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四種目標導向對英語學習與教學的啓示

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摘 要

本研究汲取教育心理學和語言學習的理論，納入自我效能、智力增長論、四向度目標導向、深度英語學習策略與英語學習成就等，隨教學可改進英語學習成就之因素，建立一個以高中生個人英語學習過程為背景的階層式四向度目標導向模式。資料取自臺北市17所高中1,261位高二學生，以結構方程模式統計分析。研究結果支持逃避精熟目標模式的存在，發現臺灣學生具有多重學習目標，且支持修正目標理論主張趨向表現目標的正面效果。研究結果並對英語教學提供建議。

關鍵詞：四向度目標導向、智力增長論、自我效能

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Four Kinds of Goal Orientations and Their Implications on English Learning and Teaching

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Abstract

This study drew from theories of educational psychology and language learning to hypothesize a hierarchy model of foreign language learning that takes into account learners' beliefs, motivation and strategy use in explaining foreign language learning achievement in the context of the high school students' learning English in Taiwan. A set of questionnaires was used to collect data. The sample consisted of 1,261 sophomore students from 17 senior high schools in Taipei city. The data were analyzed using structural equation modeling (SEM). The findings supported the hypothesized model, confirmed the existence of mastery-avoidance goals, and illuminated the relationships among latent variables under study. The results also imply the students have multiple goals and support the positive potential of performance-approach goals proposed by the revised goal theory. Implications for English instructions and future study were provided.

Keywords: four dimensional goal orientations, incremental intelligence belief, self-efficacy

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Introduction

As language learning is a complex process in which numerous factors such as age, sex, personal beliefs, motivation, interest, learning environment and peer pressure etc. intertwined in determining language achievement, it is very important for teachers to know which important factors that can be changeable via teaching to enhance students' learning. Among others, motivation goals, i.e. achievement goals defined as the impetus to create and sustain intentions and goal-setting acts (Ames & Ames, 1989), are the most important factors because they may determine the extent of the learner's active involvement and attitude toward learning (Karen, 1998) and may thereby affect learning outcomes. Though there is already a great deal of research examining both antecedents and consequences of endorsing achievement goals, past research usually focused on the interrelationship of two or three variables, such as among self-efficacy, goal orientation and performance (Anderman & Midgley, 1992; Vrugt, Oort, & Zeeberg, 2002); between implicit intelligence beliefs and goal motivation

(Bandura & Dweck, 1985); between goal motivation and language achievement (Tercanlioglu, 2004); and between foreign language learning strategy and achievement (Bialystok, 1981; Gabriela, 2002). According to prior literature and individual learning process to establish a hypothesized models, the authors used 4-dimensional motivation goals as a core of the model, and only chose important and changeable variables, i.e. self-efficacy, implicit intelligence belief as anterior variables and deep English learning strategies as a posterior variable to predict English achievement, in order to have a comprehensive understanding of intricate relationship among those factors.

Motivation goals have been developed from dichotomy via trichotomy to four-oriented goals since the late 1970s. Since four-oriented achievement goal framework was established with its theoretical and empirical research on achievement motivation (Elliot & McGregor, 2001; Elliot & Thrash, 2001), there has been no empirical research done to investigate its grounds especially in English learning, even though 4-dimensional goals can better explain the complex motivation of individual learners. Furthermore, in Taiwan, due to

facility limitation, listening and oral communication ability of English have not been included in the Entrance Examination of University until recently, which no doubt greatly impacts how high school students engaged in English learning. This study was to investigate what kinds of motivation goals Taiwanese high school students are holding in learning English and to confirm whether the hypothesized model, originated from western countries, was applicable to Taiwan students for English learning.

Literature Review

Four Dimensional Goal Orientations

In the past, normative goal theory classified achievement goals into two contrasting categories: mastery goals and performance goals. Learners who are mastery-oriented define the purpose of learning as competence increase, as opposed to those performance-goal oriented students who consider the aims of learning to be demonstrating exceptional competence over others or those who lack competence (Ames, 1992; Nicholls, 1984). Basically, normative goal theory (Ames, 1992; Dweck & Leggett, 1988) stipulates that students who are

only concerned about performance, doing better than others, and trying to be smarter than others, with little or no concern for mastery and learning, are likely to follow a fairly maladaptive pathway. This dichotomous view of motivation was challenged by revised goal theory (Harackiewicz, Barron, & Elliot, 1998; Pintrich, 2000a), which generalizes that there are no detrimental effects if students with performance-approach goals are also oriented to mastery of their schoolwork. Also, this theory claims that the influence of performance goals on the learning process and results is moderated by the learners' performance-approach or performance-avoidance approach. Performance-approach oriented learners desire to outperform or surpass others, to obtain high ability judgments and to be recognized by others, while learners who are performance-avoidance oriented are more concerned about not performing worse than others, avoiding looking dumb or silly, and avoiding getting the worst scores, in order to maintain self worth (Elliot & Church, 1997; Urdan, 1997).

Elliot and McGregor (2001) initially constructed a 2 x 2 achievement goal framework based on competence

definition and valence. Competence may be defined by two different standards as evaluation. The absolute standard is evaluated by the requirements of the task itself; the normative standard is evaluated by the performance of others. The other dimension of achievement goals is valence, which represents the approach-avoidance distinction. An achievement goal may be focused on attaining a positive, desirable possibility (an approach goal) or it may be focused on avoiding a negative, undesirable possibility (an avoidance goal). The students who define competence as an absolute standard and positively valence are mastery-approach oriented. Those who define competence as normative standard and positively valence are performance-approach oriented. Those who define competence as a normative standard but negatively valence are performance-avoidance oriented. Those who define competence as an absolute standard but negatively valence are mastery-avoidance oriented. Learners with mastery-avoidance goals are concerned about avoiding misunderstanding of learning materials, and avoiding not learning or not mastering the materials. Such learners are

similar to perfectionists or seniors who want to avoid performing worse than they did before (Pintrich, 2000b).

