



Affective and Cognitive Factors among EFL Learners

Akira Nakayama

Ashikaga Institute of Technology

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The current study is aimed at proposing a latent factor model of affective and cognitive factors for EFL learners in a Japanese university. The model was tested using structural equation modeling, and discusses how affective and cognitive factors relate to each other. As participants, 422 Japanese university students with elementary level English proficiency joined the survey and answered the self-report questionnaires relating to motivation, anxiety, beliefs, and strategy. According to the results of the analysis, the following four major findings were obtained: A) Learning Goal (LG) orientation was a key variable in predicting the use of Indirect Learning Strategy, B) Confidence Beliefs mediated the effect of Learning Goal orientation on the use of Indirect Learning Strategy, C) Performance Goal (PG) orientation had a negative impact on the use of both metacognitive and frequent use strategy, and D) Weak Correlations were found between goal orientations and English Abroad Anxiety.

本研究は、日本人大学生の英語学習における情意的及び認知的要因の関係を示す潜在変数モデルを提案し、さらに構造方程式モデリングによってそのモデルの整合性を検証し、そして英語学習に関わる情意的及び認知的要因の関係性を議論するものである。本調査には、英語学習において初級レベルの日本人大学生(422人)が参加し、学習動機と不安、学習観、学習方略についての質問紙に回答した。分析により、A)学習目標志向性が間接的学習方略使用を予測する主な独立変数であること、B)自己の能力に関する学習観が学習目標志向性から間接的学習方略への因果において媒介要因となること、C)遂行目標志向性がメタ認知方略と頻繁使用方略に対して負の影響を及ぼしていること、D)学習及び遂行目標志向性と海外での英語使用に対する不安との間に弱い相関が見られること、以上4つの結果が得られた。

Structural equation modeling (SEM), including other latent factor modeling techniques, is becoming a more popular way of predicting dependent variables from independent variables in the fields of both second and foreign language education research, especially in the study of learner motivation and strategy (e.g., Chen, Warden, & Chang, 2005; Gardner, Tremblay, & Masgoret, 1997; Kubo, 1999). This is simply because it enables us to treat the *unobservable* variables (e.g., motivation, beliefs, strategy,

and anxiety) as *latent* factors. Structural equation modeling techniques also make it possible for us to evaluate whether a hypothesized model of any related variables regarding language learning is plausible or not in a statistical format by testing the model using a simultaneous analysis of the entire system of variables to determine the extent to which it is consistent with the variable data extracted from self-report questionnaires (Byrne, 2001). The purpose of the current study was to propose a latent factor model of non-linguistic factors, called the *Belief Mediation Model*, which includes the affective factors of motivation and anxiety and the cognitive factors of beliefs and strategy, then to examine whether the proposed model fits with the data obtained from self-report questionnaires and discuss how affective and cognitive factors relate to each other.

Review of Literature

Preceding representative models

The Causal Model

For a second language learning (L2) environment, Gardner, Tremblay, and Masgoret (1997) proposed a latent factor model called the *Causal Model*. By using structural equation modeling (SEM), the causal model was examined and the results indicated an integrative motivation toward the target language and that L2 community had a significant positive impact ($\beta = .48$) on L2 achievement. Unexpectedly, it also indicated that the strategy factor had a significant negative impact ($\beta = -.25$) on L2 achievement.

The Orientation-Appraisal Model

Alternatively, in the English as a foreign language learning (EFL) environment, Kubo (1999) proposed the *Orientation-Appraisal Model*. This model was also examined using SEM and the results indicated that motivation had a significant positive impact on the strategy factor and, in turn, strategy had a significant impact on EFL achievement.

The need for a new model

The contribution of the Causal Model developed by Gardner et al (1997) was in its methodology – the introduction of SEM. It attempted to account for a wide number of variables and their interactions simultaneously and demonstrated the close relationship between motivation and L2 achievement in an L2 situation.

On the other hand, the contribution of the Orientation-Appraisal Model developed by Kubo (1999) was that it viewed L2 learning from a Japanese EFL perspective, and exhibited how this *strategy* perspective might play a much greater role in the EFL classroom in Japan than in the ESL context of North America.

However, neither of the models interprets there to be any intervening variables between Motivation, Anxiety, and Strategy – the role of *learner beliefs*. With regard to learner beliefs, Yang (1999) examined the relationship of college EFL learners' beliefs about language learning and strategies used, and reported that student beliefs were related to certain types of learning strategies. From this, he concluded that learner beliefs might be one factors influencing learning behaviors. From this point of view, the current study claims

there is a need for a new model that includes the variable of learner beliefs.

