

Exploration of the relationships among self-efficacy, self-regulation strategy use, and English vocabulary skills

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journal or publication title	Studies in Linguistics and Language Teaching
volume	24
page range	107-125
year	2013-11
URL	http://id.nii.ac.jp/1092/00001081/

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Sakae Onoda

Introduction

Producing proactive and confident language learners armed with effective self-regulation strategies has been a goal of educators in aiding students in acquiring advanced English skills in the contemporary borderless world. Self-regulation strategies subsume metacognitive self-regulation strategies and effort regulation strategies (Pintich & Zusho, 2002), which are critical for effective communication skills development. Support comes from educational psychology. Self-efficacy and self-regulation strategy use have been well documented as important predictors of academic achievement (Pajares & Schunk, 2001). However, investigations into factors that promote self-regulated language learning and the relationships among predictor variables that facilitate L2 learning achievement are still in their infancy, and the findings are rather limited. This research examines such relationships and draws upon educational psychology and L2 literature.

Literature

Research indicates that it is necessary to address teaching techniques that improve and sustain positive affective and linguistic factors that influence learning,

such as individual differences (Dornyei, 2006; Ushioda, 2009). This is supported by the perceptions of language teachers that some linguistically competent students are unwilling to use their L2 for communication, whereas other students with limited linguistic knowledge seem to communicate in the L2 whenever possible. Support for the importance of the affective aspect of language learning comes from Onoda (2011), who investigated how university English majors perceive a teaching approach that incorporates the linguistic and affective aspects of language learning. He utilized meaning-focused output and fluency development tasks that were purported to enhance the linguistic facet of learning and also incorporated tasks that promote the affective facet, self-efficacy. The results indicated that the pedagogical approach was well received by the participants, and that the linguistic and affective teaching foci appeared to improve speaking and listening skills, as measured by an in-house proficiency test and questionnaires. These results may imply that self-efficacy is one of the important factors that predict language learning outcomes. But the causal relationship has not been investigated.

Self-Efficacy and Its Effects on Academic Achievement

Self-efficacy refers to learners' judgments about their abilities to complete a specific task successfully (Paulsen & Gentry, 1995; Schunk, 1996). Self-efficacy was derived from Bandura's social cognitive theory (1986), which states individuals develop perceptions of their own capabilities in performing a task. These perceptions influence the pursuit of goals and the degree to which individuals exercise control over their environments. Rothman, Baldwin, and Hertel (2004) argued that self-efficacy beliefs help learners sustain effort and persevere when

facing difficulties. Consequently, learners with high self-efficacy anticipate successful results, engage in difficult tasks, and maintain their commitment to learning, finally yielding good academic learning results.

In the field of educational psychology, self-efficacy has been well documented as a powerful predictor of academic achievement (e.g., Paulsen & Gentry, 1995; Pintrich, Smith, Garcia, & McKeachie, 1991). Multon, Brown, and Lent's (1991) meta-analysis of research found that learners' self-efficacy beliefs are positively correlated with academic performance ($r = .38$) and that those beliefs accounted for nearly 14% of its variance. Pintrich and De Groot's (1990) study investigated the relationship among motivational orientations including self-efficacy and self-regulation. Results indicated that self-efficacy was a significant predictor of course grades.

The profound effects of self-efficacy can be applied to L2 learning as demonstrated by a number of studies. For example, Wong's (2005) study revealed that learners with high efficacy used more language learning strategies more frequently than those with low efficacy. Onoda's (2012) study indicated that self-efficacy strongly predicted self-regulation strategy use, which in turn influenced L2 speaking and listening skills. However, studies examining the effects of self-efficacy on L2 learning have been limited.

Self-Efficacy, Self-Regulation, and Academic Achievement

Self-regulation is the self-management of one's learning from the beginning to the completion of a learning goal. The most frequently cited definition of self-regulation is "an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition,

motivation, and behavior, guided and constructed by their goals and contextual features in the environment” (Pintrich, 2000, p. 453). Thus, as indicated, the concept of self-regulation is very similar to that of autonomy in the L2 field.

However, in educational psychology and general education, the causal relationship among self-efficacy, self-regulation, and academic achievement has frequently been researched and documented. Pintrich and De Groot (1990) investigated the relationship among motivational orientations (including self-efficacy), self-regulation, and academic performance with intermediate school students in the US. Using an earlier version of the MSLQ (the Motivated Strategic Learning Questionnaire, 1993), they obtained data for self-efficacy, test anxiety, intrinsic value, and self-regulation from students’ self-reports, and performance data from classroom assignments. The results indicated that self-efficacy was positively correlated with self-regulation ($r = .44$), and self-efficacy was also positively correlated with academic performance measures (e.g., two course grades, $r = .34, .35$; essays, $r = .25$; examinations/quizzes, $r = .24$). Regression analyses conducted on average grades ($r^2 = .22$) revealed that self-efficacy (partial $r = .18, p < .02$) and self-regulation (partial $r = .22, p < .005$) were significant predictors of course grades. Other researchers (e.g., Schunk, 1985; Zimmerman & Martinez-Pons, 1990) have demonstrated that when engaging in learning tasks, students with high efficacy are likely to use more cognitive and metacognitive strategies, and stay engaged in those tasks more thoughtfully and longer than those with low efficacy. Schunk (1985) and Zimmerman and Martinez-Pons (1990) have indicated that self-regulation strategy use in combination with self-efficacy yields academic achievement. Schunk and Pajares (2002) stated that “academic self-efficacy affects cognitive strategy use and self-regulation through the use of

