several reasons not to use a particular strategy. Two general reasons were operationalized: (1) because the strategy was difficult to use and (2) because the strategy causes the learner to feel anxiety.

In addition to this micro-level analysis, a second purpose of this study is to examine the role of motivation and related variables in the use of the different types of strategies (Oxford and Burry-Stock, forthcoming). Several authors have concluded that motivation for language learning plays a key role in strategy use (Oxford and Crookall 1989; Chamot 1990). Perhaps the most influential model of language learning motivation has been proposed by Gardner and colleagues (Gardner 1985; Gardner and Lambert 1972). This model has generated a great deal of empirical research and theoretical debate, which continues at present (see critiques by Dörnyei (1994) and Oxford and Shearin (1994) and a response by Gardner and Tremblay (1994)).

The cornerstone of Gardner's model is the concept of "integrative motivation." This motivation is a multifaceted construct that is composed of three interrelated components: Attitudes toward the Learning Situation (ALS), Integrativeness, and Motivation. ALS refers to the learner's evaluation of the language course and the instructor and is defined as the degree to which the student possesses a positive attitude toward both. Integrativeness refers to the desire to meet and communicate with members of the target language community and is defined by a positive attitude toward the group, a general interest in foreign languages, and the view that meeting members of the target language community is a good reason for language learning (referred to as an "integrative orientation"). In Gardner's model, Motivation refers to the drive to learn a specific language and is defined by the amount of effort a student is willing to expend, the strength of the desire to

learn the language, and a positive attitude toward learning that language. In Gardner's (1985) view, motivation is the variable that most directly affects students' achievement in the second language, and motivation is based, in large measure, on the positivity of the attitudes toward the learning situation and the degree of integrativeness. Language anxiety, or the apprehension experienced when learning or using a second language, can be considered a fourth major affective influence on language learning (Gardner and MacIntyre 1993).

Based on this model, this study will examine the specific motivational factors that correlate with the use of different types of language learning strategies. To do this, we will examine the links between Gardner's (1985) general motivational model and the specific strategy use model proposed by MacIntyre (1994). Specifically, the correlations between ALS, Integrativeness, and Motivation with Knowledge, Reasons for Using, Reasons for Not Using, and the Frequency of Strategy Use will be computed. Such correlations may help to illuminate specific ways in which motivation affects strategy use.

Thus, the present study will address two main issues. First, as a test of the social-psychological model of strategy use (MacIntyre 1994), a number of strategies will be rated for their frequency of use, knowledge, effectiveness, anxiety, and difficulty of use. Second, we will examine the correlations between these ratings of strategy use and the major components of Gardner's model of integrative motivation.

Method

Participants

A total of 138 students agreed to be tested. The age of the participants ranged from 17 to 52 years, with a mean age of 22.2 years. The sample was comprised of 101 females and 34 males; two students did not indicate their gender. All participants were drawn from first-year courses in Spanish or Italian in the Modern Languages Department at a large university. On average, students indicated a moderate level of fluency in the language they were studying. Students were asked to rate their ability to use the second language on a scale from one ("not at all able") to seven ("fluently") in four areas: understanding (mean = 4.41), reading (mean = 4.2), writing (mean = 3.87), and speaking (mean = 3.72).

Materials

The major set of materials for the present study was adapted from Oxford's (1990) 50-item version of the SILL designed for ESL students. This measure was chosen instead of the 80-item version because of time constraints during testing. The SILL was modified so that all items referred to "the second language that you are studying in this course." The following six responses were requested for each strategy. It should be noted that all of the items refer to the respondent's personal evaluation of each strategy, rather than a rating of the strategy for students in general. Ratings were made on a seven-point Likert scale with the anchors indicated below:

1. Frequency of use. Respondents indicated how often they used each item on the SILL, using anchors "Never use it" and "Use it very often." Higher scores indicate more frequent use.
2. Knowledge. Awareness of each item was provided using the anchors "Don't know it at all" and "Know it very well." Higher scores indicate increased knowledge of the strategy.
3. Effectiveness. The rating of strategy effectiveness was given between the anchors "Consider it completely ineffective" and "Consider it very effective." Higher scores indicate greater perceived effectiveness.
4. Anxiety. The degree to which using each strategy made the student feel nervous was rated, using the anchors "Not anxious about using it" and "Feel very anxious about using it." Higher scores indicate increased anxiety arousal.
5. Difficulty. The degree of difficulty in implementing each item was rated using the anchors "Very easy for me to use" and

"Very difficult for me to use." Higher scores indicate that the strategy is considered more difficult to use.