Self-Efficacy Belief and Implicit Belief

Self-Efficacy belief always plays an important role in goal motivation. For Pintrich and Schunk (1996), self-efficacy refers to a person's sense of his own capabilities, a belief of a confident level the person possesses about his own ability to understand and acquire what he is trying to learn. Students with a high sense of self-efficacy for accomplishing an educational task will participate more readily, work harder, and persist longer (Pintrich & De Groot, 1990; Zimmerman, 1995). Meanwhile, Schunk's research (Schunk, 1990, 1994) indicated that when students attribute their success to their own capabilities, self-efficacy will increase, whereas when they are unable to finish a certain task because they believe they lack capability, they will not be willing to continue making efforts.

During the same period, Dweck and Leggett (1988) wondered why learners in the same context pursue different goals, which led them to explore the area of intelligence beliefs. Their findings

showed that individuals who believe that attributes are fixed and uncontrollable can be referred to as “entity theorists”. Those who believe that attributes are malleable and controllable and can be shaped, increased, or developed through instrumental actions, can be referred to as “incremental theorists” (Dweck, Chiu, & Hong, 1993). Bandura and Dweck (1985) pointed out that upper graders who held incremental beliefs tended to pursue more mastery goals than those who held entity beliefs. In other words, either incremental beliefs or entity beliefs may impact the learners’ goal setting. However, Dweck, Chiu and Hong (1995) suggested that it is possible for an individual to hold both sets of beliefs, albeit to differing degrees. While one set of beliefs would be dominant, the other may be also applied under a circumstance.

Deep English Learning Strategies

Since the 1990s, language researchers have been focusing on learning strategies by studying the process of how a language learner internalizes the targeted language. Appropriate English-Learning strategies help learners to acquire, integrate,

maintain and memorize knowledge contents. Sankaran and Bui (2001) indicated that high motivation is associated with the use of deep learning strategy, and low motivation with undirected strategy. Since Oxford’s Strategy Inventory for Language Learning (SILL) appeared in 1990, it has been readily used in many countries to examine the second language learning strategy of learners because of its high reliability and validity across many cultural groups. SILL includes direct strategies and indirect strategies. The former includes memory strategies, cognitive strategies and compensation strategies. The latter includes meta-cognitive strategies, affective strategies and social strategies. On the other hand, in educational psychology, learning strategies have been classified as surface processing strategies and deep processing strategies. Surface processing strategies in general refer to rote memorization, using mnemonics, encoding verbatim, focusing on details or exact reproduction. Deep processing strategies refer to advanced inference processes such as monitoring, understanding of a main idea, topics and principles, pursuing the best understanding, extensive reading,

discussion and reflection (Anderman & Young, 1994; Biggs, 1993).

The Empirical Evidence for Establishing Four-Dimensional Goal Orientation Model

Based empirical evidence, the authors hypothesized a four-dimensional goal orientation model (see Figure 1) with eight latent variables, including self-efficacy belief and intelligent incremental belief as antecedent variables, four-dimensional goal orientations and deep English learning strategies as mediating variables, and the English Achievement Test as a final resultant variable. And based on four-dimensional goal theory and literature review, this is the only model that the authors hypothesized and built up. The evidence of studies to date is as follows:

There were close correlations among self-efficacy, goal orientation and achievement. Self-efficacy would contribute to the pursuit of goals and then these goals in turn would contribute to course grades (Vrugt et al., 2002). Students with higher perceived self-efficacy performed better on the proficiency tests. Those with higher self-

efficacy also set higher goals for subsequent achievement tests (Cheng & Chiou, 2010). Yang (1993) indicated that the ability belief of language learners would impact their goals and motivation patterns, and further impact their learning behaviors and strategy use. He (2004) showed self-efficacy was a significant predictor of language achievement. Hence this study assumed self-efficacy was one of the important factors affecting the choice of goals; meanwhile, self-efficacy directly or through goals, and deep English learning strategies indirectly affected English achievement test results.

Past research proved that learners with incremental intelligence beliefs tended to adopt learning goals with a desire to improve themselves and acquire knowledge and skills, whereas students with entity beliefs tended to choose performance goals (Dweck & Leggett, 1988). Because the empirical research (Leondari & Gialamas, 2002) showed that both entity and incremental options were both included in the scale, children tended to endorse incremental statements. Due to being more socially desirable for high school students, this study only selected incremental intelligence to be the second precedent for four-dimensional goal

