A Model of Adaptive Language Learning

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This study applies theorizing from educational psychology and language learning to hypothesize a model of language learning that takes into account affect, motivation, and language learning strategies. The study employed a questionnaire to assess variables of motivation, self-efficacy, anxiety, and language learning strategies. The sample consisted of 275 advanced learners studying English for academic purposes prior to entering Australian universities. The data were analyzed using both variable- and person-centered approaches. The variable-centered approaches included correlational analysis and structural equation modeling, whereas the person-centered approaches utilized cluster analysis and profile analysis using multidimensional scaling (PAMS). The findings supported the hypothesized model of adaptive learning and highlighted the relevance of research in educational psychology for informing language learning research.

THIS STUDY USED CONSTRUCTS FROM both language learning and educational psychology to propose a model of adaptive language learning. Adaptive learning comprises constructs that are related to successful language performance. This model reflects the relationship between motivation, self-efficacy, anxiety, and learning strategies to a measure of oral language performance. Research in education suggests that adaptive learning reflects a task-oriented rather than a self-oriented goal orientation (Ames, 1992), accurate self-efficacy appraisals (Bandura, 1997), low test anxiety (Zeidner, 1998), and the use of appropriate learning strategies (Pintrich & DeGroot, 1990). In language learning research, an integrative goal orientation rather than an instrumental orientation is related to adaptive learning (Gardner, 1985). Recently, research has also highlighted the importance of intrinsic rather than extrinsic motivation (Noels, 2001). Language learning anxiety has been found to have a detrimental effect on language learning (Horwitz, Horwitz, & Cope, 1986), particularly where foreign language speaking is concerned (Lucas, 1994). In addition, the frequent use of certain language learning strategies has been consistently found to be related to performance (Oxford, 1996). This study sought to provide empirical evidence for a hypothesized model of adaptive learning comprising affect, motivation, and language learning strategies in relation to oral performance in English.

There has been much debate over the construct of motivation in both language learning and its relationship to language performance. There is some consensus regarding the orientation of motivation in that a focus on the learning task is likely to be related to high achievement. In language learning, an integrative orientation, which refers to a focus on the target culture and language, may be considered more adaptive, and thus more likely to result in successful language learning than an instrumental goal orientation. An instrumental goal orientation, which refers to some form of reward, for example, financial- or career-related reasons for learning a language, may be considered less adaptive than an integrative orientation (Gardner, 2001; Gardner & MacIntyre, 1993; Tremblay & Gardner, 1995). In educational research, there is a long tradition that distinguishes goal orientations as being task goals

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(also known as mastery or learning) or performance goals (also known as ego or ability goals). A learner who displays a task goal orientation is motivated by academic tasks and achievement for its own sake, whereas a learner who displays a performance goal orientation is motivated by achieving success in comparison to others (Ames & Archer, 1988). A task goal orientation has repeatedly been found to be related to high academic achievement. In addition, there is evidence that personal goal orientations may be influenced by teachers, schools, and home environments (Anderman & Maehr, 1994). This dichotomous view of motivation has recently been challenged, and a more complex model of motivational orientation has emerged. A dimension of approach and avoidance was introduced into the conceptualizing of performance motivation (Urdan, 1997). A performance approach orientation refers to a need to outperform others, whereas a performance avoid orientation refers to the desire to avoid displaying low ability. There is considerable empirical support for this conceptualization (Elliot, 1999; Elliot & Church, 1997; Middleton & Midgely, 1997; Midgley et al., 1998). A performance approach goal orientation may be useful in some circumstances, particularly in preparing for exams (Elliot, McGregor, & Gable, 1999). A performance avoid goal orientation is viewed as less desirable and may be considered maladaptive. Emerging research indicates that in some circumstances, for example, sports, a task goal orientation may also be relevant because the participant is motivated by the fear of failure arising from not being able to complete the given task (Conroy & Elliot, 2004).

The application of goal theory has received little attention in language learning research despite its significance in education studies. In the 1990s, researchers called for a diversification of the construct of motivation in language learning research. It was felt that perhaps the dichotomous distinction between integrative and instrumental motivation was insufficient (Crookes & Schmidt, 1991; Dörnyei, 1990, 1994; Oxford, 1994; Oxford & Shearin, 1994). As a result, many studies have emerged that have adopted constructs of motivation from different disciplines, notably education and workplace research (Dörnyei, 2000; Noels, 2001). It is important to assess the relevance of alternative conceptualizations of motivation in language learning. In education studies, goal orientations have been found to be related to other constructs of adaptive learning, such as self-efficacy (Smith, Duda, Allen, & Hall, 2002), low anxiety (Middleton & Midgely, 1997), and learning strategies (Elliot & McGregor, 1999).

In educational research and recent research into language learning, motivation models have included a construct of affect (MacIntyre, MacMaster, & Baker, 2001). Affect in motivational studies is conceptualized as including anxiety or some form of self-construct or both. There is empirical evidence to suggest that affect is a significant predictor of both academic and linguistic success (Horwitz, 2001). In this study, positive affect is conceptualized as comprising high self-efficacy and low anxiety. There is much confusion between self-constructs such as self-esteem, self-concept, and self-efficacy. *Self-esteem* is a rather general term concerned with a person's sense of self-worth, irrespective of domain (e.g., learning a language). *Self-efficacy* is distinct from *self-concept* both methodologically and theoretically. *Self-concept* tends to be more general and may be measured by questions relating to the likelihood of success in broad areas, such as, How good are you at writing? *Self-efficacy* is a more clearly delineated construct. Questions to measure self-efficacy tend to be specific and matched by criterial tasks, such as, How confident are you that you can write a sentence describing yourself? Self-efficacy questionnaires often use can-do-type scales. This type of question would be followed by a task, and the judgments and task performance would be examined. Self-efficacy has been credited with more predictive and explanatory power than self-concept (Bandura, 1997; Bong, 2002; Pajares & Johnson, 1996; Skaalvik, 1997).

In language learning, studies into self-efficacy are rather rare despite empirical evidence showing the relevance of self-efficacy in predicting achievement in academic learning. Bong (2001) found that self-efficacy beliefs are related across subjects, including language learning. Tremblay and Gardner (1995), in an expansion of the Gardnerian model of motivation, included self-efficacy in their model. However, the scale referred to future achievement rather than present ability. As such, this model could include hope and intention. Such judgments would have a weak predictive power. Indeed, a direct path from self-efficacy to achievement was not included in their model. However, there has been a great deal of research into the construct of *self-confidence* in language learning. This construct differs from self-efficacy in two ways. First, it includes a component of anxiety, and second, the items used to measure the construct are very general (Clément, Dörnyei, & Noels, 1994; Clément, Gardner, & Smythe, 1980; Gardner, Tremblay, & Masgoret, 1997).

Early studies into language learning anxiety concluded that measures of *test anxiety*, which is the construct most commonly used in educational research, were not appropriate for use in language learning (Scovel, 1978; Young, 1991). Since those early studies, there has been a great deal of research that confirms the negative relationship between anxiety and language performance. Some researchers claim anxiety is one of the strongest predictors of foreign language performance (MacIntyre, 1999).

Learning strategies represent an important element in successful learning. According to Pintrich and colleagues, research into self-regulation has identified three general categories of strategies: cognitive, metacognitive, and resource management (Pintrich & Garcia, 1991). Cognitive strategies refer to strategies, such as rehearsal, that are used to learn presented material. Metacognitive strategies concern the process of learning and include monitoring and planning. Resource management refers to how students manage time and includes help-seeking strategies. Generally, studies have found that metacognitive strategies are more predictive of high academic performance than cognitive strategies and resource management (Garcia & Pintrich, 1996). A great deal of research has been conducted into language learning strategies. The classification of these strategies tends to be complex (Oxford & Crookall, 1989), and replication of categories of strategies is problematic (Woodrow, 2005). The issue of social strategies seems to be the major distinguishing feature of language learning strategies when they are compared to academic learning strategies. Schmidt and Watanabe (2001) adopted Pintrich's classification in a large-scale study and found the instrumentation and classification to be reliable and valid. Despite problems with the measurement and classification of learning strategies, there is a consensus that strategy use is related to language performance (Oxford, 1996; Park, 1997).

THE CURRENT STUDY

The participants in this study were from neighboring Asian countries. The study intended in part to examine the effect of the proximity of these countries. There are similarities in the cultural heritage of China, Japan, and Korea because these cultures have a common history informed by Confucianism. There are similarities among the educational environments of Confucian heritage cultures. Research has indicated that participants from these cultures may have motivational profiles different from those of participants residing in a Western setting. For example, there is evidence that Asian students tend to attribute success and failure to personal effort, whereas Western students tend to attribute success and failure to their ability (Biggs, 1996; Grant & Dweck, 2001).

This study sought to provide evidence to support a hypothesized model of adaptive learning comprising motivation, affect, and learning strategies applicable to language learning. In addition, the study aimed to provide evidence for the relevance of the concepts of goal orientation and self-efficacy to language learners.