An example item (#50) is:

"I try to learn about the culture of the people who speak the second language.

Don't know it at all	*1—2—3—4—5—6—7*	*Know it very well*
Never use it	*1—2—3—4—5—6—7*	*Use it very often*
Consider it completely ineffective	*1—2—3—4—5—6—7*	*Consider it very effective*
Not anxious about using it	*1—2—3—4—5—6—7*	*Feel very anxious using it*
Very difficult to use	*1—2—3—4—5—6—7*	*Very easy to use"*

A brief version of Gardner's Attitudes and Motivation Test Battery (AMTB) was also included (Gardner and MacIntyre 1993). This "Guilford-style" instrument measured the 10 major variables in Gardner's Attitude/Motivation Test Battery using single-item indicators. Gardner and MacIntyre (1993) have shown that, despite the potential problems with single-item measures, this instrument has acceptable concurrent and predictive validity. The items were used to form the following variables:

6. Attitudes toward the Learning Situation (two items). This refers to the students' evaluation of the teacher and the language course. An example item is:

"If I were to rate my attitude toward my second language course, I would say that it is:
Unfavorable__:__:__:__:__:__:__Favorable"

7. Motivation (three items). Motivation refers to the desire to learn the new language and the amount of effort invested in learning it. An example item is:

"If I were to rate how hard I work at learning my second language, I would characterize it as:
Very Little__:__:__:__:__:__:__Very Much"

8. Integrativeness (three items). Integrativeness refers to the desire to meet and communicate with members of the target language community. An example item is:

"If I were to rate my attitude toward members of the second language community, I would say that it is:
Unfavorable__:__:__:__:__:__:__Favorable"

9. Language Anxiety (two items). Language Anxiety refers to the apprehension experienced when using the second language either inside or outside the classroom. An example item is:

"If I were to rate my anxiety in my second language class, I would rate myself as:
Very Calm __:__:__:__:__:__:__Very Nervous"

Procedure

Instructors of Italian and Spanish courses were contacted and given information about the study. Testing required approximately 20 minutes and was conducted either at the beginning or at the end of a regularly scheduled language class, depending on the preference of the course instructor. The study was described to the students by the researcher in both a written "consent form" and a brief oral presentation to the class. Approximately 80 percent of students present on the day of testing participated. Students who agreed to participate completed the questionnaire in the classroom, working individually. The strategy items were presented in the same order as in the SILL (Oxford 1990).

Data Analysis: The procedure used to test the model involved computing a series of stepwise multiple regressions. Multiple regression is a statistical procedure in which scores on a set of variables (the "predictors") are used to predict the scores on another variable (the "criterion"), based on their intercorrelations. In this case, ratings of knowledge, effectiveness, difficulty, and anxiety will be used to predict the frequency of strategy use. There are several methods of deciding which predictor variables to use in the regression equation. The present study employs a "stepwise" procedure which requires that each of the predictors make a significant contribution to predicting scores on the criterion, independent of the contribution being made by other

variables in the equation. This may result in a different subset of predictors for each of the 50 ratings of strategy use, depending on which ratings correlate best with the use of each of the strategies.

The stepwise regression procedure was chosen in order to achieve the most parsimonious prediction equation for each strategy, with the intention of examining the trends in the equations and not the results of any one equation. With multiple regression, it is often tempting to interpret the regression coefficients in order to judge the relative importance of the predictor variables. In stepwise multiple regression, however, this proves to be problematic because the beta weights depend, in large part, on the presence of other variables in the equation. Each variable entered into the regression changes the betas for all other variables because variables present in the equation are made statistically independent of each other. For this reason, we will not attempt to interpret the individual regression coefficients, but rather will examine the pattern of predictors as a group.

