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Relationships among Beliefs, Learning Strategy Use, and L2 Proficiency

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This paper examines the relationships among beliefs, learning strategy use, and L2 proficiency, followed by the identification of effective beliefs and learning strategies in predicting L2 proficiency. Students' beliefs and learning strategies were identified by the factor analytic findings of the Beliefs about Language Learning Inventory (BALLI) and the Strategy Inventory for Language Learning (SILL), and L2 proficiency was determined by the Test of English as a Foreign Language (TOEFL), for 332 university students learning English in Korea. Four underlying factors were discovered in both the SILL and the BALLI. The results of Pearson product moment correlations and a multiple regression analysis indicate that students' beliefs are generally related to their use of learning strategies, and that beliefs and learning strategy use, in turn, predict L2 proficiency. These findings provide evidence that L2 acquisition may result from information processing. Pedagogical implications are suggested to improve the effects of strategy training, with particular attention to the Korean context.

I. BACKGROUND

Learning strategies are defined as specific behaviors and thought processes used by the learner to invite input, to facilitate input processing, and to produce output (Park, under review). These behaviors and thought processes are observable or non-observable, goal-oriented, effortful, and intentional (Wenden, 1987a). Oxford (1990) developed a self-report questionnaire called the Strategy Inventory for

Language Learning (SILL), and classified learning strategies into six categories: memory strategies, cognitive strategies, compensation strategies, metacognitive strategies, affective strategies, and social strategies.

Research on learning strategies has been conducted with the idea that effective learning strategies can be taught to less effective learners. Some effective learning strategies may be learner independent (Naiman et al., 1978; Rubin, 1975); others may be learner dependent (Vann & Abraham, 1990; Porte, 1988). In spite of this idea, however, strategy training is successful in some studies (Hosenfeld, 1984; Cohen & Aphek, 1980); while in others, the success of strategy training is limited (O'Malley, 1987; Wenden, 1987b). The effects of strategy training can be improved by incorporating learner characteristics such as beliefs, learning styles, and personalities into strategy training (Rees-Miller, 1993; O'Malley & Chamot, 1990).

Learning strategy research has both empirical and theoretical concerns. Empirically, it shows that learning strategy use is related to L2 proficiency/achievement (Phillips, 1991; Bialystok, 1981). Theoretically, it explains how learning strategies work in L2 acquisition in terms of cognitive psychology, specifically information processing theory (Nyikos & Oxford, 1993; Wenden, 1991). The role of learning strategies in information processing theory is to facilitate learning new information by influencing cognitive and affective domains during the encoding process (Weinstein & Mayer, 1986).

In order to reach a better understanding of learning strategies, much research has been conducted to find variables underlying the choice of learning strategies. These underlying variables include beliefs (Yang, 1992; Wenden, 1987c), learning styles/personalities (Ehrman & Oxford, 1989), levels (Ramirez, 1986; Politzer, 1983), gender (Ehrman & Oxford, 1989; Oxford & Nyikos, 1989), and culture (Poltizer & McGroarty, 1985). Among these variables, beliefs may be more amenable to teacher intervention than other variables (Horwitz, 1987), and may influence directly the degree of success in L2 acquisition (Abraham & Vann, 1987).

Beliefs about language learning are defined as preconceived ideas about language and the nature of the language learning process (Horwitz, 1987). Wenden (1991) contends that metacognition consists of metacognitive knowledge and regulatory skills, with metacognitive knowledge consisting of the three categories of person, task, and strategy, and with regulatory skills consisting of such processes as planning and monitoring. Wenden (1991) further contends that beliefs are a part of metacognitive knowledge. Horwitz (1987) developed a self-report questionnaire called the Beliefs About Language Learning Inventory (BALLI), and classified beliefs into five categories: foreign language aptitude, the difficulty of language learning, the nature of language learning, learning and communication strategies, and motivation.