METHOD

Participants

The participants in this study were students taking English for academic purposes (EAP) courses at intensive language centers in Australia prior to university entry. Most of these students came from neighboring Asian countries. A total of 40.8% ($n = 149$) of the participants were from Confucian heritage cultures (Korean-, Japanese-, and Chinese-speaking countries). Most of the students planned to take postgraduate courses (54.2%, $n = 149$), with the greatest number of them intending to study commerce and business (39.3%, $n = 108$). In all, there were 275 students (male, $n = 139$; female, $n = 136$) who participated by completing a questionnaire on adaptive learning.

Instrumentation

The questionnaire used in the study consisted of subscales to measure motivation, self-efficacy, anxiety, and language learning strategies. It comprised 75 items (Woodrow, 2003) and was developed from a larger questionnaire validated in a pilot study (Woodrow, 2001).

There are some issues concerning the use of self-report questionnaires. In order to overcome these concerns, 47 participants took part in semistructured interviews, which presented the constructs of adaptive learning in depth and gave the participants the opportunity to comment on issues raised by the questionnaire. The questionnaire was piloted and revised according to the results, taking into account the participants' comments. A major concern of self-report instrumentation, particularly when measuring subjective and attitudinal variables, is that respondents select responses according to how they wish to portray themselves (Oller, 1982). This effect may be minimized, to a certain extent, by response and respondent confidentiality and careful wording of items. The instrumentation chosen to measure

items for this study came, as far as possible, from valid and reliable extant scales. The instrumentation to measure affect, constructed for the study, was simplified after the pilot study so that it would contain little content that could be construed as being socially desirable or undesirable (Holtgraves, 2004). In addition, the researcher was unknown to the respondents. According to the interviews, the participants were very interested in the notion of motivation and particularly in the concept of affect. Of 47 participants, 45 reported experiencing second language speaking anxiety to some extent.

Motivation goal orientations were measured using the Patterns of Adaptive Learning Survey (PALS) personal goal orientation subscales (Midgely et al., 1997). The items were adapted to apply to adult English language learners and used a 5-point Likert scale. In addition, language learning motivation items were taken from the attitude/motivation test battery (AMTB; Gardner, 1985). Four items relating to motivational intensity were also included.

A subscale to measure second language speaking anxiety was developed by the researcher because the existing instrumentation was not wholly relevant for participants studying in a second language environment as opposed to a foreign language environment. The subscale reflected speaking anxiety experienced both in class and outside of class. Of the 22 original items used for this subscale in the pilot study, 11 items were retained, on theoretical and empirical grounds, in the final version of the questionnaire. These items referred to communication situations and reflected the setting, interlocutor, level of formality, and whether the participant was initiating or responding to communication. To promote engagement with the questionnaire task and thus avoid the issue of satisficing (Krosnick, 1999), items were simplified greatly after the pilot study. Participants were asked to indicate on a 5-point Likert-type scale the extent to which they felt anxious in particular situations.

There was no available measure of language learning self-efficacy, so the subscale was constructed according to Bandura's recommendations for scale construction (Bandura, 1995). A 10-point can-do scale was used. The items also reflected the in- and out-of-class distinction.

Language learning strategies were measured using Schmidt and Watanabe's (2001) strategies subscale. After trial in the pilot study, 20 of the original items for this subscale were retained. The pilot study failed to replicate the classification proposed by Schmidt and Watanabe (Woodrow, 2001, 2003, 2005), so the strategies were reclassified as cognitive, metacognitive, and social, based on the results of an exploratory factor analysis.

The measure of performance used in the study was based on the International English Language Testing Service (IELTS) oral assessment. This test comprised a three-stage scripted interview that was assessed according to profile descriptors of language performance by a certified examiner. The assessment included interview-type questions, discussion tasks, and a short oral presentation.

RESULTS

Reliability and Validity of the Instrumentation

Confirmatory factor analysis (CFA) was selected as the most appropriate statistical method to assess the reliability and validity of the instrumentation because judgments were made a priori regarding the latent variables of the study. Four CFAs were estimated using Linear Structural Relations (LISREL) software for motivation goal orientations, second language speaking self-efficacy, second language speaking anxiety, and language learning strategies. The models were estimated based on correlation matrices to accommodate 5-point answers because these variables cannot be classed as truly continuous (see Appendix A). Language learning motivation orientation items relating to instrumental goal orientations from Gardner's (1985) AMTB were removed from the analysis because these items were highly kurtotic, and kurtosis can cause problems in CFA analysis. This result was probably due to the ultimate goal of the students in the sample. The participants were studying EAP with the aim of entering Australian universities. This goal may be regarded as highly instrumental; thus a highly kurtotic result could be expected.

CFA is classed as structural equation modelling (SEM). In evaluating model fit for the CFA models, multiple indexes were used. In addition to reporting the chi statistic (χ^2), normed χ^2 (χ^2/df—chi-square divided by degrees of freedom) was reported because it is not very sensitive to sample size. Fit indexes were used as recommended by Holmes-Smith (2000). They maintain that the goodness-of-fit index (GFI) and the adjusted goodness-of-fit index (AGFI) should be .90 or greater to indicate a reasonable fit. The root mean square residual (RMR) and the root mean square error approximation (RMSEA) should be in the region of .05 to indicate a good fit, although larger values are acceptable when the other indexes indicate a good fit. The normed fit index (NFI) and the non-normed fit index (NNFI) and

the comparative fit index (CFI) should have indexes of .90 or over.

The model estimated for motivation comprised three factors representing task, performance approach goal, and performance avoid goal orientations. The model indicated a moderate to good fit to the data. The factor loadings were very similar to those reported by Midgely and colleagues (1998). The factor structure is illustrated in Figure 1, and the fit indexes are in Appendix B. Reliability of the subscale was calculated based on the CFA model, which is viewed as superior to other coefficients because it takes account of error. The coefficients for the subscales were task goal = .70; performance approach = .86; and performance avoid = .77.

A two-factor model was estimated for second language speaking self-efficacy, and a good fit to the data was found. The figure for self-efficacy is presented in Figure 2 and the fit indexes are in Appendix B. The reliability coefficients for the self-efficacy subscales were high with .92 for both in-class and out-of-class self-efficacy and a combined coefficient of .96.

A two-factor model was also estimated for second language speaking anxiety that related to in- and out-of class communication. Two error covariances were included in the model that seemed to relate to native speaker interaction outside of class. However, this effect was not sufficient to warrant a third factor. A further error covariance was included in the model that seemed to relate to public performance of speaking English. The model is presented in Figure 3, and the fit indexes are presented in Appendix B. The model provided a moderate fit to the data. The model-calculated reliability coefficients were .89 for in-class anxiety and .87 for out-of-class anxiety. The

FIGURE 1
Confirmatory Factor Analysis for Motivation Goal Orientations

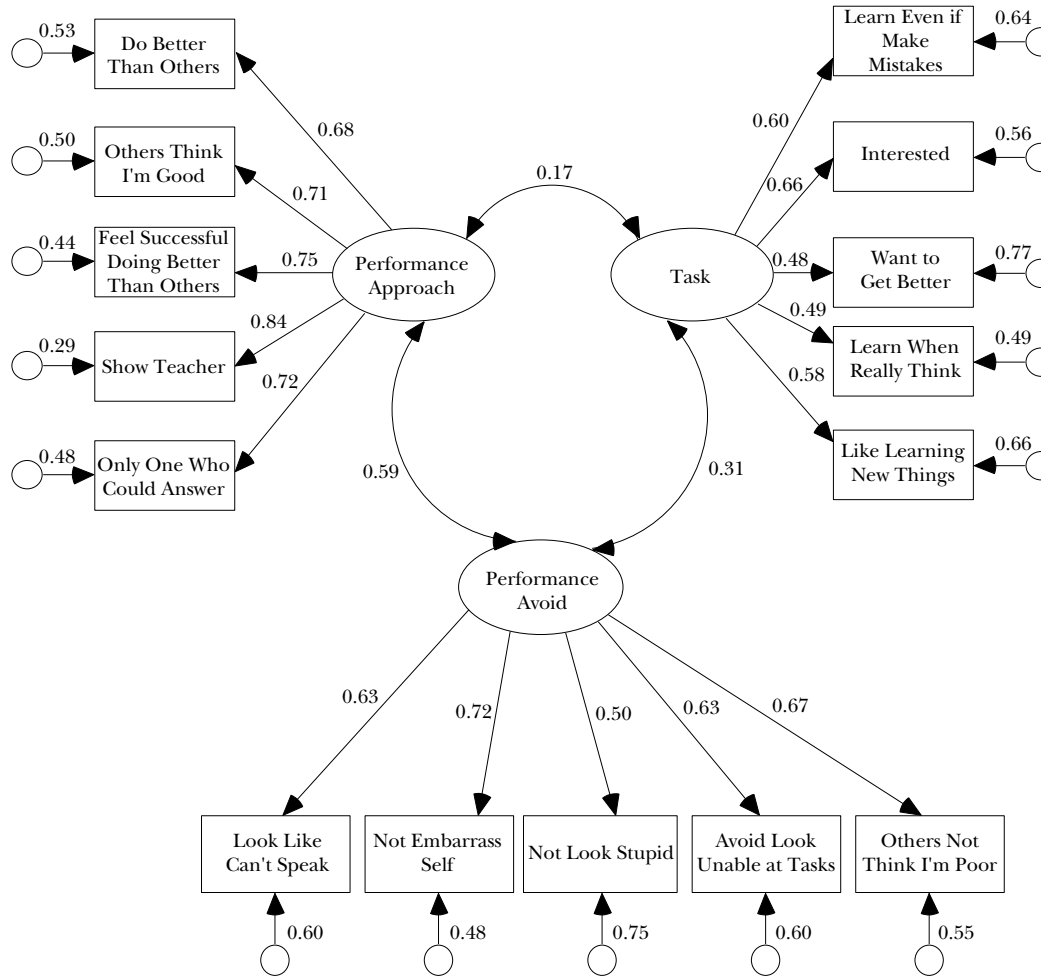
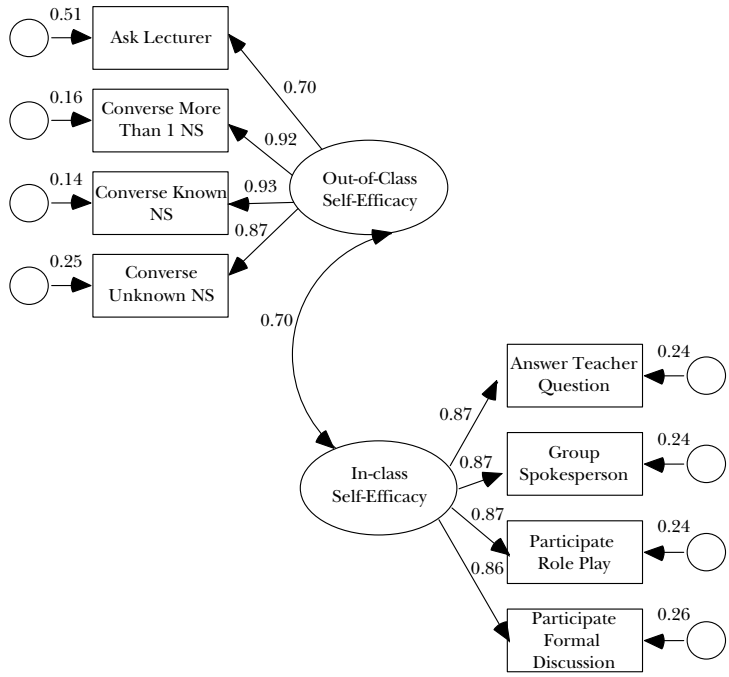