A relatively large number (50) of regressions were computed because the social-psychological model of strategy use (MacIntyre 1994) is intended to predict the use of specific strategies, rather than groups of strategies or overall strategy use. The large number of tests leads to concern about the Type I error rate. In this case, the most serious Type I error would occur when a multiple regression is declared significant when, in fact, no prediction exists. For this reason, a Bonferroni adjustment was made to our conservative overall alpha level of .01, making the nominal alpha level equal to .0002 (.01/50 = .0002) for each test of R^2. Thus, before examining the predictors involved in the regression, the multiple correlation had to be declared significant at the .0002 level. With this provision, the analysis proceeded on an item-by-item basis, and the regression coefficient (ß) for each predictor within a significant regression was evaluated at the standard .05 alpha level.

The full model will be considered supported when knowledge, effectiveness, and either difficulty or anxiety enter the prediction equation. This pattern provides support for each element of the social-psychological model (knowledge, reason to use, and no reason not to use a strategy). The model will be considered partially supported when a subset of these variables are significant predictors.

The second set of analyses will examine the correlations between the major elements of Gardner's (1985) socioeducational model (ALS, Integrativeness, Language Anxiety, and Motivation) and the factors contributing to strategy use. For this analysis, the scores will be aggregated for all 50 strategies to produce a single total score for Knowledge, Effectiveness, Difficulty, Anxiety, and Frequency of Use. To maintain our focus on predicting strategy use, correlations between Gardner's variables and the frequency of use in each of the six categories of strategies also will be examined. Because the elements of Gardner's model are being assessed with single-item indicators, the variability of these variables will be somewhat attenuated. Therefore, each correlation will be evaluated at the .05 alpha level.

Results

The results will be addressed in three stages. First, the mean ratings of knowledge, effectiveness, difficulty, anxiety, and use given to each of the strategies will be reported. Second, the social-psychological model will be examined on a strategy-by-strategy basis. Finally, the correlations of attitudes, motivation, and anxiety with aggregated ratings of the strategies and frequency of use of the six categories of strategies will be examined.

Ratings of the Strategies

Table 1 (on next page) presents the average (mean) ratings given to each of the strategies. It can be noted that the three most frequently used strategies are "pay attention to L2 speakers," "look for similar words in L1," and "use synonyms." These three strategies also receive among the highest ratings for knowledge and effectiveness, and among the lowest ratings of difficulty to use. The three least frequently

TABLE 1

Mean Ratings of Elements of the Social-psychological Model for Each of the 50 Strategies

Strategy	Knowledge	Effectiveness	Difficulty	Anxiety	*Frequency of Use*
relate old and new language	5.18	5.44	2.79	3.50	5.08
use words in sentences	4.93	5.19	3.42	3.77	4.14
relate sound and mental picture	3.96	4.45	3.60	3.27	3.37
make mental picture	4.69	4.92	3.24	3.33	4.19
use rhymes	3.42	3.45	4.29	3.07	2.46
use flashcards	4.21	4.15	3.80	2.91	2.40
act out words	2.73	3.15	4.64	2.95	1.92
review lessons often	6.12	6.31	2.27	3.44	5.36
remember location of new words on page	5.41	4.99	2.84	3.28	4.90
say or write words often	5.86	5.54	2.43	3.22	5.03
try to talk like native speaker	5.48	5.43	3.69	4.16	4.84
practice sounds of language	5.45	5.51	3.06	3.70	4.82
use words differently	4.51	4.88	3.60	3.53	3.86
start L2 conversations	5.39	5.96	3.93	4.76	4.37
watch L2 media (e.g.,TV)	5.47	5.72	3.60	3.40	3.87
read for pleasure in L2	5.10	5.73	4.03	3.43	3.14
write L2 notes/letters	5.26	5.51	3.90	3.75	3.83
skim reading, then go back	5.51	5.33	2.94	3.37	4.81
look for similar words in L1	6.34	5.91	2.07	3.49	6.17
find patterns in L2	5.74	5.80	2.85	3.37	5.40
divide up L2 words	4.61	4.62	3.73	3.05	3.84
do not translate word-for-word	5.50	5.18	3.65	3.74	4.70
make summaries	4.57	4.85	4.01	3.42	3.26
make guesses	5.61	4.01	3.59	3.78	4.80
use gestures	5.61	4.71	3.15	3.73	4.70
make up words	4.54	2.78	4.07	3.92	3.43
read without looking up every unknown word	5.24	4.02	3.69	3.76	4.55
guess what will say next	4.16	3.83	4.22	3.55	3.45
use synonyms	6.17	5.74	2.88	3.76	5.96
find ways to use L2	5.43	5.91	3.67	4.14	4.60
note my mistakes	6.27	6.37	2.53	3.60	5.92
pay attention to L2 speakers	6.41	6.44	2.61	3.92	6.20
find ways to improve language learning	5.11	5.60	3.40	3.55	4.56
plan study time	5.71	5.85	3.58	3.47	4.36
look for conversations	5.67	6.15	3.95	4.46	4.25
look for L2 readings	5.54	5.99	3.85	3.62	4.05
have clear goals for skill	5.52	5.64	3.32	3.81	4.69
think about progress	5.65	5.45	3.14	3.60	5.15
try to relax	5.16	5.45	3.76	3.97	4.48
encourage myself to speak when afraid	5.81	5.87	3.79	4.54	4.93
give self rewards	3.90	3.08	3.92	2.48	2.19
note when nervous/tense	4.56	3.39	3.78	3.11	3.69
write feelings in a diary	1.85	3.07	5.01	2.47	1.29
talk about feelings	3.66	3.48	3.98	2.75	3.02
ask other to slow down	6.20	6.15	2.71	3.68	5.61
ask native to correct me	5.86	6.15	3.15	4.04	5.10
practice with others	5.49	5.65	3.62	4.02	4.01
ask for native's help	5.62	5.92	3.57	3.92	4.40
ask questions in L2	5.65	5.88	3.61	4.14	4.44
learn about L2 culture	5.77	5.55	2.87	3.35	4.99
Avg.	**5.18**	**5.10**	**3.47**	**3.66**	**4.31**