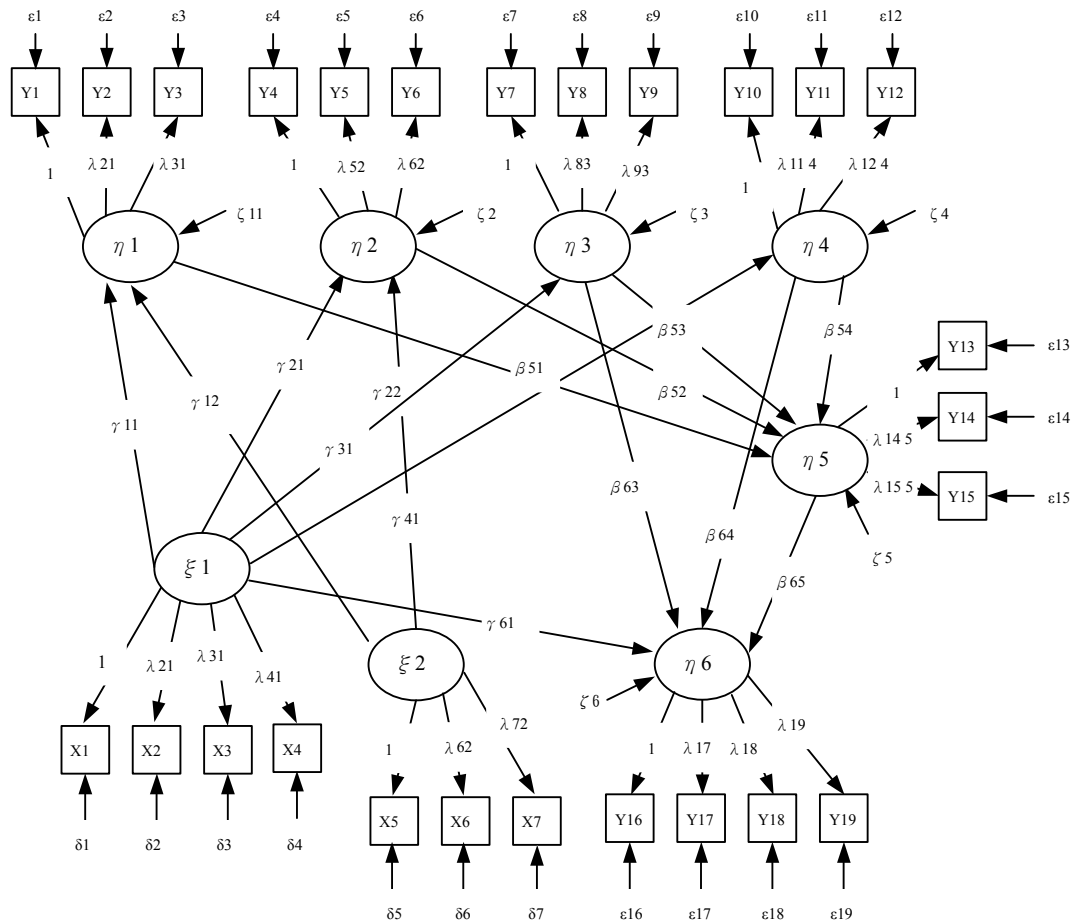


Figure 1 Path route for causal model

$\xi 1$: Self-efficacy belief

- X1 : Item 1 for self-efficacy
- X2 : Item 2 for self-efficacy
- X3 : Item 3 for self-efficacy
- X4 : Item 4 for self-efficacy

$\eta 1$: Mastery-approach goals

- Y1 : Item 1 for mastery-approach goals
- Y2 : Item 2 for mastery-approach goals
- Y3 : Item 3 for mastery-approach goals

$\eta 3$: Performance-approach goals

- Y7 : Item 7 for performance-approach goals
- Y8 : Item 8 for performance-approach goals
- Y9 : Item 9 for performance-approach goals

$\eta 5$: Deep English learning strategies

- Y13 : Functional practice strategies
- Y14 : Cognitive strategies
- Y15 : Metacognitive strategies

$\xi 2$: Intelligence incremental belief

- X5 : Item 1 for intelligence incremental belief
- X6 : Item 2 for intelligence incremental belief
- X7 : Item 2 for intelligence incremental belief

$\eta 2$: Mastery-avoidance goals

- Y4 : Item 4 for mastery-avoidance goals
- Y5 : Item 5 for mastery-avoidance goals
- Y6 : Item 6 for mastery-avoidance goals

$\eta 4$: Performance-avoidance goals

- Y10 : Item 10 for performance-avoidance goals
- Y11 : Item 11 for performance-avoidance goals
- Y12 : Item 12 for performance-avoidance goals

$\eta 6$: English achievement test

- Y16 : Conversation test
- Y17 : Vocabulary test
- Y18 : Grammar and sentence pattern test
- Y19 : Reading test

orientation and assumed this belief had an influence only on the learners with mastery-approach and mastery-avoidance goals, not on students with performance-approach and -avoidance goals (Dweck & Leggett, 1988).

As to the correlation between personal goals and deep English learning strategies, there were empirical studies (Chang & Huang, 1999; Ehrman & Oxford, 1995; Okada, Oxford, & Abo, 1999) which confirmed that metacognitive strategies and cognitive strategies have a significant relationship with extrinsic motivation, but Liao (2000) and Peng (2002) demonstrated that metacognitive strategies and cognitive strategies have a significant relationship with extrinsic and intrinsic motivations. Mastery approach/avoidance goals of the current study belong to intrinsic motivation and performance approach/avoidance goals belong to extrinsic motivation. Since the above-mentioned studies present inconsistent results and so far there has been no empirical study that presents a relationship between four-dimensional goal orientations and deep English learning strategies, we assumed that four-dimensional orientations had different

influence on deep English learning strategies. As shown in Figure 1, the four-dimensional goal orientations individually pointed to deep English learning strategies. The research of Bialystok (1981) and Nyikos and Oxford (1993) proved that functional practice strategies affected the academic performance. Park's study showed that cognitive and meta-cognitive strategies and social strategies all affected academic performance (Park, 1997). Therefore, the authors assumed there was a direct effect of deep English learning strategies on the English achievement test results. According to prior research focusing on their relationships with academic achievement, performance approach goals are consistently is positive (Church, Elliot, & Gable, 2001; Elliot & McGregor, 2001) Besides, the studies (Elliot & Church, 1997; Harackiewicz, Barron, Tauer, Carter, & Elliot, 2000) have indicated that there is no direct effect of mastery goals on achievement performance and performance-approach goals led to positive achievement performance while performance-avoidance goals led to negative achievement performance. So we assumed that performance-approach goals and

performance-avoidance goals had a direct effect on the English achievement test.

Method

Participants

A total of 567 sophomore students from four high schools were sampled for the pilot study and a total of 1,261 sophomore students (51% males) from another 17 high schools for the formal study. In order to achieve normal distribution in the sampling, the authors adopted a stratified and intentional sampling method, excluding the schools for pilot study, and selected one to three senior public or private high schools from each district of Taipei city 12 districts, which approximately could represent three levels (low-middle-high) of students' ability in Taipei.

Instrument

The questionnaire, made up of four scales, was to gauge the participants' self-efficacy, incremental intelligence belief, four-dimensional goals and deep English learning strategies. All items were on a 4-point, Likert-type scale ranging from 1 (not very true) to 4 (very true). See Appendix A.