Theoretical Background

Goal Theory (Dweck, 1986) is referred to in the current study as theoretical background for connecting affective and cognitive factors of the four variables (i.e., motivation, anxiety, beliefs, and strategy). Goal Theory is a motivational theory widely accepted in the field of educational psychology. In Goal Theory, individual behaviors are thought to be rational and economic so as to achieve certain goals. Goals (e.g., motivation) that an individual sets influence that individual's cognitions (e.g., beliefs), choice of strategy, methodology, and progress toward those goals. Based on what kind of goals an individual student has, Goal Theory can be used to make predictions about the student's learning behaviors and learning outcomes.

Although this assumption appears to conflict with the ideas that anxiety and beliefs are more primal and that self-concept and self-assessment will drive the level of motivation and goal orientation (Dornyei, 2001), the appearance of conflict is only the result of a difference in the theoretical position. In Goal Theory, goal orientations are thought to be a relatively stable human trait extracted or emerging from the more primal *beliefs*. This is also known as the "theory of intelligence." This theory encapsulates the ideas of "incremental theory" and "entity theory." According to Dweck (1986), the former refers to the idea that "intelligence is malleable" (p. 1041) and the latter refers to the idea that "intelligence is fixed" (p. 1041), and the individual student's theories of intelligence appear to orient them toward

different goals (orientations). Moreover, this is also thought to be a genetically determined trait, which means they are relatively stable variables that teachers or parents cannot easily change. Most likely, Dornyei might consider *beliefs* to be the primal beliefs Goal Theory assumes. However, it can be said that some beliefs (including more general beliefs or folktales) are influenced by motivations or orientations.

In motivational research, the dilemma of *Which came first, the chicken or the egg?* can be avoided by adopting Goal Theory. This is because Goal Theory assumes the theory of intelligence as a personality trait, which is relatively stable over the course of a person's lifetime. The premise is that goal orientations are thought to come first, or at least before the other variables of learning beliefs, anxieties, and strategies which are subject to change because they are unstable (i.e., state variables).

Dweck (1986) suggests two types of goal orientations: Learning Goal (LG) and Performance Goal (PG). The former refers to the orientation to increase competence and understand something new and the latter refers to the orientation to gain positive evaluations, or to avoid negative evaluations of his or her competence.

In the current study, the primary assumption is that the types of Motivation (i.e., goal orientations) students have will influence the type of anxiety and beliefs they have, and the types of anxiety and beliefs they have will in turn, influence the type of strategies they select.

Hypothesis: A latent factor model

Figure 1 represents the assumptions of the current study.

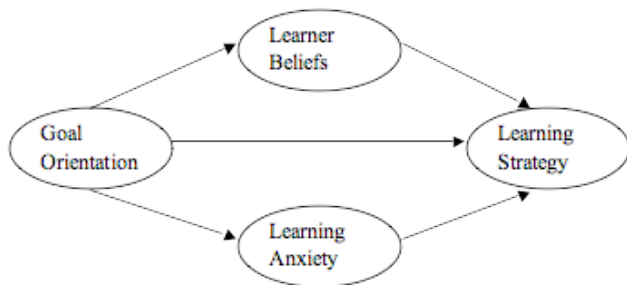


Figure 1. The Belief Mediation Model

In Figure 1, the four circles represent the four latent factors of the Belief Mediation Model: Goal Orientation, Learning Beliefs, Anxiety, and Strategy. It should be interpreted from left to right. The one-way arrows indicate the direction of the causation as well as the impact of one variable on another.

Research Questions

The following research questions are addressed in the current study.

1. Does the Belief Mediation Model fit the data?
2. What kind of Beliefs mediates the effects of goal orientations on strategy variables?
3. Does anxiety facilitate learning?

Method

Participants

The participants consisted of 422 18-22 year old first year male Japanese students. They took a college-wide English course, entitled *Basic English Grammar*. As no standardized English test scores were available for these participants, I estimated that if they had taken the TOEFL, approximately two-thirds of them would have had scores ranging from 300 to 380, while only a handful would have scored higher than 450.

Instruments

The following scales were used in this study: goal orientations scale (Hayamizu, Ito, & Yoshizaki, 1989), language learning anxiety scale (Mori, 2003), language learning beliefs scale (Horwitz, 1987), general learning beliefs scale (Ueki, 2002), direct language learning strategies scale (Oxford, 1990), and indirect language learning strategies scale (Oxford, 1990). All six scales involved the participants choosing from the same 5-point Likert scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree.