used strategies include "write feelings in a diary," "give self rewards," and "physically act out words." Two of these strategies (write feelings in a diary and give self-rewards) receive among the lowest ratings of knowledge, effectiveness, and anxiety, which is somewhat surprising. Two of these (write feelings in a diary and act out words) are also among the most difficult to use.

Test of the Model

In order to test the social-psychological model, 50 stepwise multiple regressions were performed. In each, the use of the strategy was predicted by the ratings of knowledge, usefulness, difficulty, and anxiety. The major results of the regression analyses are presented in Table 2 (on next page). A significant regression equation ($p < .0002$) was obtained for each of the 50 strategies. Thus, in all cases, the model is at least partially supported. The amount of variance accounted for ranged between 36 percent and 82 percent, with a mean of 60 percent. This indicates that a substantial amount of the variability in strategy use is accounted for by these few variables.

Table 2 presents the standardized regression coefficients obtained for each of the regression equations. The pattern of regression coefficients can be examined to gauge support for components of the model.[2] Overall, in 36 out of 50 cases (72 percent), the full model was supported. That is, the use of approximately three out of four strategies is predicted by a combination of knowledge, effectiveness, and either difficulty or anxiety. The use of stepwise regression procedures indicates that all three of these ratings make significant, independent contributions to the prediction equation for the majority of individual strategies.

Directing attention to the 14 cases where the full model was not supported, we observe that effectiveness failed to enter in nine of the 14 equations. Five equations showed no significant contribution from either difficulty or anxiety. Considered separately, difficulty was a significant predictor in 41 cases, and anxiety entered only 11 of the equations. Thus, of the two reasons not to use a strategy, it would appear that difficulty of use is the more important consideration among the 50 strategies studied here. In only two cases did knowledge fail to enter the equation, indicating that it is necessary to know a strategy before it can be used. Because the ratings were made on a seven-point scale, these results further indicate that the better a student knows the strategy, the more frequently it can be used.

The model indicates that a strategy will be used if it is well known, there is a reason to use it, and nothing to prevent its use. These data support that generalization. However, the original model may imply that a reason to use the strategy is a necessary condition before a reason not to use the strategy is considered. Based on the present results, a modified version of the model would show that the two decisions happen independently, rather than one preceding the other. In cases where both decisions favor the use of a strategy, it will be used very frequently. If only one condition is met, strategy use likely will be much less frequent.