In spite of the increasing popularity of research on learning strategies and beliefs since the mid '70s, the topics of learning strategies and beliefs are still new research areas in Korea (see Lee, 1994). Thus, research on the learning strategies and beliefs of Korean students will not only sensitize Korean students, teachers, and researchers, but also supplement current research on learning strategies and beliefs. The specific purpose of this study is to examine the relationships among beliefs, learning strategy use, and L2 proficiency. For this purpose, the present study attempts to answer the following three research questions: (1) What are the factors of the SILL and the BALLI? (2) What are the correlations among beliefs, learning strategy use, and L2 proficiency? (3) Which factors of the SILL and the BALLI are more predictive of L2 proficiency?

II. METHODOLOGY

1. Subjects

The subjects were 332 students attending two universities in Korea. They were taking an English course at the time the data were

collected. These students ranged from freshmen to seniors, majoring in either humanities/social science or engineering. The majority of these students were males between nineteen and twenty-nine years of age, with an average age of 23.1.

The subjects had studied English for six years in secondary school, and had experience in studying other foreign languages such as Japanese, German, and French. They were studying English outside the classroom for about one hour or less (52%), for about two hours (28%), or for about three hours or more (20%) per day during the Fall semester of 1993, for the major reasons of getting a job (including going to graduate school) in the future (53%), interest in the English language and culture (33%), and other reasons (14%). Considering the foreign languages they had studied and the amount of time they spent outside the classroom to learn English, these students were assumed to hold particular beliefs about language and the language learning process, and to use language learning strategies to facilitate English learning.

2. Instrumentation

In order to identify the variety and frequency of use of language learning strategies, Oxford (1990) developed the Strategy Inventory for Language Learning (SILL, ESL/EFL Student Version) which contains six categories: (1) memory strategies for storing and retrieving new information; (2) cognitive strategies for manipulating and transforming learning materials; (3) compensation strategies for overcoming deficiencies of knowledge in language; (4) metacognitive strategies for directing the learning process; (5) affective strategies for regulating emotions; and finally, (6) social strategies for increasing learning experience with other people. The fifty items of the SILL range on the Likert-scale from "1: never or almost never true of me" to "5: always or almost always true of me." Since the SILL has a composite score, the five-point scaled items of the SILL can be added to assess the frequency of a particular category of learning strategies. The

reliabilities of the SILL, using Cronbach's Alpha, range between .85 and .93, and the construct validity of the SILL based on the similarities among the factors of the SILL found in different groups is reported high (Oxford & Burry, 1993). However, the author slightly modified the original version of the SILL in order to measure better the English learning strategies of university students in Korea. The reliability of the modified SILL for the subjects in this study, using Cronbach's Alpha, is .93.

Horwitz (1987) developed the Beliefs About Language Learning Inventory (BALLI, ESL Student Version) in order to identify students' beliefs about language learning. The BALLI consists of five categories: (1) foreign language aptitude, which is about special abilities for language acquisition; (2) the difficulty of language learning, which concerns the difficulty of learning language, the relative difficulty of language skills, and students' expectations for success; (3) the nature of language learning, which concerns a broad range of issues about the nature of language learning; (4) learning and communication strategies, which concern the process of learning language and the practice of communication; and finally, (5) motivations, which concern desires the students hold associated with language acquisition. The thirty-four items of the BALLI are scored on a Likert-scale and range from "1: strongly disagree" to "5: strongly agree." Even though the validity of the BALLI is not reported yet, the similarities among the factors of the BALLI found in different groups imply its high construct validity (Horwitz & Park in progress; Yang, 1992). The author slightly modified the original version of the BALLI to measure better the beliefs about English learning of university students in Korea. The reliability of the modified BALLI for the subjects of this study, using Cronbach's Alpha, is .61.

A practice version of the TOEFL was used to determine the English proficiency of the subjects. The multiple choice format of the TOEFL consists of three sections: listening comprehension, structure and written expression, and vocabulary and reading comprehension. According to the "TOEFL Test and Score Manual (1983)," the average

internal consistency reliability of the TOEFL administered in 1981-2 is .95, and the criterion validity of the TOEFL measured by correlating TOEFL scores with other English proficiency scores ranges between .89 and .79.