Self-efficacy belief scale

Students' self-efficacy beliefs were measured by Self-Efficacy Belief Scale. The scale (11-item) was adapted under academic efficacy from Patterns of Adaptive Learning Scales (PALS scale) (Midgley et al., 2000), and the modified scale was made for students' English learning, and translated into Chinese version using the double-back translation method.

Incremental intelligence belief scale

Students' incremental intelligence beliefs were measured by Incremental Intelligence Belief Scale (6-item). Adapted by Wu, Yu, Chen, and Lin's (1999) scale, modifications were reworded in order to be used in the context of their learning experience.

Four dimensional goal orientation scale

Students' motivation goal orientations were measured by Four Dimensional Goal Orientation Scale (24-item) adapted from Elliot and McGregor's (2001) scales. There are four subscales in this instrument; the mastery-approach goals (8-item), mastery-avoidance goals (8-item), performance-approach goals (8-item), and performance-avoidance goals

(8-item). The scale was adapted and translated in the Chinese language in order to be used in Taiwan context.

Deep English learning strategy scale

Students' deep English learning strategies use was measured by Deep English Learning Strategy Scale. The scale was referred to Oxford (1990) and adapted from Chen's deep learning strategies scale (Chen, 2002). The original scale is one of valid and reliable and applicable scales especially for language learning strategies for assessing the English performance of college students in Taiwan. The scale included cognitive strategies (8-item), metacognitive strategies (8-item), functional practice strategies (8-item) and social strategies (8-item).

To assure the scales' validity and reliability, the scales were examined by a pilot study ($N=567$) with items analysis and EFA (Exploratory Factor Analysis) by deleting the inappropriate items with low factor loadings and low coefficients. For Self-Efficacy Belief Scale, the factor loading of each item was bigger than .70 with an explained variance up to 64.49%. For Incremental Intelligence Belief Scale, the factor loading of each item was bigger than .60 with an explained variance up to

57%. For Four Dimensional Goal Orientation Scale, the factor loading of each item was bigger than .60 with an explained variance up to 54.63%. For Deep English Learning Strategy Scale, the factor loading of each item was bigger than .50 with an explained variance up to 51.14%. Table 1 reveals the scales' factor loadings and alpha coefficients, indicating that the scales had good levels of validity and internal consistency. CFA was also performed for each scale on the formal study ($N=1261$) (see Appendix B), as CFA was selected as the most appropriate statistical method to assess the reliability and validity of the instrumentation due to its judgment made a priori.

English achievement test

English achievement Test (30-item) used in the study was to test their abilities of conversation (6-item), vocabulary (6-item), grammar and sentence patterns (8-item), and reading (10-item), based on the content of the local English textbooks from Volume 1 to Volume 3, with reference to the intermediate level of the General English Proficient Tests (GEPTs) and the learning discs made by the Language Training and Testing Center (LTTC). After deleting inappropriate items with difficulty index over .80 and

Table 1

Validity and reliability of the instrument

Scale	No. of items	factor loadings	Cronbach Alpha
Self-efficacy belief	4	.77~.87	.88
Incremental intelligence belief	3	.68~.70	.79
Goal orientations-			
mastery-approach goals	3	.61~.69	.69
mastery-avoidance goals	3	.64~.91	.83
performance-approach goals	3	.66~.71	.73
performance-avoidance goals	3	.68~.83	.80
Deep English learning strategies-			
Functional practice strategies	3	.56~.73	.72
Cognitive strategies	3	.59~.86	.73
Metacognitive strategies	3	.69~.76	.79

discrimination index below .30, the reliability $\alpha=.88$ of the English Achievement Test (25-item) indicated that the test had a good reliability. Meanwhile, by using the mid-term English scores of all participants from the first term of 2006 academic year as external validity, the correlation between their two scores was significant ($r=.723, p<.01$).

Framework

Basing on correlation matrices, the model with eight latent variables was established. Self-Efficacy and intelligence incremental belief were assumed as independent variables, marked by ξ in the model; mastery-approach goals, mastery-avoidance goals, performance-approach goals, performance-avoidance goals, deep

English learning strategies, and the English achievement test were dependent variables, marked by ε (i.e. η). X for measurement indicators of independent variables, and Y for measurement indicators of dependent variables were used by LISREL. There were seven X indicators and nineteen Y indicators in the model (see Figure 1).

According to the empirical research, this study assumed there was a direct influence of self-efficacy on four-dimensional goal orientations and on the English achievement test (path coefficient γ_{11} 、 γ_{21} 、 γ_{31} 、 γ_{41} and γ_{61}), and indirect influence of self-efficacy on the English achievement test through four-dimensional goal orientations and deep English learning strategies; incremental

intelligence belief had direct effects on mastery-approach goals and mastery-avoidance goals (path coefficient γ_{12} 、 γ_{22}) and also had an indirect effect on the English achievement test results through goal orientations and deep English learning strategies; the four dimensional goal orientations individually had direct effects on deep English learning strategies (path coefficient β_{51} 、 β_{52} 、 β_{53} 、 β_{54}) and indirect effects on the English achievement test through deep English learning strategies; performance-approach goals and performance-avoidance goals had direct effects on the English achievement test (path coefficient β_{63} and β_{64}); deep English learning strategies had a direct effect on the English achievement test (path coefficient β_{65}).

A total of 26 measurement indicators and 26 observed indicators for eight latent variables were adopted in the model. The scores that participants got on four items of self-efficacy scale made up four observed indicators. Likewise, the scores that participants got on three items of intelligence incremental scale made up three observed indicators. The scores that participants got on three items of each of the four goal orientation subscales made up twelve observed indicators. The scores

that participants got on the functional practice strategy subscale, cognitive strategy subscale and metacognitive strategy subscale made up three observed indicators individually. The scores that participants got on the conversation test, vocabulary test, grammar and sentence pattern test and reading test made up four observed indicators individually.