FIGURE 2
Confirmatory Factor Analysis for Second Language Speaking Self-Efficacy



overall reliability was .94, indicating a reliable instrument.

A three-factor model reflecting metacognitive, cognitive, and social strategies was estimated for language learning strategies. A moderate fit to the data was achieved with the removal of certain items on empirical and theoretical grounds. However, the error variances were rather high for the model. The model is presented in Figure 4, and the fit indexes in Appendix B. Reliability for cognitive strategies was .81; for social strategies, it was .78; and for metacognitive strategies, it was .79. The reliability of the combined subscales was .90.

Two variable-based methods were used to assess the feasibility of the hypothesized model of adaptive learning, correlation analysis, and structural equation modeling.

Correlates of Oral Performance

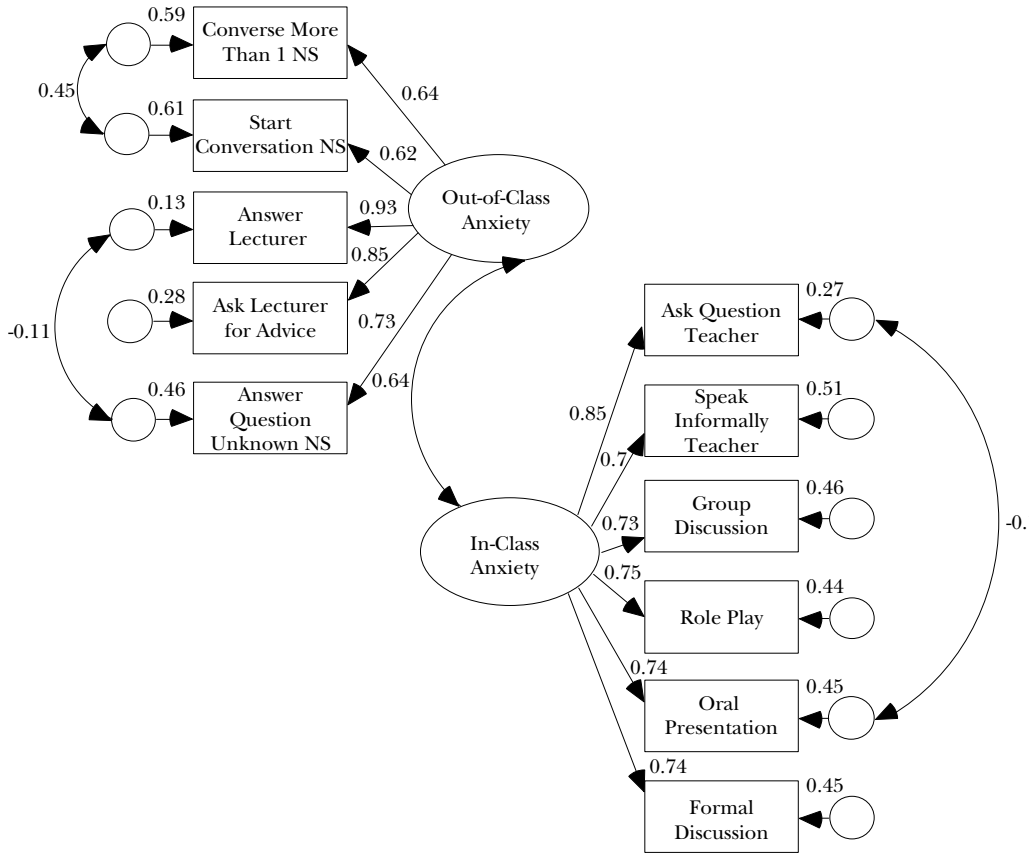
Simple bivariate correlation analysis using a Pearson product-moment technique was used to assess the initial linear relationship between the variables. These correlations were calculated using SPSS computer software. Several of the proposed variables indicated significant correlations with oral performance, as measured by the IELTS-type oral assessment. The effect sizes were calculated using r squared (r^2) to indicate the amount of variance of the dependent variable accounted for by the independent variables. The correlation matrix for all summated subscale means in Appendix A shows that there were significant correlations between oral performance and a task goal orientation ($r = .244$, $p = <.01$, $r^2 = 5\%$, $n = 255$), in-class self-efficacy ($r = .28$, $p = <.01$, $r^2 = 8\%$, $n = 250$), out-of-class self-efficacy ($r = .33$, $p = <.01$, $r^2 = 11\%$, $n = 250$), and metacognitive strategies ($r = .19$, $p = <.01$, $r^2 = 4\%$, $n = 256$). There were moderate significant negative correlations between oral and performance avoid goal orientation ($r = -.23$, $p = <.01$, $r^2 = 5\%$, $n = 255$), in-class anxiety ($r = -.23$, $p = <.01$, $r^2 = 5\%$, $n = 259$), and out-of-class anxiety ($r = -.24$, $p = <.01$, $r^2 = 6\%$, $n = 259$).

These relationships, in general, support the proposed model. Relationships between the variables were explored further using structural equation modeling.

Structural Equation Model

Structural equation modeling allows for model specification whereby a number of relationships between variables may be examined. Because the study involved a large number of variables, it was necessary to collapse them to produce a manageable model that did not violate the sample size

FIGURE 3
Confirmatory Factor Analysis for Second Language Speaking Anxiety



assumption. Four main variables were included in the model: motivation, affect, intensity, and learning strategies.

In the model, anxiety and self-efficacy were classed as affective variables. These variables were negatively correlated. A variable of positive affect was proposed comprising high self-efficacy and low anxiety. To focus on positive affect, items for anxiety were reverse-coded so that a high score indicated low anxiety and a low score indicated high anxiety.

The motivation variable in the model was made up of integrative motivation and task goal motivation, thus representing positive goal orientations. The oral performance variable was included in the model as an observed variable rather than as a latent variable because there were no indicators for it as was the case with the other latent variables.

A variable of intensity was included in the model based on items from the observed variables. Two major factors emerged from these variables relating to effort and persistence.