Strategies and Gardner's Model

Next, we examine the influence of ALS, Integrativeness, Language Anxiety, and Motivation on strategy use and the factors influencing it. In this case, we are interested in general tendencies in the use and ratings of strategies. Before proceeding, average ratings of use, knowledge, effectiveness, anxiety, and difficulty were computed. The correlations between these five overall ratings and the AMTB measures are presented in Table 3 (on page 382).

Knowledge of strategies was positively correlated with both motivation and integrativeness. The perceived effectiveness of strategies was correlated with motivation, integrativeness, and ALS. Difficulty of strategy use was correlated negatively with motivation, integrativeness, and ALS and was positively related to language anxiety. The anxiety aroused by strategies was positively correlated with language anxiety. Finally, the overall frequency of strategy use was correlated significantly with all four of Gardner's variables.

To examine the frequency of strategy use more closely, a set of correlations involving the

TABLE 2

Results of Regression Analyses Predicting Strategy Use Based on the Social-psychological Model

Strategy	Knowledge of Strat.	Strategy Effective	Difficult to use	Anxiety over use	***% of variance accounted for***
relate old and new language	.464	.296	-.205	-.108	**66.0**
use words in sentences	.293	.409	-.221	–	**52.7**
relate sound and mental picture	.516	.235	-.245	–	**73.2**
make mental picture	.580	.296	–	.157	**74.3**
use rhymes	.314	.545	–	.124	**57.2**
use flashcards	–	.432	-.313	–	**47.2**
act out words	.404	.438	–	.120	**62.2**
review lessons often	.242	–	-.540	.131	**48.2**
remember location of new words on page	.500	.477	–	–	**81.8**
say or write words often	.340	.274	-.297	–	**61.3**
try to talk like native	.435	.257	-.287	–	**69.4**
practice sounds of language	.428	.423	–	–	**59.4**
use words differently	.576	.300	–	–	**64.4**
start L2 conversations	.350	.167	-.374	-.144	**48.6**
watch L2 media (eg.TV)	.416	–	-.465	–	**50.3**
read for pleasure in L2	.256	–	-.582	–	**49.4**
write L2 notes/letters	.345	–	-.559	–	**55.0**
skim reading, go back	.309	.422	-.145	.115	**68.7**
look for similar words in L1	.604	.180	-.135	.098	**71.1**
find patterns in L2	.515	.448	–	–	**78.4**
divide up L2 words	.417	.345	-.164	–	**68.5**
not try to translate word-for-word	.295	.261	-.329	.175	**53.9**
make summaries	.383	.308	-.274	–	**54.8**
make guesses	.261	.536	-.172	–	**65.4**
use gestures	.346	.310	-.317	–	**62.5**
make up words	.269	.470	-.280	–	**68.4**
read w/o looking up every unknown word	.280	.450	-.244	–	**67.5**
guess what will say next	.454	.404	-.181	–	**74.7**
use synonyms	.488	.285	-.183	–	**70.9**
find ways to use L2	.444	–	-.472	–	**57.9**
note my mistakes	.287	.276	-.370	–	**53.2**
attention to L2 speakers	.392	.412	-.177	–	**64.5**
find ways to improve language learning	.627	.213	-.134	–	**74.1**
plan study time	.280	.200	-.496	–	**49.2**
look for conversations	.352	–	-.482	–	**43.1**
look for L2 readings	.208	–	-.614	–	**46.4**
have clear goals for skill	.324	.422	-.231	–	**60.5**
think about progress	.496	.286	-.146	–	**69.0**
try to relax	.472	.227	-.248	–	**55.4**
encourage myself to speak when afraid	.319	.222	-.464	–	**60.7**
give self rewards	–	.709	–	–	**50.3**
note when nervous/tense	.474	.210	–	.274	**52.3**
write feelings in a diary	.496	–	-.174	.199	**36.0**
talk about feelings	.438	.348	-.245	–	**67.0**
ask other to slow down	.284	.253	-.505	–	**62.6**
ask native to correct me	.409	.235	-.349	–	**66.9**
practice with others	.277	.155	-.458	–	**44.9**
ask for native's help	.358	–	-.358	–	**50.7**
ask questions in L2	.201	.218	-.468	–	**46.5**
learn about L2 culture	.292	.304	-.357	–	**67.1**
Avg.					**60%**