Procedures

Administering of the six scales was conducted one day in early April 2004 and consumed approximately 30 minutes of one ninety minute class period. All students were informed that their participation in the project was voluntary, that their responses to the questionnaires would be used only for this particular study, and that their personal information would be kept completely confidential.

Results

Descriptive Statistics

The descriptive statistics of items used in the final analysis are shown in Table 1. Table 1 includes the item's description, the value of Cronbach's α for the reliability of the scales, the mean average (M), and the standard deviation (SD).

It is inferred from Table 1 that the participants, as a whole, tended to feel anxiety at the prospect of using English abroad in the future (Mean average of ELA1 = 4.14 and that of ELA4 = 3.99) and also tended not to use learning strategies (Mean average of all strategy variables < 3.00).

Detailed Findings

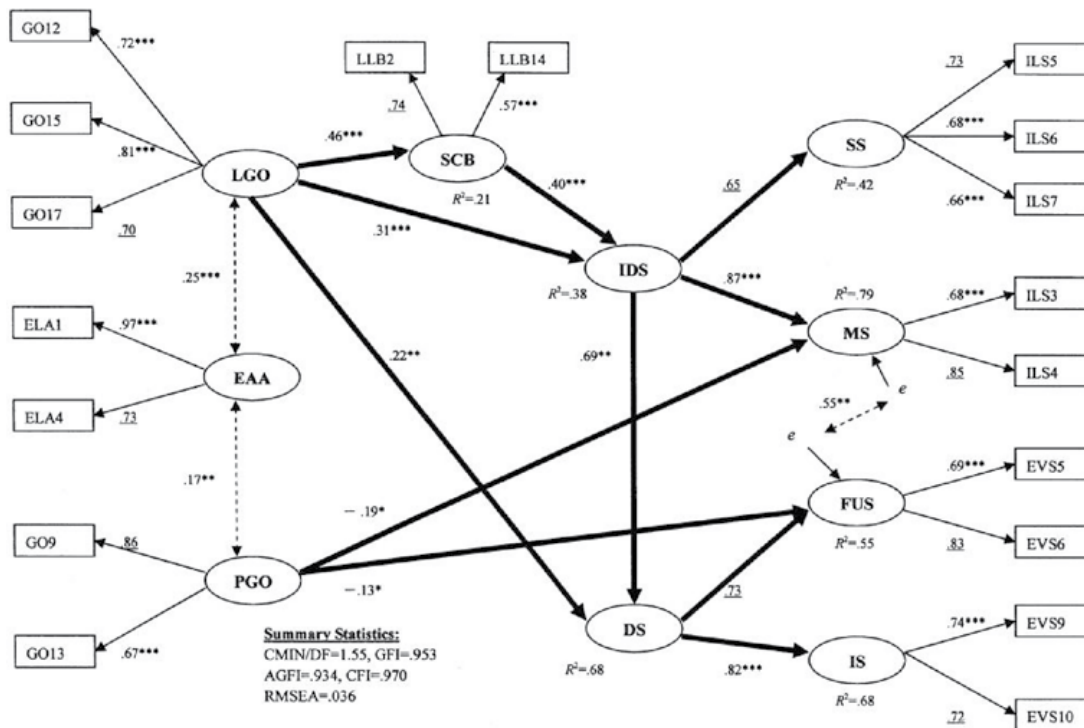
On Structural Equation Modeling

Figure 2 indicates the results of SEM. Detailed findings are as follows:

- 1 In terms of the model fit (goodness of fit), Figure 2 showed better fit toward the data extracted from the self-report questionnaire (GFI = .953, AGFI = .934, CFI = .970, RMSEA = .036).
- 2 Learning Goal (LG) orientation was a key variable to predict the use of Indirect Learning Strategy ($\beta = .31$).
- 3 Confidence Beliefs mediated the effect of Learning Goal orientation on the use of Indirect Learning Strategy ($\beta = .40$).
- 4 Performance Goal (PG) orientation had a negative impact on the use of both metacognitive ($\beta = -.19$) and frequent use strategy ($\beta = -.13$).