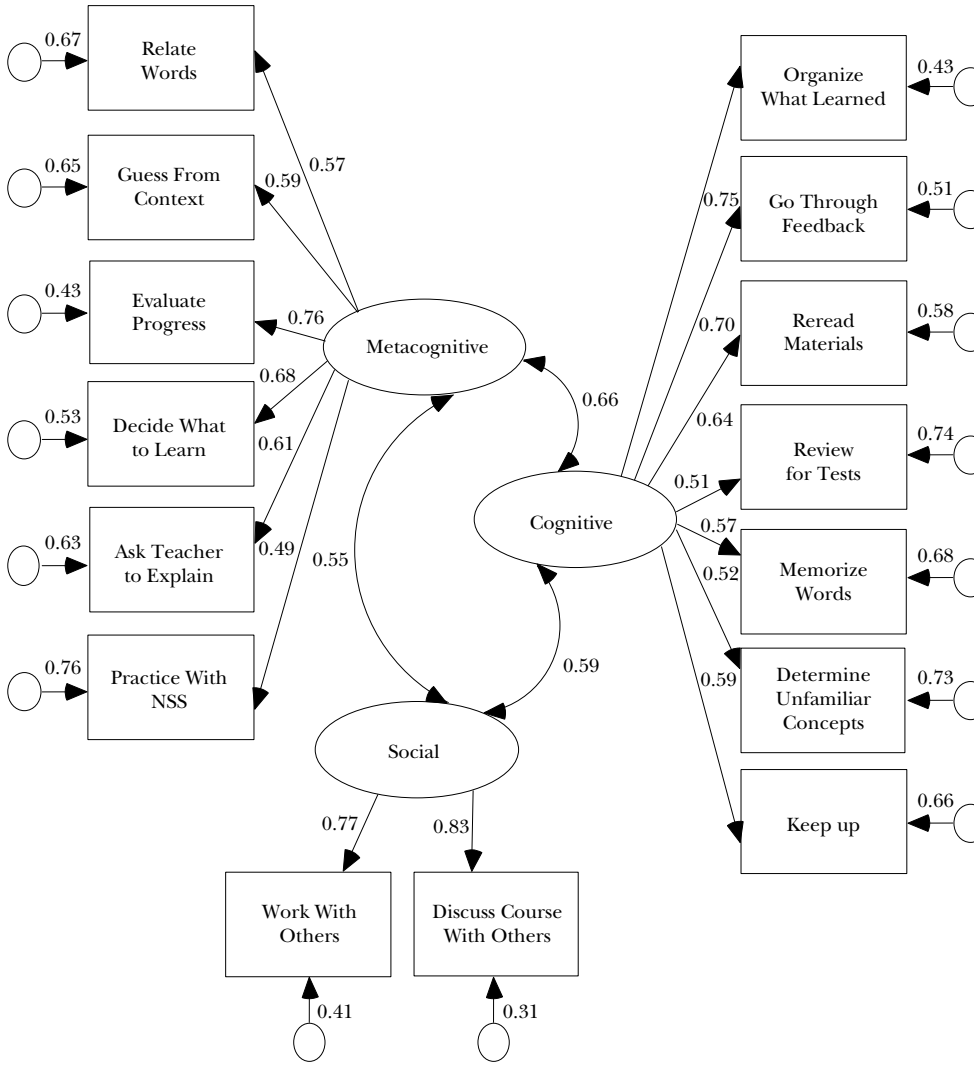
The structural model indicated a good fit to the data, as is indicated in Figure 5 and Appendix B. Understandably, a high error variance was associated with the oral performance variable because this model accounts for only a part of the variance in relation to motivation, affect, and strategies. Language level and aptitude were not the major issue in this study. Only a restricted variable of language performance was used in this study, that is, oral performance as measured by an IELTS-type of assessment.

In the model, intensity and strategies are not directly related to performance. However, there is a relationship between strategies, intensity, affect, and motivation, indicating that strategies and intensity are influenced by affect and motivation.

Cluster Analysis

Two methods of case-based analyses were used to provide support for the proposed model of adaptive learning, thus examining the model

FIGURE 4
Confirmatory Factor Analysis for Language Learning Strategies



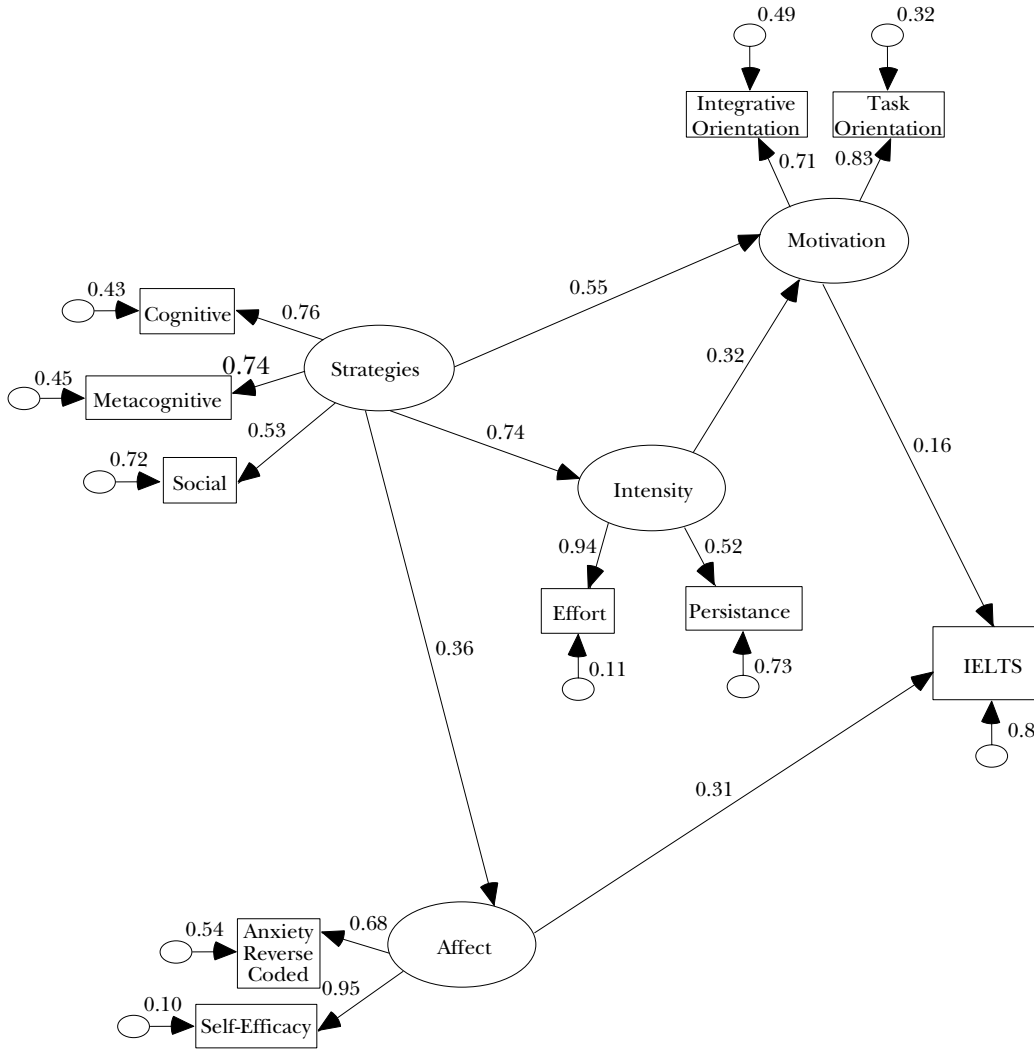
from an individual rather than a variable perspective: cluster analysis and profile analysis using multidimensional scaling (PAMS).

A hierarchical cluster analysis was used to determine whether the participants could be grouped according to scores on the subscales of adaptive learning in a way that was similar to the proposed model. Ward's minimum variance method was used because it is considered to be one of the most effective in terms of recovery performance (Milligan & Cooper, 1987). Cases in Cluster 1 had high scores on IELTS, task goal, self-efficacy, and all strategies (particularly metacognitive), and low scores on performance goals (particularly performance avoid) and anxiety. Cases in Cluster 2 had lower scores on IELTS, task goal, and all strategies, and higher scores on performance goals and anxiety. The clusters and variable means are presented in Table 1. These results are consistent with the correlations and structural model and indicate support for the hypothesized model of adaptive learning, with Cluster 1 reflecting adaptive learning and Cluster 2 reflecting less adaptive learning.

Profile Analysis and Multidimensional Scaling (PAMS)

Profile analysis was performed to explore in greater depth the evidence for the model of

FIGURE 5
Structural Model of Adaptive Learning



Key to variables

Cog	Cognitive strategies
Meta	Metacognitive strategies
Soc	Social strategies
Integ	Integrative goal orientation
Task	Task goal orientation
Revanx	Anxiety reverse coded
Efficacy	Self-efficacy
Effort	Effort
Persist	Persistence
IELTS	Oral performance

adaptive learning and to provide a second case-based method of analysis. PAMS is a relatively new technique proposed by Davison (1994) that, like cluster analysis, shifts the focus of the analysis from the variables in question to the cases or subjects. However, cluster analysis does not account for potentially important differences between individuals within these groups. Using PAMS, a

TABLE 1
Clusters, Means, and Standard Deviations for All Variables

	Adaptive Learning			Less Adaptive Learning		
Variable	*M*	*N*	*SD*	*M*	*N*	*SD*
IELTS	6.28	95	0.09	5.78	148	0.08
Task Goal	4.07	103	0.05	3.70	154	0.68
Performance Approach Goal	2.49	103	0.10	2.81	154	0.08
Performance Avoid Goal	2.30	103	0.08	2.83	154	0.07
Integrative	4.33	103	0.06	4.07	154	0.05
Intensity	4.00	103	0.07	3.37	154	0.79
Anxiety In Class	1.82	103	0.45	2.64	154	0.05
Anxiety Out of Class	1.86	103	0.06	2.62	154	0.80
Self-Efficacy In Class	8.00	103	1.29	5.82	154	1.59
Self-Efficacy Out of Class	8.05	103	1.15	5.87	154	1.74
Cognitive Strategies	3.86	103	0.51	3.35	154	0.53
Social Strategies	3.34	103	0.89	2.84	154	0.06
Metacognitive Strategies	4.01	103	0.45	3.34	154	0.05

Note. IELTS = International English Language Testing Service (IELTS) oral assessment.

more precise analysis of individuals' patterns of adaptive learning was produced by separating individuals' scores into profile patterns and levels. Also, PAMS characterizes profiles in terms of continuous profile match parameters (Davison, 1994; Davison, Kim, & Ding, 2001). This method proposes an alternative approach to analyses of data based on a generalization of the Q factor model. PAMS reparameterizes the linear latent model associated with factor analysis to produce estimates based on score profile.