Procedure

On the basis of the framework, the pilot study was conducted at the end of the first semester and the formal study was conducted at the end of the second semester. The authors with one research assistant in each class assured of the confidentiality of their questionnaires and the effectiveness of the English achievement test and meanwhile encouraged the participants to respond to the items of the questionnaire as accurately as possible to ensure quality responses.

Data Analysis

SPSS 13.0, for Windows 11.0, LISREL 8.54 and PRELIS 2.1 were used to analyze the data, $\alpha = .05$ indicated as a significant level. Because LISREL computer statistic software sets the method of

parameter estimation as maximum likelihood (ML), this method imposes serious requirements on the hypothesis of normal distribution. Therefore, before the test for goodness of fit, the hypothesis of multivariate normal distribution with PRELIS 2.1 edition computer statistic software was examined, showing collected data not corresponding with the hypothesis of multivariate normal distribution ($\chi^2_{(2)} = 7758.913, p = .000$). Hence, diagonally-weighted Least Square (DWLS) was used an asymptotic covariance matrix as the method of parameter estimation to verify the goodness of fit of the model.

Results

Goodness of Fit for the Model

According to the standard of Joreskog and Sorbom's (1993), all the indices indicated that the goodness of fit for the global model is very good (See Appendix B). The observed model confirmed to the hypothetic model, which means the hypothesized model can explain the observed data very well.

A Glimpse of Multiple Goal Profile

By using the means of mastery-

approach goals and performance-approach goals, SPSS select case was performed and the data showed there were 485 students who adopted performance-approach goals and also tended to be mastery-approach oriented; 324 students with high mastery-approach goals and 161 students with low mastery-approach goals. This indicates the students adopted multiple goals. Due to only taking mastery-approach goals and performance-approach goals as SPSS select case, this result only represents a specimen of multiple goal profile.

The Effects of Latent Variables

Besides the correlation of the eight latent variables (see Appendix C), the relationships among latent variables can be determined by further comparing the effects among the latent variables, including direct effects, indirect effects and total directs.

The Direct Effects of Latent Independent Variables on Latent Dependent Variables

The direct effects of self-efficacy on mastery-approach goals, mastery-avoidance goals, performance-approach

goals, performance-avoidance goals, and the English achievement test were all significant, $\gamma_{11} = .42$, $\gamma_{21} = .24$, $\gamma_{31} = .67$, $\gamma_{41} = -.38$ and $\gamma_{61} = .41$ ($p < .05$), which indicated the direct effect of self-efficacy on the performance- approach goals was greater than on the three other kinds of

goals. The direct effect of self-efficacy on English Achievement Test is significantly high $\gamma_{61} = .41$. The direct effects of incremental intelligence belief on mastery-approach goals and mastery-avoidance goals were $\gamma_{12} = .39$ and $\gamma_{22} = .31$ respectively (See Figure 2).