The Individual Background Questionnaire (IBQ) was used to gather additional information on individual characteristics of the subjects. This additional information will help to better understand the results of this study. The IBQ includes such items as identification number, age, major, classification, hours a day studying English outside the classroom, and experience learning foreign languages other than English. The SILL, the BALLI, and the IBQ were all used in Korean to minimize any possible errors coming from lack of English comprehension.

3. Data Collection and Analysis Procedures

Considering the homogeneity of the subjects and the large sample size for this study, the data were collected through cluster sampling in a classroom either during or after the class hour, with the consent of all the students who participated. The students were reminded that there were no right or wrong answers on the SILL, the BALLI, and the IBQ, and they were asked to give honest responses to these three questionnaires. For the purpose of elimination, the subjects were then asked whether they had taken the same practice TOEFL before. There was no student who had taken it before.

The analysis of the data was carried out on the Macintosh using SPSS statistical programs. For Research Question 1, factor analyses were performed to find the underlying factors of the SILL and the BALLI. The Kaiser criterion and the scree test were considered in determining the number of underlying factors of the SILL and the BALLI. An orthogonal varimax rotation was used to increase the interpretability of the underlying factors. Only the items with a factor loading of .40 or greater were interpreted. For Research Question 2, Pearson product moment correlations were used to find the correlations among beliefs, learning strategy use, and L2 proficiency. For Research

Question 3, a stepwise multiple regression analysis was performed to find effective beliefs and learning strategies for predicting L2 proficiency. Then, the results of the stepwise multiple regression analysis were compared with the results of a full regression analysis.

III. RESULTS

In order to find the relationships among students' beliefs, learning strategy use, and L2 proficiency, I turned to the factor analytic findings of the SILL and the BALLI as a preliminary step. Four underlying factors were found in both the SILL and the BALLI, as presented in Tables 1 and 2.

TABLE 1
Factors of the SILL

FS1	Indendent and interactive pratice strategies
FS2	Metacognitive strategies
FS3	Communication-Affective strategies
FS4	Memory strategies

TABLE 2
Factors of the BALLI

Factor Number	Factor Name
FB1	Motivational beliefs and beliefs about formal English
FB2	Self-efficacy and beliefs about social interaction
FB3	Beliefs about learning spoken English
FB4	Beliefs about foreign language aptitude

In order to investigate the relationships among students' beliefs,

learning strategy use, and L2 proficiency. Pearson product moment correlations and a stepwise multiple regression were used. Pearson correlations were performed on a total of nine variables: four belief variables, four strategy variables, and one proficiency variable, to investigate the correlation among students' beliefs, learning strategy use, and L2 proficiency. The four belief variables were the underlying factors of the BALLI (FB1, FB2, FB3, and FB4), the four strategy variables were the underlying factors of the SILL (FS1, FS2, FS3, and FS4), and the proficiency variable was the TOEFL scores. The results of the Pearson correlations are presented in Table 3.

TABLE 3
Correlations among Beliefs, Learning Strategy Use,
and the TOEFL Scores

	FB1	FB2	FB3	FB4	TOEFL Score
FS1	-.23**	.34**	-.05	.13*	.29**
FS2	.16**	.38**	.10	-.07	.22**
FS3	.21**	.04	.20**	.03	.07
FS4	.06	.21**	.10	-.07	.08
TOEFL Scores	-.03	.34**	.13*	.10	1.00

As seen in Table 3, FB1 (motivational beliefs and beliefs about formal English) is significantly correlated with three strategy variables: FS1 (independent and interactive practice strategies), FS2 (metacognitive strategies), and FS3 (communication-affective strategies). However, the relationship between FB1 and FS1 is negative. In addition, FB1 is not significantly correlated with the TOEFL scores. Thus, these findings indicate that even though FB1 is generally related to learning strategy use, it is not related to L2 proficiency. Table 3 also reports that FB2 (self-efficacy and beliefs about social interaction) is significantly correlated with FS1, FS2, and FS4 (memory strategies).