Initially, idealized profiles were generated using multidimensional scaling (MDS) in SPSS 10. Results of the initial MDS clearly indicated a two-dimensional solution for each variable of adaptive learning. Results of the profile analysis for goal orientations showed a distinction between task and performance goals and between approach and avoid orientations as would be expected. Figure 6 shows that Dimension 1 was defined by high scores on performance orientations, both approach and avoid, and by a low score on a task goal orientation. Because these are profiles, the mirror image of these results would refer to a person who had a high task goal orientation and low performance orientations. Dimension 2 was defined by high scores in a performance avoid goal orientation and low scores in performance approach and task goal orientations. The mirror image of this profile indicated that a person with high approach goals would have a low avoid goal. These profiles are displayed in Figure 6, and the dimensions according to the items are displayed in Table 2.

In the analysis of the self-efficacy scores, Dimension 1 was defined by high scores on self-efficacy and low scores on anxiety. Thus, a profile of positive affect indicated high self-efficacy and low anxiety, whereas a profile of negative affect indicated high anxiety and low self-efficacy. Dimension 2 was less distinct but generally supported the notion of an in- and out-of-class distinction, particularly in terms of self-efficacy, with low scores on in-class efficacy and high scores on out-of-class self-efficacy. These profiles are displayed in Figure 7, and the dimensions and their items are presented in Table 3.

The profile analysis for language learning strategies was less distinct than for the other variables. There was an indication of a cognitive/metacognitive dimension and a social/individual dimension. Clear dimensions were not anticipated because learning strategies were not related directly to performance and because of the apparent lack of stability of the instrumentation indicated by replication problems. The lack of replication is probably due to the lack of clear conceptualization of language learning strategies.

Dimension 1 was defined by higher scores on metacognitive strategies and lower scores on cognitive strategies. Interacting with native speakers represented the height of metacognitive strategies, whereas surface strategies, such as reviewing for tests and memorizing vocabulary, represented the lowest cognitive strategies. Dimension 2 was defined by high scores on social strategies and low scores on the other individual strategies. This finding is particularly interesting in light of the cultural grouping of the sample. Most of the sample came from Confucian heritage culture countries such as China, Japan, and Korea. Confucian

FIGURE 6
Graphical Representation of Multidimensional Scaling (MDS) Solution for Goal Orientation Profiles

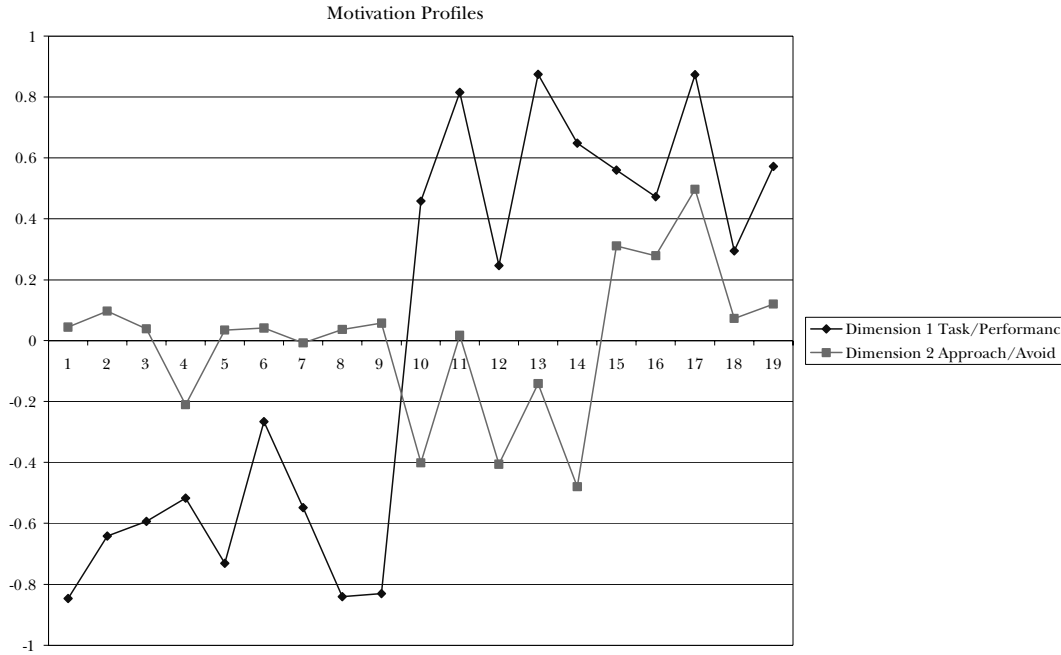


TABLE 2
Estimated Two-Dimensional Scale Values of 19 Goal Orientation Variables for Profile Analysis

Number and Variable Type		Item	Dimension 1	Dimension 2
1	Integrative	At ease with native speakers	−0.85	0.04
2	Task	Learn from mistakes	−0.64	0.10
3	Task	Interested in English work	−0.59	0.04
4	Integrative	Understand culture	−0.52	−0.21
5	Integrative	Participate in cultural groups	−0.73	0.04
6	Task	Really think about learning tasks	−0.27	0.04
7	Task	Like to learn new things	−0.55	−0.01
8	Task	Want to get better at English	−0.84	0.04
9	Integrative	Meet varied people	−0.83	0.06
10	Performance Approach	Doing better than others	0.46	−0.40
11	Performance Approach	Other students think I'm good	0.82	0.02
12	Performance Approach	Feel successful if do better than others	0.25	−0.41
13	Performance Approach	Show teacher better than others	0.87	−0.14
14	Performance Approach	Only one to answer teacher's question	0.65	−0.48
15	Performance Avoid	Others won't think poor at English	0.56	0.31
16	Performance Avoid	Avoid looking like can't do tasks	0.47	0.28
17	Performance Avoid	Avoid looking stupid	0.87	0.50
18	Performance Avoid	Do work to avoid embarrassing self	0.30	0.07
19	Performance Avoid	Avoid looking like can't speak English	0.57	0.12

heritage cultures are said to be collectivist and work for the good of the group, whereas Western cultures are said to be individualistic and work for the good of the self. Figure 8 illustrates the profiles, and Table 4 presents the dimensions and corresponding items.

Correlations between the MDS profiles and the level factors are presented in Appendix A. The

FIGURE 7
Graphical Representation of Multidimensional Scaling (MDS) Solution for Affect Profiles

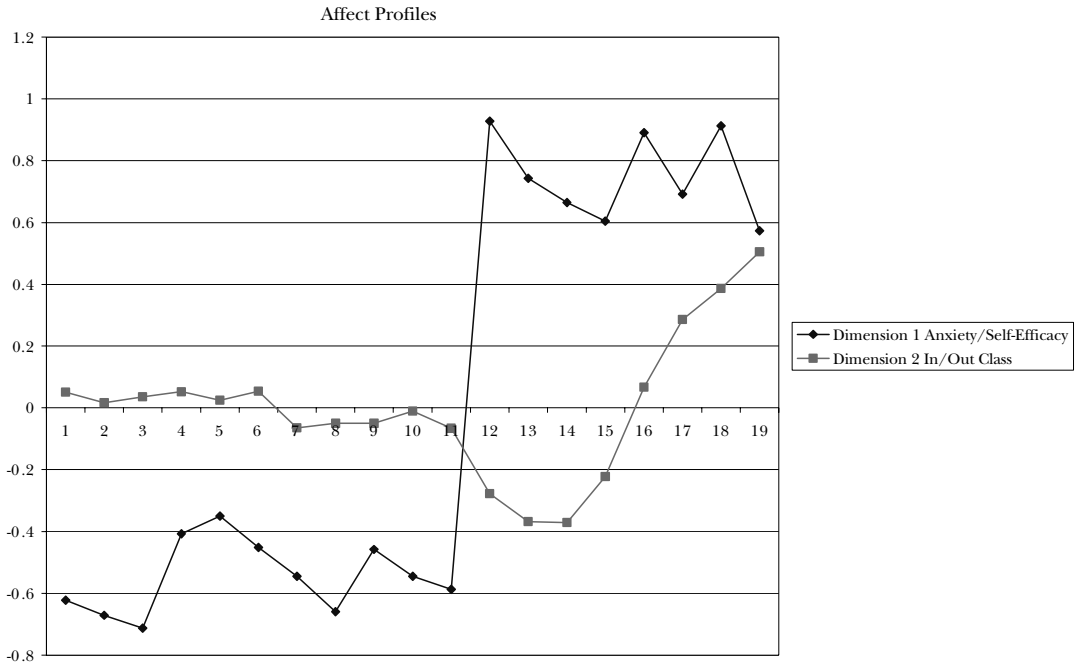


TABLE 3
Estimated Two-Dimensional Scale Values of 19 Affect Variables for Profile Analysis