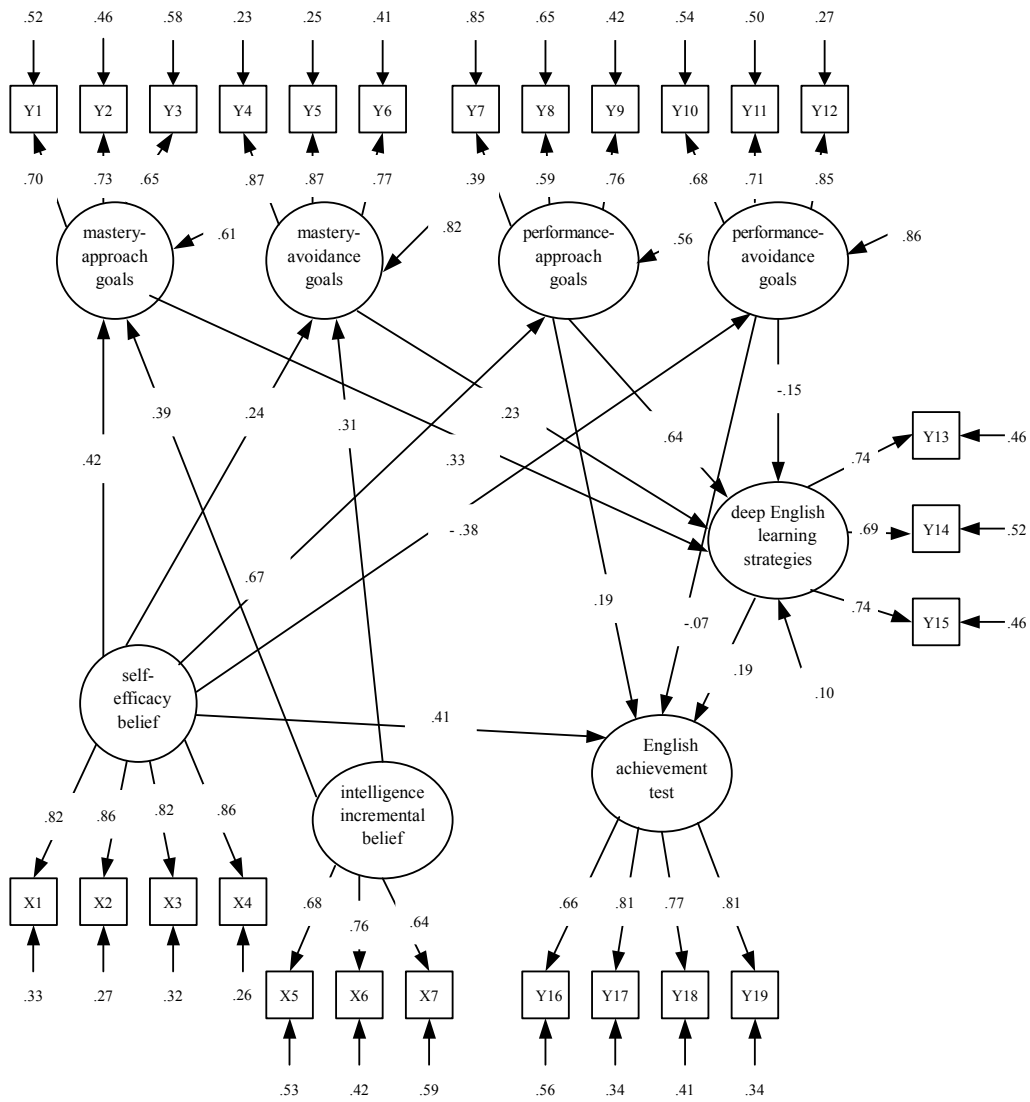


Figure 2 Path coefficients for the model

The Direct Effects of Latent Dependent Variables on Latent Dependent Variables

The direct effects of four-dimensional goal orientations on deep English learning strategies were all significant, $\beta_{51} = .33$, $\beta_{52} = .23$, $\beta_{53} = .64$ and $\beta_{54} = -.15$ in order (See Figure 2), which indicated the direct effect of the performance-approach goals on deep English learning strategies was greater than that of mastery-approach/avoidance goals. The direct effect of the performance-avoidance goals on deep English learning strategies was negative. Next, the observed data indicated that the direct effects of the performance-approach goals and the performance-avoidance goals on the English achievement test were $\beta_{63} = .19$, $p > .05$ and $\beta_{64} = -.07$, $p < .05$ respectively. The positive effect means that the more students adopted performance-approach goals, the better they performed on the English achievement test. The negative effect meant the opposite; the more students adopted performance-avoidance goals, the worse they performed on the test.

Indirect Effects among Latent Variables

As shown in Appendix D, the indirect effects of self-efficacy on deep English learning strategies and the English achievement test were significant ($p < .05$). Taking the indirect effect of self-efficacy on deep English learning strategies as an example, there were four routes: The first was through mastery-approach goals, and the standardized solution for this route was .14 ($\gamma_{11} \times \beta_{51} = .42 \times .33 = .14$). The second was through mastery-avoidance goals, and the standardized solution for this route was .05 ($\gamma_{21} \times \beta_{52} = .24 \times .23 = .05$). The third was through the performance-approach goals, and the standardized solution for this route was .43 ($\gamma_{31} \times \beta_{53} = .67 \times .64 = .43$). The fourth was through performance-avoidance goals, and the standardized solution for this route was .06 ($\gamma_{41} \times \beta_{54} = -.38 \times -.15 = .06$). Total indirect effect for these four routes was .67. Among all the indirect effects, the highest one was .67, the indirect effect of self-efficacy on deep English learning strategies, and the lowest one was -.03, the indirect effect of performance-avoidance goals on the English achievement test through deep

English learning strategies.

Total Effects of Latent Dependent Variables on Latent Dependent Variables

As shown in Appendix D, no indirect effects of the four-dimensional goal orientations on deep English learning strategies were assumed. Hence, total effects of those goal orientations on deep English learning strategies were equal to direct effects. They were .33, .23, .64 and -.15, respectively as shown. Besides, no direct effects of mastery-approach goals and mastery-avoidance goals on the English achievement test were assumed. So their total effects were .06 and .04 respectively, equal to their indirect effects. The total effects .31 and -.10, respectively of the performance-approach and -avoidance goals on the English achievement test were equal to their direct effects of .19 and -.07, respectively, plus their indirect effects of .12 and -.03. No indirect effect of deep English learning strategies on the English achievement test was assumed, so its total effect at .19 was the same as its direct effect. Among all total effects, the biggest total effect was .69 of self-efficacy on the English achievement test. Next was .67, the total

effect of self-efficacy on deep English learning strategies. The smallest at .04 was the total effect of incremental intelligence belief and performance-avoidance goals on the English achievement test.

Discussion

Limitations of the Study

As a static rather than dynamic and circulating model was established in this study, and its design was based on individual learning process and all measures were selected at the same time point, this is inconsistent with the genuine individual English learning. Actually, students can enhance self-efficacy by using learning strategies, and then adapt their learning. Also, in turn, their English achievement may affect their self-efficacy belief and change their goal orientations and so on. Besides, four-dimensional goal orientation is a very complicated theory but it better confirms to the motivation patterns than two or three dimensional goal. Hence, how to establish a fit and circulating model may provide a challenging task for future research.

Conclusions and Implications

One of the primary purposes of this study was to verify whether the model of four-dimensional goal orientation can apply to Taiwan. Even though considering the participants from a different cultural background, the goodness of fit of the global model indicates that the established theoretical model can explain the observed data in the EFL context in Taiwan and it also means the western model are suitable for explaining high school students' English learning in Taiwan. Furthermore, the fit data results support the embedded theories within the model, which signifies that self-efficacy and/or incremental intelligence belief directly affect the choice of four-dimensional goal orientations, and then the choice of four-dimensional goal orientations further affects the use of deep English learning strategies, which finally affects the performance on the English achievement test.

From the effects among eight latent variables, some important findings and teaching suggestions are discussed as follows.

First, the direct, indirect and total effects of self-efficacy on deep English learning strategies and the English achievement test were the highest of all.

This result supports the views of Pintrich and De Groot (1990) that self-efficacy can significantly predict students' cognitive involvement, use of learning strategies and performance, and also supports Yang's (1993, 1999) view that language learners' own ability perceptions influence their goals and motivation patterns, learning behaviors and strategy use, and further impact their performance (Vrugt et al., 2002). In other words, the higher self-efficacy students have, the more likely they adopt mastery and/or performance-approach goals, which leads to more use of deep English learning strategies and indirectly contributes to better performance on English achievement test. Such findings also support He's (2004) view that self-efficacy is an effective predictor during the foreign language learning process. In other words, self-efficacy has a high direct effect on English performance. In Taiwan, normative evaluation and grading systems at schools readily allow social comparisons for senior high school students to assess their own abilities. However, if teaching can provide meaningful interaction and cooperation tasks which are challenging and slightly exceed students' ability, they will focus

less on ability cues in the classroom and instead transfer their concerns about ability difference into the content and enjoyment of learning. That way, teaching can enhance an individual's self-efficacy. Further, teachers can encourage students to set attainable goals (such as learning 25 new words per week) and integrate them into their own learning plan to carry out their own expectations within a certain time.