Interestingly, FB2 is significantly correlated with the TOEFL scores as well. Thus, FB2 is related to L2 proficiency as well as learning strategy use. Even though FB3 (beliefs about learning spoken English) is significantly correlated with one strategy variable, FS3, it is also correlated with the TOEFL scores as well. Finally, FB4 (beliefs about foreign language aptitude) is significantly correlated with one strategy variable, FS1. In addition, Table 3 further shows that two strategy variables, FS1 and FS2, are significantly correlated with the TOEFL scores.

Thus, the findings of the Pearson correlations suggest that two belief variables, FB1 and FB2, are generally related to strategy variables, and that two belief variables, FB2 and FB3, and two strategy variables, FS1 and FS2, are significantly related to the TOEFL scores. Thus, even though students' beliefs, learning strategy use, and L2 proficiency are generally related to one another, these relationships depend on the specific types of beliefs and learning strategies.

Following the Pearson product moment correlations, a stepwise multiple regression was performed, with the TOEFL scores as the criterion variable and the belief (FB1, FB2, FB3, and FB4) and strategy variables (FS1, FS2, FS3, and FS4) as the predictor variables in order to identify which beliefs and learning strategies were more predictive of the TOEFL scores. The results of the stepwise multiple regression are presented in Table 4.

TABLE 4
Effects of FB2, FS1, and FS2 on the TOEFL Scores

Variable	Cumulative R ²	R ² Change	b	Beta	t
FB2	.115	.115	11	.212	3.353*
FS1	.145	.030	11	.209	3.581*
FS2	.163	.018	7	.145*	2.441*

According to Table 4, the three predictor variables, FB2 (self-efficacy

and beliefs about social interaction), FS1 (independent and interactive practice strategies), and FS2 (metacognitive strategies) were more predictive of the TOEFL scores than the other belief and strategy variables, jointly accounting for significant variation in the TOEFL scores ($R^2 = .16$, $F = 18.51$, $p < .05$). This variation ($R^2 = .16$) in the TOEFL scores explained by the FB2, FS1, and FS2 in the stepwise regression analysis was not very different from the variation ($R^2 = .18$) in the TOEFL scores explained by the all belief and strategy variables in a full regression analysis ($R^2 = .18$, $F = 7.86$, $p < .05$). These significant ANOVA results combined with the scatterplots of residuals ($Y-Y'$) against the predicted TOEFL scores (Y') confirm that the regression model was linear and provide evidence that Pearson product moment correlations should be used in Table 3 rather than eta correlations which allow for curvilinearity. Table 4 also shows that one scale point of improvement on the FB2, FS1, and FS2, say from 3 to 4, predicts an improvement of about eleven or seven points respectively on the TOEFL scores. Thus, the findings of the regression study suggest that students' beliefs as well as their learning strategy use predict L2 proficiency, with FB2, FS1, and FS2 more predictive of L2 proficiency than the other belief and strategy variables, with particular attention to the Korean context.

IV. DISCUSSION

Four factors were found in both the SILL and the BALLI in this study. These four factors were somewhat similar to the factors found in other populations (Horwitz & Park, in progress; Yang, 1992). In her study, Yang (1992) found six underlying factors of the SILL—functional practice, cognitive-memory, metacognitive, formal oral-practice, social, and compensation strategies—and four underlying factors of the BALLI—self-efficacy and expectation about learning English, perceived value and nature of learning spoken English, beliefs about foreign language aptitude, and beliefs about formal structural studies—for

university students learning English in Taiwan. Horwitz and Park (in progress) also found four factors of the BALLI for university students learning French in the United States: functionality of knowing another language, beliefs about language learning aptitude, beliefs about language learning tasks, and beliefs about the difficulty of language learning. In spite of the criticism of factor analysis for its subjectivity, the similarity of the factors of the SILL and the BALLI across populations supports the high construct validity of the SILL and the BALLI used in this study.