Number		Item	Dimension 1	Dimension 2
1	Anxiety In Class	Question from teacher	−0.62	0.05
2	Anxiety In Class	Informal conversation with teacher	−0.67	0.02
3	Anxiety In Class	Group discussion	−0.71	0.04
4	Anxiety In Class	Role play	−0.41	0.05
5	Anxiety In Class	Oral presentation	−0.35	0.03
6	Anxiety In Class	Formal discussion	−0.45	0.05
7	Anxiety Out of Class	Talk with more than one native speaker	−0.55	−0.07
8	Anxiety Out of Class	Start conversation with native speaker	−0.66	−0.05
9	Anxiety Out of Class	Academic lecturer asks question	−0.46	−0.05
10	Anxiety Out of Class	Ask academic subject lecturer a question	−0.55	−0.01
11	Anxiety Out of Class	Native speaker asks	−0.59	−0.07
12	Efficacy In Class	Question from teacher	0.93	−0.28
13	Efficacy In Class	Act as spokesperson	0.74	−0.37
14	Efficacy In Class	Role play	0.67	−0.37
15	Efficacy In Class	Formal discussion	0.61	−0.22
16	Efficacy Out of Class	Ask questions of academic subject lecturer	0.89	0.07
17	Efficacy Out of Class	Converse with more than one native speaker	0.69	0.29
18	Efficacy Out of Class	Start a conversation with known native speaker	0.91	0.39
19	Efficacy Out of Class	Start a conversation with unknown native speaker	0.57	0.51

motivation MDS 1 profile associated with high performance goals and low task goals was negatively correlated with the affect MDS 1 profile (anxiety/self-efficacy), the strategies MDS 1 profile (cognitive/metacognitive), motivational intensity, and oral performance. This finding supported the proposed model of adaptive learning. The MDS 1 affect profile (anxiety/self-efficacy)

FIGURE 8
Graphical Representation of Multidimensional Scaling (MDS) Solution for Language Learning Strategies

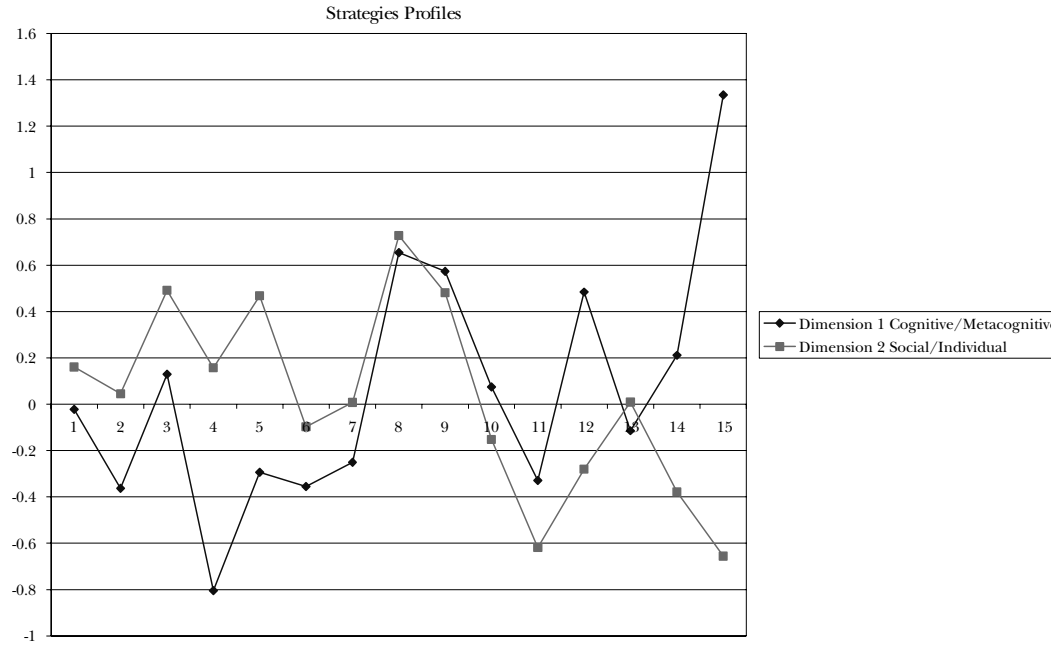


TABLE 4
Estimated Two-Dimensional Scale Values of 15 Strategies Variables for Profile Analysis

Number and Variable Type		Item	Dimension 1	Dimension 2
1	Cognitive	Organize	−0.02	0.20
2	Cognitive	Go through assignment	−0.36	0.05
3	Cognitive	Reread course materials	0.13	0.49
4	Cognitive	Review for tests	−0.81	0.16
5	Cognitive	Memorize words	−0.29	0.47
6	Cognitive	Determine concepts for test	−0.36	−0.10
7	Cognitive	Keeping up	−0.25	0.01
8	Social	Assignments with others	0.65	0.73
9	Social	Discuss with others	0.57	0.48
10	Metacognitive	Relate words to each other	0.08	−0.15
11	Metacognitive	Guess from context	−0.33	−0.62
12	Metacognitive	Evaluate progress	0.48	−0.28
13	Metacognitive	Decide what you need to learn	−0.11	0.01
14	Metacognitive	Ask teacher to explain	0.21	−0.38
15	Metacognitive	Practise with native speakers	1.34	−0.66

was positively correlated with strategies MDS 1 (cognitive/metacognitive), oral performance, and motivational intensity—again lending support for the model. There was a negative correlation with the strategies MDS 2 profile (social/individual) and oral performance, whereas the strategies MDS 1 profile (cognitive/metacognitive) indicated a low correlation with oral performance. (See Appendix A.)

DISCUSSION

The results of this study indicate support for the hypothesized model of adaptive language learning with a distinct division between students who comply with the model of adaptive learning and those who do not. According to the model, successful learners show a task goal orientation and positive affect, and are more likely to use

metacognitive language learning strategies than unsuccessful learners. By contrast, less successful learners are more likely to show a performance avoid orientation and display negative affect.

However, this model provides only some of the aspects concerning language proficiency and acquisition. The model concerns some variables that are related to spoken language performance, and these variables may be manipulated to a certain degree at classroom and institution level.

The oral performance variable in this model represents a rather narrow strand of language proficiency. Oral performance as measured by an IELTS-type speaking test was selected for two main reasons. First, this type of assessment is a valid and reliable measure of oral performance. The assessment was conducted by a certified IELTS examiner according to usual examining practices. This measure of oral performance is the most commonly used measure for university entrance for international students in Australia and thus was relevant to the real-world needs of the participants in the sample. The second reason for the choice of variable was the relationship between the affective variables and speaking as outlined in previous research, which emphasizes the saliency of speaking skills (Phillips, 1992; Price, 1991). Often, students may feel comfortable with other skills but experience a high degree of anxiety when speaking.

Future research is needed to replicate the model and to consider other variables that may influence language performance. The most obvious of these variables would be level of English. Participants in this study were all of a similar linguistic level and were due to take the IELTS. It is assumed that the majority of these participants would be successful; therefore, they could be classed as able to follow a tertiary course of study in English. It would be interesting to investigate the role that language level plays in a model of adaptive learning.

The participants in this study were mostly international students from Confucian heritage cultures. There are similarities in the educational systems and attitudes toward education in these countries. Typically, education is highly prized. High value is placed on effort, which is viewed as being directly linked to high academic achievement (Grant & Dweck, 2001). The majority of international students attending Australian universities are from Confucian heritage culture countries; thus, it is important to consider motivational profiles characteristic of these students.

The results of this study indicate that the instrumentation to measure constructs of adaptive learning was both reliable and valid and that the constructs used were appropriate to language learners.

The study provided empirical evidence for the reliability and validity of the PALS instrumentation used in a second language setting. The means, standard deviations, and alpha reliability scores for this study were similar to those of the original validation study by Midgely and colleagues (1997). These similarities are shown in Table 5. The confirmatory factor structure and factor loadings were also similar to those of the PALS by Midgely et al. (1997).

A task goal orientation was found to be the most predictive of oral ability. This result is consistent with findings in educational research. However, the study indicated that neither an integrative nor an instrumental goal orientation was related to oral performance. This finding suggests that this conceptualization of motivational construct is not applicable to the sample. Gardner's model is directed at bilingual learners who have as their goal native-speaker-like linguistic competence. The participants in this study were short-term sojourners who planned to study at a tertiary level in English and then return to their own countries. It is understandable that an integrative goal orientation may not be relevant to these participants. There was a strong correlation between integrative and task goal orientations indicating that both of these conceptualizations share a commonality of intrinsic motivation. It is surprising that motivational intensity was not related to oral performance. This finding may possibly be explained by the fact that effort variables tend to focus on formal learning, whereas oral competence may depend upon a broader learning experience such as in- and out-of-class communication.