Second, the direct effect of self-efficacy on performance-approach goals was the highest .67 among all path coefficients, indicating that the higher self-efficacy students have, the more likely they hold performance-approach goals. The direct effect .42 of self-efficacy on mastery-approach goals means that they are also likely to hold mastery-approach goals. Such finding indicates that under pressure of college entrance examination, students have multiple goals as claimed by the past research (Levy-Tossman, Kaplan, & Assor, 2007; Smith & Sinclair, 2005), in English classroom in Taiwan. However, the direct effect -.38 of self-efficacy on performance-avoidance goals indicates that the lower self-efficacy the students have, the more likely they hold

performance-avoidance goals. However, the direct effect .39 of self-efficacy on mastery-avoidance goals indicates that mastery-avoidance oriented students in this study may not be purely perfectionists as Pintrich (2000b) has indicated, but rather learners who lack self-confidence, fear failure, or worry about incomplete understanding of materials. Greater emphasis on encouragement and more opportunities for self-comparison in English classrooms in Taiwan could reduce tension for these students and help them to increase their self-efficacy.

Next, the direct effects of intelligence incremental beliefs on mastery-approach goals and mastery-avoidance goals were .39 and .31 respectively. This indicates that to some degree students with intelligence incremental beliefs tend to have mastery-approach/avoidance goals and tend to believe in a way that intelligence can be changed through learning (Dweck et al., 1993). Thus teachers could increase the chances of students' success in language learning by arranging activities and grading by self-improvement to help students cultivate an incremental view of their own ability—the belief that their

learning ability can be changed, controlled and improved.

Third, the direct effects of mastery-approach goals, mastery-avoidance goals, performance-approach goals and performance-avoidance goals on deep English learning strategies were .33, .23, .64 and -.15 respectively, indicating that different goals have different levels of influence on the use of deep English learning strategies by language learners. This also indirectly verifies the existence of mastery avoidance goals and supports 4-dimensional goal theory (Yperen, Elliot, & Anseel, 2009). From the view of the two higher effects, it also indicates that the students may adopt performance-approach goals and mastery-approach goals at the same time. Due to the additive and interactive effects, it brings high effects on deep English learning strategies. From the multiple-goal perspective, students who pursued master and performance-approach goals demonstrated more optimal patterns of learning (Barron & Harackiewicz, 2001; Céline, Benoît, Ophélie, & Fabrizio, 2010). The effect of mastery-approach/avoidance and performance-approach goals on deep English learning

strategies was positive, supporting the view that students who perceive they have mastery patterns of reaction, and who are concerned about grades, are likely to be engaged in cognitive involvement (Harackiewicz et al., 1998; Pintrich & Garcia, 1991). However, Kaplan and Middleton (2002) proposed that the positive effect of the performance-approach goal was the only one applicable for students with high ability. Similar to the findings of this study, the highest direct effect of the performance-approach goal on deep English learning strategies might be only applicable for students with high ability who usually are high mastery/performance-approach oriented.

Next, the total effects of performance-approach goal and performance-avoidance goals on English achievement tests were .31 and -.10 respectively, including the direct effects .19 and -.07 plus the indirect effects .12 and -.03. This result supports the finding that competence perceptions are a moderating variable for performance goals (Elliot & Church, 1997; Skaalvik, 1997). Performance goals can positively or negatively affect students. Low competence perceptions may have

harmful effects on learners, while high competence perceptions may enhance learners' motivation and performance. That is to say, competence perceptions (i.e. the sense of self-efficacy) indirectly affect achievements through the choice of goals. So, for most normal students or students with a perception of low competence, an atmosphere supporting the mastery approach in the English-teaching classroom can help them understand that learning is self-growth, and building language skills can be a fruitful and enjoyable process. Further, for students who are performance-avoidance oriented, the direct effects of their goals on the deep English strategies they used and on their English achievement test results were $\beta_{54}=-.15$ and $\beta_{64}=-.07$ respectively. Those students usually have low expectations of their own ability. The frequently unstable relations between learning behavior and achievement can cause them to lose confidence. In order to prevent avoidance behaviors among students, teachers can design interactive activities or make learning scaffolds for those and make them set achievable learning goals in order to enhance their sense of self-efficacy.

Finally, the direct effect .19 of deep English learning strategies on the English achievement test (β_{65}) was not significant. But the correlation coefficient between two variables was .627, the highest of all the correlations. This indicates that the influence of deep English learning strategies on English achievement tests cannot be ignored and the training of using deep English strategies should be emphasized. Among the correlation coefficients of three kinds of deep English learning strategies and the English achievement test, the highest was the functional practice strategy ($r=.523$), while the mean of this strategy ($m=2.15$) of all participants was the lowest. This indicates that functional practice strategies have the most influence on English achievement tests; however, they are not frequently used by students. Such findings may be caused by the fact that under an examination-oriented environment, cognitive strategies are more useful in passing the examinations. Functional practice strategies such as listening to English broadcasting programs, reading English newspapers or talking with foreigners, even though with more indirect influence on grades, are often ignored or avoided with the excuse

of no time or no opportunity, as those activities are seen to have less influence on one's grades in the short term. For students, especially in an EFL environment, English is not commonly used in daily life in Taiwan. There is no urgent requirement for students to develop good English learning habits, such as trying to communicate with friends in English, writing letters, keeping a journal or reading English newspapers. Thus it is necessary for teachers to emphasize the importance of functional practice strategies that will foster all-around English ability, and to demonstrate that the purpose of learning English is to develop communication ability and appreciate western culture in order to cultivate an international perspective, not just to enhance English academic achievement on school exams.