Table 1. Descriptive Statistics

Items		M	SD
Learning Goal Orientation ($\alpha = .787$)			
GO12	I study because I enjoy getting to know that I can do it.	3.58	.97
GO15	I study because I enjoy finding new means of problem-solving.	3.07	.97
GO17	I study because I can see something new.	3.54	1.05
Performance Goal Orientation ($\alpha = .723$)			
GO9	I study because I do not want to fail a credit.	4.00	.98
GO13	I study because I do not want to repeat a year.	3.94	1.15
English Abroad Anxiety ($\alpha = .827$)			
ELA1	I feel anxious about how much I can use English abroad.	4.14	1.12
ELA4	I feel anxious about how much I can make myself understood in English abroad.	3.99	1.09
Self-Confidence Beliefs ($\alpha = .589$)			
LLB2	I believe that I will ultimately learn to speak this language very well.	3.25	1.03
LLB14	Everyone can learn to speak a foreign language.	3.65	1.15
Social Strategy ($\alpha = .732$)			
ISL5	I ask English speakers to correct me when I talk.	2.81	1.25
ISL6	I practice English with other students.	2.92	1.15
ISL7	I ask for help from English speakers.	3.27	1.19
Metacognitive Strategy ($\alpha = .726$)			
ISL3	I plan my schedule so I will have enough time to study English.	2.25	1.00
ISL4	I look for opportunities to read as much as possible in English.	2.37	1.08
Frequent Use Strategy ($\alpha = .729$)			
EVS5	I learn words outside the class by using them as much as I can.	2.10	1.10
EVS6	I learn words by using the words I know in many different ways.	2.39	1.05
Imaging Strategy ($\alpha = .695$)			
EVS9	I look over again and again so that I can make an image of the words in mind.	2.77	1.08
EVS10	I connect words to the other words and phrases so that I can associate the target words with the other words.	2.88	1.08



Notes. LGO (Learning Goal Orientation), EAA (English Abroad Anxiety), PGO (Performance Goal Orientation), SCB (Self-Confidence Beliefs), IDS (Indirect Learning Strategies), DS (Direct Learning Strategies), SS (Social Strategy), MS (Metacognitive Strategy), FUS (Frequent Use Strategy), IS (Imaging Strategy)

***: $p < .001$; **: $p < .01$; *: $p < .05$

Figure 2. The Results of SEM

- 5 Weak Correlations were found between goal orientations and English Abroad Anxiety ($r = .25$).

Discussion

On RQ1: Does the Belief Mediation Model fit the data?

All goodness of fit indexes indicated that the model fits the data, which means the hypotheses described in the model were supported. This also indicates the relationship between language learners' affective and cognitive factors is explained within the framework of Goal Theory. This in turn means that student language learning behavior can be predicted, at least to some degree, from the scores of their goal orientation scales.

On RQ2: What kinds of Beliefs mediate the effects of goal orientations on strategy variables?

It appears from the data that Self-confidence Beliefs had the greatest impact. This means that students who are really interested in learning (i.e., LG oriented learners) are more likely to be confident enough to use various kind of learning strategies, compared to students who are only thinking of the evaluations of others (i.e., PG oriented learners).

On RQ3: Does anxiety facilitate learning?

The results indicated that both LG and PG oriented learners felt significantly anxious about the prospect of using English abroad in the future. However, since LG only has a positive impact on the use of learning strategies, LG oriented learners tended to sustain their will to study and continue studying

the target language. This means that anxiety does not always debilitate learning. Thus, the role of anxiety depends on the learner's choice goal orientations and this partially agrees with the idea of *facilitating anxiety* as discussed by Scovel (1978).

Conclusions

Japanese EFL learners at the elementary (or low proficiency) level, generally feel anxious about the prospect of using English abroad. However, not all students are pessimistic about being successful learners of English. The students of Learning Goal orientation are more likely to have confidence in learning English in an EFL context and therefore try to learn English in more varied ways using different strategies.

Limitations and Further Research

Gardner (1985) reported the limitations of research using this modeling technique, applicable to this study, (e.g., path analysis or structural equation modeling) as follows, "Just as a factor analytic solution is only one of an infinite number of possible solutions which can also reproduce the correlation matrix, so too is any particular causal model only one of many" (Gardner, 1985, p. 155). In addition, this study (the Belief Mediation Model) only applies within the Japan EFL context and must be considered with respect to the fact that the participants of my study consisted of only male students of approximately 19 years of age. Therefore, further research related to this model is necessary within other contexts and with different participants.

Additional Notes

This study is a revised version of the study presented at Joint AAAL and ACLA/CAAL 2006 and JASS2006.

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Akira Nakayama (Ph.D.) is currently a school psychologist and counselor at Ashikaga Institute of Technology in Tochigi, Japan. He is interested in learning strategies and learner beliefs as they relate to language learning. <a-nakaya@ashitech.ac.jp>

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