TABLE 3

Correlations Between Elements of Gardner's Model and Ratings of Strategies

	Gardner's Construct				
Strategy Model Element	Motiv.	Integ.	ALS	Langanx	N
Knowledge	.34**	.36**	.15	-.16	112
Effectiveness	.47**	.36**	.24#	-.06	102
Difficulty	-.47**	-.39**	-.32*	.44**	92
Anxiety	.08	-.05	.06	.22#	99
Overall Frequency of Use	.49**	.34**	.19#	-.28*	113
Frequency of Use for Each Type of Strategy					
Memory	.33**	.09	.12	-.10	128
Cognitive	.45**	.27*	.19#	-.24*	125
Compensation	.20#	.12	.03	-.06	132
Metacognitive	.57**	.39**	.21#	-.20#	125
Affective	.11	.10	.00	-.02	125
Social	.37**	.40**	.18#	-.40**	129

Note:
All tests are two-tailed (# - .05, * - .01, ** - .001).
The Ns differ for each test because of missing values for some of the items.

Legend:
Integ.—Integrativeness
ALS—Attitudes toward the Learning Situation
Langanx—Language Anxiety
Motiv.—Motivation

six types of strategies (Oxford and Burry-Stock, forthcoming) along with the four Gardner variables were computed (see Table 3). In this case, two general patterns can be observed. First, motivation correlates significantly with five of the six classes of strategies (excluding affective ones). Second, integrativeness, ALS, language anxiety, and motivation correlate with the use of three types of strategies: cognitive, metacognitive, and social. It would appear that affective variables primarily affect the use of these three types of strategies.

Discussion

The present study demonstrates that it is possible to account for much of the variance, 60 percent on average, in individual strategy use with three basic ratings of strategies: knowledge, effectiveness, and difficulty of using them. Each of these influences contribute significantly and independently to the prediction of strategy use for approximately 75 percent of the specific strategies. Thus, there is strong support for the model shown in Figure 1. Students with greater knowledge of a strategy, who consider it effective and who do not perceive it to be difficult to use, will likely use the strategy frequently. It would appear that the rating of anxiety created by using the strategy is not consistently related to the frequency of its use.

The present results also show that students who are more highly motivated use strategies more often, a finding that replicates previous studies (Oxford and Nyikos 1989). Other correlations presented here might help to explain

this finding. It is interesting that more highly motivated students also report knowing more strategies, find them easier to use, and consider them to be more effective than students who are less motivated. This relation holds for both integrativeness (the desire to meet members of the target language community) and for motivation to learn the specific language as well. Examined more closely, we see that motivation to learn the language is associated with increased use of memory, cognitive, compensation, metacognitive, and social strategies.

Although causal statements cannot be made on the basis of the present correlational data, two possible links between strategies and motivation may be offered as explanations for these findings. First, based on Gardner and MacIntyre (1992), it is possible to argue that students who feel more highly motivated will be more likely to expend the effort needed to engage in strategy use. Strategies are, by definition, effortful behaviors. According to Gardner (1985), motivation stems from the desire to meet and communicate with members of the target language group and positive attitudes toward the learning situation (ALS). The influence of integrativeness was observed, especially for social and metacognitive strategies, supporting the important role that the target language group has in generating motivation for language learning. ALS also correlated with the use of these types of strategies, but not as strongly as did integrativeness. The integrative motive is clearly associated with a willingness to use language learning strategies.

A second causal path might also be suggested. Students who are more fully aware of strategies, consider them to be more effective, and experience less difficulty in their use, might become more highly motivated to learn the language. Clearly, this sequence of events would require an initial reason for engaging in language learning in the first place, such as the integrative motive postulated by Gardner (1985). Strategies, viewed in this light, primarily contribute to a sense of mastery over the learning process that would reduce uncertainty and anxiety, and maintain or improve both attitudes and motivation. Both of these interpretations support Gardner's (1985) suggestion that motivation leads to an increase in effort expended on language learning.