The two subscales used to measure affect indicated that in a second language learning environment a focus on out-of-class communication is also relevant to adaptive learning. The strategies subscale, though reasonably reliable and valid,

TABLE 5
Comparison of Present Study and Patterns of Adaptive Learning Survey (PALS)

	Present Study			PALS		
Goal	*M*	*SD*	α	*M*	*SD*	α
Task	3.86	0.66	.68	3.98	0.89	.78
Performance Approach	2.65	1.01	.86	2.68	1.08	.86
Performance Avoid	2.61	0.86	.77	2.41	0.91	.75

did not produce the same results as did Schmidt and Watanabe's (2001) study. It is probably unreasonable to expect one instrument to measure strategies variables reliably across samples due to the variation in student variables. Perhaps it is time to take stock and consider more situated approaches to the measurement and classification of language learning strategies (Woodrow, 2005).

Support for the model has some implications for the classroom: the need to promote a task goal orientation, high self-efficacy, low anxiety, and the use of language learning strategies, particularly metacognitive learning strategies. Support for the model of adaptive learning is significant because of the possibility of manipulating these constructs at the classroom level.

The application of goal orientation theory to language learning has interesting implications. The current study indicated that the theory is relevant to language learners and that a tripartite conceptualization of goals is useful. In education studies, there is evidence that personal goal orientations may be manipulated at the classroom and school levels (Ames, 1992; Anderman & Maehr, 1994). Thus, it is important to promote the value of task goals and to minimize focus on normative and competitive language learning tasks both within the classroom environment and within the school itself.

The construct of performance avoid goal orientation is particularly interesting because this is the first time this construct has been used with language learners. The construct indicates that a fear of failure is indeed a motivating force for language learners. An interesting result emerged from the study concerning the relationship between a performance avoid goal and a task goal. Usually these constructs are orthogonal or negatively related. Most previous studies have used Western participants, whereas this study used mainly Asian participants. This study found a positive relationship ($r = .25$, $p < .01$). This result means that participants can be motivated by the task while they are, at the same time, afraid of failure, which suggests that ethnicity influences motivational patterns. There is need for further research in this area.

Other areas of the model raised interesting avenues for further research. The relationship between intensity and strategies seemed to function as moderating variables and were not directly related to the performance variable.

The advantage of a model of adaptive learning lies in the extent to which these constructs can be manipulated at the classroom and school levels (Anderman & Maehr, 1994). A task goal orientation may be promoted over a performance goal by focusing students on the task or the process of learning in the classroom rather than on getting a better score than another student. So, to promote a task goal, the focus should be on criterion assessment—assessment in terms of task completion—rather than on norm-referencing, which assesses students in comparison to others. This change in focus can be promoted at both school and classroom levels. Both school and classroom discourse should focus on the task, learning, and understanding rather than on examination scores.

The performance avoid goal orientation is considered a maladaptive construct and is related to anxiety (Middleton & Midgely, 1997). Thus, teachers should not try to motivate students with threats of failure, which are counterproductive.

The application of the self-efficacy construct is widespread in educational studies yet it is not so common in language learning studies. Recent research indicates some evidence that self-efficacy is relevant to language learning (Bong, 2001; Yueng et al., 2000). This study provided further support for the relevance of this construct. In fact, self-efficacy showed the strongest loading onto the latent variable of positive affect proposed in the structural model, and, in the correlational analysis, self-efficacy was the strongest predictor of oral performance. Bandura (1997) referred to three sources of self-efficacy beliefs: mastery, vicariousness, and persuasion. In the classroom, self-efficacy beliefs may be promoted through scaffolding whereby learner support from the teacher moves from high to low, thus increasing the likelihood of success, and through decreasing negative self-efficacy judgments, which could lead to failure and a tendency to give up. Vicariousness refers to a learner adopting positive beliefs based on observing the success of another student, "If she can do it, so can I." Vicarious self-efficacy beliefs can be promoted through the use of pair and group work. Perhaps the use of mentoring may be useful for enhancing self-judgments by pairing more experienced and less experienced students. Beliefs based on persuasion again may be facilitated by group and pair work and by teacher input.

According to Pintrich (2003), self-efficacy beliefs may be enhanced by providing accurate and positive feedback to students concerning their competence and by giving them advice on developing this competence. Further research is required to assess how and what type of feedback may influence self-efficacy beliefs.

Anxiety and self-confidence were combined to form a variable of positive affect in the structural

model. However, the correlational analysis, although high (around $r = -.6$, $p = <.01$), was at a level that indicated that each construct is distinct. The study provided a new measure of anxiety and further support for the importance of second language speaking anxiety as a significant factor in language learning success. Methods to prevent foreign language anxiety depend on the nature of the anxiety.

Research in education has indicated evidence to suggest there are two different types of anxiety based on Tobias's (1985) information processing model. Naveh-Benjamin's research (1991) indicated that anxious learners may experience either a skills deficit anxiety or a retrieval interference anxiety. Skills deficit anxiety arises due to poor uptake of skills and knowledge. Retrieval interference anxiety is due to worry and task irrelevant thoughts that occupy valuable cognitive capacity during communication in the foreign language (Zeidner, 1998). There is a need for further research concerning these two types of anxious learners in a language learning setting. Skills deficit learners would benefit from improving learning strategies, whereas retrieval interference learners would benefit from relaxation techniques and desensitizing (Naveh-Benjamin, 1991).

Despite problems with the instrumentation for measuring learning strategies and the lack of relationship between strategies and performance, it was evident that language learning strategies were related to other variables of adaptive learning. There is evidence that language learning strategies can be taught, and clear evidence that metacognitive strategies are very important in language learning (Oxford, 1990, 1996). Language learning strategies as a central issue in self-regulation (Pintrich & Garcia, 1991) need more research. In particular, the conceptualization of language learning strategies that can accommodate varying learning environments would prove valuable. This research could be informed by the application of more qualitative methods that investigate in greater depth the language learning strategy choice of particular students, in particular learning and teaching environments.

The current research has provided preliminary evidence of a model of adaptive learning that is relevant to language learners. Adaptive language learners show a task goal orientation, have high self-efficacy, low second language anxiety, and use metacognitive language learning strategies. The research suggests that these variables of adaptive learning may be manipulated to enhance the motivation and achievement of language learners. However, further study is needed to assess which methods are most conducive to enhancing adaptive practices and thus lead to student self-regulation, pointing out the importance of the content and utility of classroom discourse. Pintrich (2003) suggested some design principles for self-regulation, such as using cooperative and collaborative groups, focusing on mastery, learning, and effort, rather than on social comparison or norm-referenced standards. Further empirical evidence is needed to evaluate these design principles as they are put into practice in the language learning classroom.

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APPENDIX A
Correlation Matrices

Confirmatory Factor Analysis of Motivation Goal Orientations

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1.00														
2	.31	1.00													
3	.07	.26	1.00												
4	.45	.11	.09	1.00											
5	.05	.51	.32	.08	1.00										
6	.22	.19	.15	.27	.21	1.00									
7	.30	.14	.02	.42	.02	.36	1.00								
8	.03	.31	.10	−.08	.39	.14	.01	1.00							
9	.01	.25	.50	.09	.38	.11	.14	.30	1.00						
10	.33	.17	.08	.29	.15	.27	.22	.13	.08	1.00					
11	.14	.21	.61	.06	.34	.17	.10	.14	.51	.26	1.00				
12	.12	.38	.27	.06	.42	.19	.15	.34	.31	.27	.31	1.00			
13	.13	.39	.27	.07	.48	.15	.11	.34	.41	.18	.31	.45	1.00		
14	.04	.29	.55	.04	.31	.12	.11	.17	.62	.08	.59	.31	.36	1.00	
15	.02	.26	.41	−.07	.25	.09	.01	.18	.41	.08	.57	.30	.30	.67	1.00

Key to Variables

1	Task 1	Like tasks that learn from even if make mistakes
2	Avoid 1	Others won't think I'm poor at English
3	Approach 1	Doing better than other students
4	Task 2	Interested in English work
5	Avoid 2	Avoid looking like I can't do English tasks
6	Task 3	I like English learning tasks best when I really have to think
7	Task 4	Like to learn new things
8	Avoid 3	Avoid looking stupid
9	Approach 2	Other students in my English class think I'm good at English
10	Task 5	Want to get better at English
11	Approach 3	Do better than most of the other students
12	Avoid 4	Don't embarrass myself
13	Avoid 5	Don't look as though I can't speak English in my class
14	Approach 4	Show my English teacher that I'm better at English
15	Approach 5	Only one who could answer the teacher's questions in my class

Confirmatory Factor Analysis of Self-Efficacy

	1	2	3	4	5	6	7	8
1	1.00							
2	.77	1.00						
3	.74	.79	1.00					
4	.75	.73	.76	1.00				
5	.62	.50	.53	.59	1.00			
6	.60	.52	.50	.58	.63	1.00		
7	.59	.51	.52	.56	.63	.85	1.00	
8	.52	.50	.49	.55	.59	.79	.81	1.00