The present study confirms the assumption that students' beliefs may be related to their learning strategy use. This relationship, however, was relatively low compared with other studies (see Yang, 1992; Wenden, 1987c) and depended on specific types of beliefs and learning strategies. For instance, two beliefs, motivational beliefs and beliefs about formal English, and self-efficacy and beliefs about social interaction, were more related to learning strategy use than the other two beliefs, beliefs about learning spoken English and beliefs about foreign language aptitude. Even though several studies have reported a relationship between learning strategy use and L2 proficiency/achievement (Phillips, 1991; Chamot & Kupper, 1989; Ramirez, 1986; Bialystok, 1981), the relationship between beliefs and L2 proficiency has not been explored yet. Thus, it is an interesting finding that students' beliefs about language learning are directly related to their TOEFL scores, confirming the assumption made by Abraham and Vann (1987).

This study also shows that self-efficacy and beliefs about social interaction, independent and interactive practice strategies, and metacognitive strategies are more predictive of the TOEFL scores than the other beliefs and learning strategies for university students learning English in Korea. Self-efficacy and beliefs about social interaction includes such beliefs as perceived ability for learning English, confidence to learn to speak English well, learning English to know English speakers and culture, and degree of comfort in practicing English with others. Independent and interactive practice strategies include such strategies as practicing English with other people, asking

questions, using English in different ways, watching TV and listening to radio, and learning English in a natural environment, while metacognitive strategies include such strategies as finding out to be a better learner of English, having clear goals for improving English, thinking about progress in learning English, planning a schedule to study English, thinking of favorite ways of learning English, looking for people to talk to, and paying attention to key words.

In spite of the relationships among beliefs, learning strategy use, and the TOEFL scores, however, beliefs and learning strategy use accounted for only 16 to 18% of the total variation in the TOEFL scores. Several explanations can be offered for this small variance between beliefs and learning strategy use and the TOEFL scores. First, the questionnaires, the SILL and the BALLI, and the TOEFL used in this study measured only some of these students' beliefs, learning strategies, and English proficiency. Second, some students might have forgotten the beliefs and learning strategies that they had used before and failed to report the beliefs and learning strategies which contributed to their TOEFL scores. Third, L2 acquisition can be explained by natural and unconscious processes as well as by intentional and conscious learning strategies. These natural and unconscious processes may come from native language knowledge (Park, *in press*; Bley-Vroman, 1989), innate universal grammar and language-specific learning principles accessible to adult L2 learners (White, 1989; Cook, 1988), and/or general learning principles (Birdsong, 1994; Felix, 1985).

Even though learning strategy use combined with beliefs accounted for only 16 to 18% of the total variation in the TOEFL scores, the role of learning strategies and beliefs in L2 proficiency provides evidence that part of L2 acquisition results from information processing. This is because researchers attribute the roles of learning strategies and beliefs to social-cognitive psychology, specifically information processing theory (Nyikos & Oxford, 1993; Wenden, 1991; Bandura, 1986; Weinstein & Mayer, 1986). According to Weinstein and Mayer (1986), learning strategy use facilitates processing new information (input) by influencing cognitive and affective domains during the encoding process. The encoding

process falls into the following four stages: selection, acquisition, construction, and integration. Through selection, learners pay attention to specific information and transfer this information into working memory. In acquisition, learners transfer information from working memory to long-term memory. In the stage of construction, learners actively build internal connections between ideas in the information that has reached working memory. In the final stage of integration, learners actively look for prior knowledge in long-term memory and transfer this knowledge to working memory.

V. IMPLICATIONS FOR PEDAGOGY

The findings of this study suggest that strategy training be conducted in English classrooms to help students become autonomous English learners outside the classroom, where much English learning occurs. General ideas about how strategy training should be conducted are well described in other studies (Wenden, 1991; O'Malley & Chamot, 1990; Oxford, 1990). Nevertheless, the findings of this study add two more dimensions to these general ideas.