In general, language anxiety appears to have less of an impact on language learning strategies than did the other variables, but some interesting findings were obtained. Moderately strong correlations were observed between language anxiety and the ratings of overall strategy difficulty and the use of social strategies. The correlation between language anxiety and the perceived difficulty in using strategies is understandable because anxiety has been shown to consume cognitive resources (Eysenck 1979) required for language learning (MacIntyre and Gardner 1994a, 1994b), and this would certainly make strategies more difficult to use. The correlation between language anxiety and use of the social strategies can be explained by noting that language anxiety is a form of social anxiety (see Leary 1991) that appears to be strongly based on the fear of poor communication and negative social evaluation (Horwitz, Horwitz, and Cope 1986). Both of these explanations are supported by previous research (MacIntyre and Gardner 1991). Perhaps the most surprising result was the relatively low correlation between language anxiety and the anxiety created by strategy use. To explain this, we might suggest that communicative demands of the second language create the highest levels of language anxiety. Whereas most of the strategies studied here do not induce a communicative demand, the ones that do ("start L2 conversations," "look for L2 conversations," and "encourage myself to speak when afraid") are the three most anxiety-provoking strategies.

The results of this study suggest that, ideally, training in the use of language learning strategies should instill in the student the perception that s/he knows the strategy well, that it will be effective, and that it is not difficult to use. Training that simply demonstrates a particular strategy without showing *when* it will be most effective is less likely to produce high rates of use than training that also shows when

to use the strategy. Further, training aimed at reducing the difficulty of using a given strategy is likely to improve its use as well. Even with this shift in training emphasis, the students' level of motivation, their attitudes toward the language community and the language course, and their level of language anxiety should also be considered. This constellation of affective variables appears to predispose some students to using strategies, and language teachers and researchers can take this into account when implementing or evaluating strategy training.

The strategy that may benefit most from such attention is the use of a language learning diary. Brown (1989) is a strong supporter of the effectiveness of such diaries in managing the affective reaction to language learning. Students in this sample, however, consider a language learning diary to be very difficult to use (average rating 5.01 out of 7) and among the least effective strategies (mean rating 3.07 out of 7). Perhaps this is because they report very little knowledge about how to use the diary (average rating 1.85 out of 7), giving it by far the lowest rating on knowledge. If Brown (1989) is correct, and the use of a language learning diary has as much value as he suggests, then students should be told not only how to use one but also persuaded of its effectiveness. Based on these data, anxiety does not appear to be a problem because writing a diary is one of the least anxiety-provoking strategies.

Similarly, the training of other strategies can make use of the information provided in this study. As an example, physically acting out words is not a well-used strategy, and anxiety appears to play a role (see Table 1). If an entire class was encouraged to act out words, as in a game of charades, then anxiety may be better managed because every student is doing the same activity. It should be noted that Foss and Reitzel (1988) report that some students find charades to be anxiety-provoking but a similar percentage of students (approximately 25 percent) report that it makes them feel confident. This can be taken into account by allowing students to choose their roles in the game and allowing highly reticent students to withdraw if they wish.

A final suggestion arising from this study is that individualized strategy training programs might be more effective than those aimed at a general audience. Using an initial screening process, an individual student's attitudes, motivation, language anxiety, and responses to a set of strategies can be assessed along the lines suggested by the social-psychological model. Individualized programs could then be designed to take advantage of a specific student's source of motivation for language learning, his/her positive attitudes, and opinions about specific strategies. Future research, and training studies in particular, are likely to refine our knowledge about language learning strategies and how to encourage students to make the most of them.

Conclusion

In general, the data strongly support the ability of the social-psychological model to predict strategy use (MacIntyre 1994). This model indicates that knowing a strategy well, perceiving it as effective, and not considering it to be difficult to use predict the majority of the variance in strategy use. Strategy training that addresses only one variable (e.g., increasing knowledge) may be ineffective if it does not also increase the perception of effectiveness and ease of use. The data also show the important role that social-psychological variables in general, and integrativeness and motivation in particular, play in the use of language learning strategies. What now is required is more research into the training of strategy use and the factors that increase its efficacy. Knowing the factors that facilitate or hinder strategy use may be an important first step toward more effective strategy training.

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[1] As noted above, it has been argued by some that students may not be aware of the strategies that are being used; however, it seems that the key to the strategy concept is to view it as a deliberate, freely chosen plan designed to facilitate language learning (MacIntyre 1994). For this reason, knowledge is considered a prerequisite for language learning strategy use.

[2] The standardized regression coefficients presented in Table 1 range from -1 to +1 and can be interpreted in much the same way as correlations. That is, values close to zero indicate a relative lack of prediction and values close to one indicate near perfect prediction.

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