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Appendix A Key to Variables

- X1 I am very confident of my English capability.
- X2 I'm certain I can figure out how to do the most complex material presented by the instructor in my English class.
- X3 In comparison with other students, my English ability is better.
- X4 I'm sure that my English assignment and test are good.
-
- X5 I think people's intelligence is based on experience.
- X6 I think people can change their intelligence level by learning and making efforts.
- X7 I think one's intelligence can be improved by having a good teacher or studying.
-
- Y1 My purpose in learning English is to improve my English ability, not to show off to others.
- Y2 For me, it's important to have English skills in listening, speaking, reading and writing.
- Y3 Apart from competing or and comparing with others, I think it's important to learn some English.
-
- Y4 In English class, I worry about that I haven't learned everything what I should have learned.
- Y5 In English class, I worry about that I cannot understand what I have been taught in listening, speaking, reading and writing.
- Y6 Regardless of my scores on English tests, I will worry about not completely understanding what the English teacher teaches me.
-
- Y7 My purpose in taking English classes is to show off to others..
- Y8 For me, it's important to perform better than other students in English class.
- Y9 I would take notice of my ranking according to grade in my English class.
- Y10 I just want to avoid doing poorly in my English class.
- Y11 My goal in my English class is to avoid performing poorly.

Y12 My fear of performing poorly in my English class is often what motivates me.

Y13 Functional strategies including -

1. I listen to English programs such as ICRT and Studio Classroom.
2. I read English newspapers and magazines.
3. I can write English letters, journal entries, notes or papers.

Y14 Cognitive strategies including -

1. I can break a word into components such as prefix or suffix in order to understand the meaning of the word.
2. When I cannot remember a word to express my meaning, I will replace it with other words that have similar meanings.
3. When I encounter unfamiliar words, I will guess their meaning in context.

Y15 Metacognitive strategies including

1. I take notice of my English improvement.
2. In order to improve my English, I set specific goals.
3. I am aware of my English learning style, and I will change the method if necessary.

Y16 Conversation test

Y17 Vocabulary test

Y18 Grammar and sentence pattern test

Y19 reading test

Appendix B Fit Indexes

Structural Model of Self-efficacy Belief Scale

	χ^2	<i>p</i>	RMSEA	GFI	AGFI	CFI	IFI	NNFI
model	8.43	> 0.05	.051	1.00	1.00	1.00	1.00	1.00

Note: χ^2 =chi square statistic; RMSEA=root mean square error approximation; GFI=goodness-of fit index; AGFI=adjusted goodness-of-fit index; CFI=comparative fit index; IFI=incremental fix index; NFI=normed fit index; NNFI=non-normed fit index.

Structural Model of Four Dimensional Goal Orientation Scale

	χ^2	<i>p</i>	RMSEA	GFI	AGFI	CFI	IFI	NNFI
model	72.95	< .05	.040	1.00	.99	1.00	1.00	1.00

Structural Model of Deep English Strategy Scale

	χ^2	<i>p</i>	RMSEA	GFI	AGFI	CFI	IFI	NNFI
model	1280.25	=.00	.062	.98	.96	.98	.98	.97

Structural Model of Fit of the Global Model

Global	χ^2	<i>p</i>	RMSEA	GFI	AGFI	CFI	IFI	NFI	NNFI	RFI	PNFI	PGFI
model	1682.27	.00	.057	.97	.96	.98	.98	.97	.97	.96	.85	.78

Note: RFI=relative fit index; PNFI= Parsimony Normed Fit Index; PGFI= Parsimony Goodness of Fit Index

Appendix C Correlation Matrices

Correlation Matrix for latent variables of the model

	ξ_1	ξ_2	η_1	η_2	η_3	η_4	η_5	η_6
ξ_1	1.000							
ξ_2	.184**	1.000						
η_1	.384**	.285**	1.000					
η_2	.191**	.233**	.398**	1.000				
η_3	.417**	.172**	.170**	.319**	1.000			
η_4	-.365**	-.082**	-.203**	.023	-.024	1.000		
η_5	.641**	.225**	.489**	.383**	.447**	-.291**	1.000	
η_6	.619**	.104**	.286**	.235**	.367**	-.279**	.627**	1.000

**Significant at .01 level.

ξ_1 Self-efficacy

ξ_2 Intelligence incremental belief

η_1 Mastery-approach goal

η_2 Mastery-avoidance goal

η_3 Performance-approach goal

η_4 Performance-avoidance goal

η_5 Deep English learning strategies

η_6 English achievement test

Appendix D The Direct, Indirect and Total Effects for Variables of the Causal Model

		Self- efficacy	Intelligence Incre.belief	m-ap	m-av	p-ap	p-av.	Deep English Learning str.
Mastery - approach goals	D. effect	.42	.39	-	-			-
	Ind. effect	-	-	-	-			-
	Total effect	.42	.39	-	-			-
Mastery - avoidance goals	D. effect	.24	.31	-	-			-
	Ind. effect	-	-	-	-			-
	Total effect	.24	.31	-	-			-
Performance- approach goals	D. effect	.67	-	-	-			-
	Ind. effect	-	-	-	-			-
	Total effect	.67	-	-	-			-
Performance - avoidance goals	D. effect	-.38	-	-	-			-
	Ind. effect	--	-	-	-			-
	Total effect	-.38	-	-	-			-
Deep English learning strategies	D. effect	--	-	.33	.23	.64	-.15	-
	Ind. effect	.67	.20	-	-	-		-
	Total effect	.67	.20	.33	.23	.64	-.15	-
English achievement test	D. effect	.41	-	-	-	.19	-.07	.19
	Ind. effect	.28	.04	.06	.04	.12	-.03	-
	Total effect	.69	.04	.06	.04	.31	-.10	.19