First, strategy training should be combined with belief training. Research on learning strategies has been conducted with the idea that the learning strategies of good language learners can be taught to poor language learners. However, the training effects have not always been successful (O'Malley, 1987; Wenden, 1987b). One of the reasons for the potential failure of strategy training may be ignorance of other learner characteristics such as beliefs, learning styles, and levels (Rees-Miller, 1993). Thus, one of the findings of this study—the relationship between beliefs and learning strategy use—suggests that strategy training should be conducted combined with belief training. Another reason for unsuccessful training effects may be that strategy training is conducted in a large classroom, which is common in L2 education. When strategy training is conducted in a large classroom, teachers cannot introduce learning strategies which fit every student's individual learner

characteristics, complicating training effects. Thus, in order to improve training effects in a large classroom, teachers are recommended to identify more effective learning strategies for a specific group of students, and to focus on teaching these strategies to the students, in order to incorporate a greater variety of the students' learner characteristics into strategy training. Another advantage of identifying effective strategies and teaching these strategies to the students is that effective strategies are more teachable than ineffective strategies because effective strategies may be rewarded directly and quickly, leading L2 learners to be motivated to learn the strategies being taught and to use them later more willingly and frequently in L2 acquisition tasks.

Second, in addition to the importance of strategy and belief training in the classroom to help students become autonomous L2 learners outside the classroom, strategy and belief training should be conducted in conjunction with the teaching about the target language. In order to teach the target language more efficiently, language teaching has utilized specific methods, such as the grammar-translation, audio-lingual, natural, and communicative language teaching methods. Considering the importance of beliefs about social interaction and practice and metacognitive strategies in predicting the TOEFL scores in this study, a communicative language teaching method can be most effective with this population. Compared to other teaching methods, the communicative language teaching method is more learner centered, more practice oriented, and emphasizes social interaction for the development of students' L2 proficiency more than other methods (Richards & Rodgers, 1986; Nattinger, 1983). Thus, the effects of strategy training, if combined with the communicative language teaching method, can be improved in the particular context of university students learning English in Korea.

VI. CONCLUSION AND RECOMMENDATIONS

The present study has discovered the underlying factors of the SILL

and the BALLI, has investigated the relationships among students' beliefs, learning strategy use, and L2 proficiency, and has found beliefs and learning strategies which are more predictive of L2 proficiency, with particular attention to the Korean context. Considering that the students' use of language learning strategies and beliefs about language learning are self-reported by university students learning English in Korea at one point in time, one should be cautious in making generalizations based on the findings of this study. Thus, more studies need to be conducted, using other populations and data such as interviews, think-aloud procedures, and observation over time as well as at one point in time. Nevertheless, this study has shown that there are four factors in both the SILL and the BALLI, that students' beliefs, learning strategy use, and the TOEFL scores were generally related to one another, and that self-efficacy and beliefs about social interaction, and practice and metacognitive strategies were more predictive of the TOEFL scores than the other belief and strategy variables. These empirical findings not only supplement research on learning strategies and beliefs, but help build a more complete theory of L2 acquisition (see Park, in press). The findings of this study suggest that the following areas need to be studied in the future:

1. The relationships among students' beliefs, learning strategy use, and L2 proficiency were investigated cross-sectionally through the two self-report questionnaires, the SILL and the BALLI, in this study. Thus, the investigation of these relationships need to be verified using other types of data, such as interviews and observation, longitudinally as well as cross-sectionally.
2. Students' beliefs and learning strategy use are related to the TOEFL scores in this study. However, it is not certain yet whether beliefs and learning strategy use have causal effects on L2 proficiency. In addition, it is assumed that students' beliefs affect their use of learning strategies and that students' beliefs combined with their learning strategies again affect their L2 proficiency. Thus, this pathway needs to be explored.

3. The training effects of beliefs and learning strategies, focusing on self-efficacy and beliefs about social interaction and practice and metacognitive strategies, in university students learning English in Korea need to be investigated.
4. The language learning strategies which work for particular students for particular tasks need to be identified. In addition, which domain of language (vocabulary, core or peripheral grammar) can be affected through language learning strategies needs to be determined.

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