Key to Variables

1	In-Class Self-Efficacy	Answer question from teacher
2	In-Class Self-Efficacy	Act as group spokesperson
3	In-Class Self-Efficacy	Take part in role play
4	In-Class Self-Efficacy	Participate in formal discussion
5	Out-of-Class Self-Efficacy	Ask questions to lecturer
6	Out-of-Class Self-Efficacy	Take part conversation more than one NS
7	Out-of-Class Self-Efficacy	Start a conversation with known NS
8	Out-of-Class Self-Efficacy	Start a conversation with unknown NS

Confirmatory Factor Analysis of Second Language Speaking Anxiety

	1	2	3	4	5	6	7	8	9	10	11
1	1.00										
2	.66	1.00									
3	.67	.53	1.00								
4	.56	.47	.53	1.00							
5	.50	.43	.48	.70	1.00						
6	.61	.49	.56	.59	.58	1.00					
7	.37	.54	.36	.30	.32	.39	1.00				
8	.35	.52	.42	.29	.28	.37	.85	1.00			
9	.55	.49	.40	.44	.42	.44	.54	.52	1.00		
10	.45	.51	.38	.38	.33	.39	.54	.52	.81	1.00	
11	.37	.43	.32	.35	.28	.33	.60	.60	.57	.58	1.00

Key to Variables

1	In-Class Anxiety	Answer question teacher
2	In-Class Anxiety	Speak informally to my teacher
3	In-Class Anxiety	Take part in group discussions
4	In-Class Anxiety	Take part in a role play
5	In-Class Anxiety	Give an oral presentation
6	In-Class Anxiety	Contribute to formal discussions
7	Out-of-Class Anxiety	Take part conversation more than one native speaker (NS)
8	Out-of-Class Anxiety	Start conversation with native speaker
9	Out-of-Class Anxiety	Answer question from lecturer
10	Out-of-Class Anxiety	Ask lecturer for advice
11	Out-of-Class Anxiety	Answer question unknown NS

Confirmatory Factor Analysis of Language Learning Strategies

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1.00														
2	.41	1.00													
3	.33	.35	1.00												
4	.39	.38	.30	1.00											
5	.33	.42	.24	.39	1.00										
6	.38	.38	.27	.32	.29	1.00									
7	.58	.45	.42	.37	.35	.47	1.00								
8	.37	.15	.25	.22	.34	.26	.30	1.00							
9	.29	.15	.14	.25	.15	.20	.15	.42	1.00						
10	.31	.35	.23	.30	.19	.31	.37	.40	.44	1.00					
11	.43	.30	.30	.31	.23	.38	.41	.35	.36	.57	1.00				
12	.27	.26	.15	.27	.27	.20	.22	.28	.38	.44	.40	1.00			
13	.18	.20	.14	.20	.19	.07	.14	.32	.40	.38	.19	.43	1.00		
14	.24	.32	.23	.30	.14	.28	.39	.27	.21	.31	.32	.30	.13	1.00	
15	.35	.32	.26	.22	.22	.31	.38	.35	.20	.32	.33	.34	.15	.64	1.00

Key to Variables

1	Cognitive Strategy	Go through assignments after feedback
2	Cognitive Strategy	Reread course materials
3	Cognitive Strategy	Review ahead for tests
4	Cognitive Strategy	Memorize words
5	Cognitive Strategy	Determine unfamiliar concepts for tests
6	Cognitive Strategy	Concerned with keeping up
7	Cognitive Strategy	Organize what learned
8	Metacognitive Strategy	Relate words to each other
9	Metacognitive Strategy	Guess words from context
10	Metacognitive Strategy	Evaluate progress
11	Metacognitive Strategy	Decide what need to learn
12	Metacognitive Strategy	Ask teacher to explain
13	Metacognitive Strategy	Practice with native speakers
14	Social Strategy	Work with others on assignments
15	Social Strategy	Discuss course with classmates

Structural Equation Model

	1	2	3	4	5	6	7	8	9	10
1	1.00									
2	.59	1.00								
3	.30	.30	1.00							
4	.37	.37	.53	1.00						
5	.15	.20	.42	.46	1.00					
6	.15	.05	.07	.26	.14	1.00				
7	.22	.09	.18	.35	.18	.65	1.00			
8	.43	.37	.59	.48	.29	.18	.25	1.00		
9	.23	.24	.38	.21	.19	−.01	.03	.49	1.00	
10	.24	.10	.10	.19	−.04	.26	.33	.14	−.03	1.00

Key to Variables
1 Task goal
2 Integrative orientation
3 Cognitive strategies
4 Metacognitive strategies
5 Social strategies
6 Anxiety reversed
7 Self-efficacy
8 Effort
9 Persistence
10 International English Language Testing Service oral assessment

All Summated Subscale Means

	1	2	3	4	5	6	7	8	9	10	11	12	13
1	1.00												
2	.14*	1.00											
3	.23**	.48**	1.00										
4	.59**	.17**	.28**	1.00									
5	.38**	.10	.16**	.35**	1.00								
6	−.16**	.02	.20**	−.06	−.12*	1.00							
7	−.11	.13*	.22**	−.03	−.05	.58**	1.00						
8	.18**	.00	−.17**	.04	.17**	−.59**	−.39**	1.00					
9	.22**	−.08	−.17**	.12*	.12*	−.47**	−.64**	.67**	1.00				
10	.30**	.08	.06	.30**	.56**	−.11	−.01	.18**	.15**	1.00			
11	.37**	.05	.02	.37**	.39**	−.31**	−.17**	.34**	.29**	.53**	1.00		
12	.15*	.06	.11	.21**	.27**	−.17**	−.09	.16**	.17**	.42**	.46**	1.00	
13	.24**	−.01	−.23**	.10	.07	−.23**	−.24**	.28**	.33**	.10	.19**	−.04	1.00

**Significant at .01 level.
*Significant at .05 level.
Key to Variables
1 Task goal orientation
2 Performance approach goal orientation
3 Performance avoid goal orientation
4 Integrative goal orientation
5 Motivational intensity
6 In-class anxiety
7 Out-of-class anxiety
8 In-class self-efficacy
9 Out-of-class self-efficacy
10 Cognitive language learning strategies
11 Metacognitive language learning strategies
12 Social language learning strategies
13 IELTS oral performance indicator

Correlations Between Multidimensional Scaling (MDS) Profiles

	1	2	3	4	5	6	7	8	9	10	11
1	1.00										
2	−.28**	1.00									
3	.34**	−.20**	1.00								
4	−.24**	−.09	−.02	1.00							
5	−.11	.11	−.00	.10	1.00						
6	−.15*	−.04	.04	.72**	.03	1.00					
7	−.41**	−.05	.02	.22**	.12	.11	1.00				
8	.01	.09	.03	−.21**	−.05	−.16*	−.29**	1.00			
9	−.20**	−.04	.24**	.31**	−.01	.25**	.12*	.06	1.00		
10	−.17**	−.02	.30	.16*	−.05	.13*	−.06	.14*	.53**	1.00	
11	−.26**	−.07	.01	.32**	.08	.25**	.12*	−.24**	.16*	.09	1.00

*Significant at the .05 level.
**Significant at the .01 level.

Key to MDS Profiles

1 Task versus performance goal profile
2 Approach versus avoid goal profile
3 Motivation profile level
4 Anxiety versus self-efficacy profile
5 In-class versus out-of-class affect profile
6 Affect profile level
7 Cognitive versus metacognitive strategies profile
8 Social versus individual strategies profile
9 Strategies level profile
10 Motivational intensity
11 Oral performance

APPENDIX B
Fit Indexes

Confirmatory Factor Analysis of Motivation Goal Orientations

	χ^2	p	χ^2/df	RMR	RMSEA	GFI	AGFI	CFI	NFI	NNFI
Motivation Goals	194.96	.000	2.22	.06	.07	.91	.87	.90	.84	.88

Confirmatory Factor Analysis of Second Language Speaking Self-Efficacy

	χ^2	p	χ^2/df	RMR	RMSEA	GFI	AGFI	CFI	NFI	NNFI
Self-Efficacy	61.17	.00	3.22	.05	.09	.95	.90	.97	.96	.96

Confirmatory Factor Analysis of Second Language Speaking Self-Efficacy

	χ^2	p	χ^2/df	RMR	RMSEA	GFI	AGFI	CFI	NFI	NNFI
Anxiety	172.62	.00	4.32	.07	.11	.90	.83	.93	.84	.90

Confirmatory Factor Analysis of Model of Language Learning Strategies

	χ^2	p	χ^2/df	RMR	RMSEA	GFI	AGFI	CFI	NFI	NNFI
Strategies	180.50	.00	2.07	.05	.06	.92	.88	.92	.86	.90

Structural Model of Adaptive Learning

	χ^2	p	χ^2/df	RMR	RMSEA	GFI	AGFI	CFI	NFI	NNFI
Model	72.56	.00	2.41	.05	.07	.95	.91	.95	.92	.92

Note. χ^2 = chi square statistic; χ^2/df = normed chi square divided by degrees of freedom; RMR = root mean square residual; RMSEA = root mean square error approximation; GFI = goodness-of-fit index; AGFI = adjusted goodness-of-fit index; CFI = comparative fit index; NFI = normed fit index; NNFI = non-normed fit index.

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