metacognitive strategies” (p. 247) and that academic self-efficacy is positively correlated with classroom learning and home study measures including examinations and reports. Similar investigations have been conducted by Zimmerman and his associates (Zimmerman, 1994; Zimmerman & Bandura, 1994; Zimmerman & Martinez-Pons, 1990), who found that highly efficacious students achieve good academic results.

The Relationships among Self-Efficacy, Self-Regulation, and L2 Learning Outcome

It is hypothesized that Bandura’s (1977) social cognitive theory is also applicable to foreign language learning in universities and that improving self-efficacy promotes the use of effective self-regulation strategy, which in turn enhances L2 learning outcomes. In the L2 field, however, investigations of the relationship between L2 learning and self-efficacy beliefs have been limited.

Wong (2005) investigated how language learning strategies and language learning self-efficacy were correlated, using data obtained from graduate school ESL learners in Malaysia. She used six categories of language learning strategies that emerged from the participants’ responses to a questionnaire. The analysis revealed that the six categories were significantly correlated with self-efficacy beliefs. Thus, the results indicate that highly efficacious language learners are likely to use language learning strategies than minimally self-efficacious learners.

Wang’s (2007) qualitative case study uncovered a close relationship between self-efficacy beliefs and self-regulated learning in ESL contexts. The researcher observed and monitored the English learning behaviors of four Chinese children, both in their home learning and school learning contexts,

and analyzed their self-efficacy beliefs and self-regulation strategy use. The findings revealed that their self-efficacy beliefs were linked to their knowledge in the content area, self-perceived English proficiency, perceived difficulty of tasks, their interest in and attitudes toward English, and self-regulated strategy use.

L2 Vocabulary Learning and Self-Regulation

It has been documented that a well-developed L2 vocabulary is critical for effective communication. Researchers (Laufer, Meara, & Nation, 2005) suggest that knowing 5,000 word families is necessary for reasonable comprehension, i.e., 70% of authentic non-fiction texts (Laufer, Meara, & Nation, 2005). However, learners need to go through a long process of learning in order to develop an adequate vocabulary size.

A number of effective learning strategies are suggested in L2 vocabulary learning. They range from explicit vocabulary learning, i.e., language-focused learning, such as

1. using word cards for rote memorization (i.e., spaced retrieval),
2. learning the most useful 15 - 20 English prefixes and suffixes to relate them to the meanings of the whole words ((Laufer, Meara, & Nation, 2005),
3. engaging in regular review (Laufer, Meara, & Nation, 2005; Beglar & Hunt, 2005),
4. practicing the use of collocations different from those of the learner's L1 (Laufer, Meara, & Nation, 2005),

to more communication-oriented strategies, i.e., meaning-focused and fluency development strategies, such as

1. reading and writing something every day (Laufer, Meara, & Nation, 2005),
2. speaking and writing as much as possible at faster than the normal speeds (Laufer, Meara, & Nation, 2005)
3. using vocabulary in different contexts, i.e., “generative use” (Joe, 1998).

Closely examined, these strategies require self-regulation which encourages learners to use metacognitive strategies to help them progress toward the learning goal. This view is congruent with Laufer, Meara, and Nation’s (2005) view that learners ultimately should develop the habit of learning vocabulary autonomously, i.e., taking responsibility for their own vocabulary learning in order to efficiently expand their vocabulary size.

One investigation of the effects of self-regulation on vocabulary learning is worth discussing because it is pertinent to the present study. Tseng, Dörnyei, and Schmitt (2006) developed the Self-Regulatory Capacity in Vocabulary Learning scale (SRCvoc) to measure the underlying self-regulatory capacity of a learner that will result in strategy use. The instrument focused on five aspects of self-regulation: commitment control, metacognitive control, satiation control, emotion control, and environmental control. The researchers reported that the instrument measured these aspects of self-regulation at a high validity and reliability, indicating that self-regulation is one of the most important predictors of L2 vocabulary learning.

Research Question

What are the relationships among self-efficacy, self-regulation strategy use, and L2 vocabulary learning?

Hypotheses

H1: Self-efficacy directly influences L2 vocabulary skills.

H2: Self-efficacy influences self-regulation strategy use.

H3: Self-regulation strategy use influences L2 vocabulary skills.

A Hypothesized Model

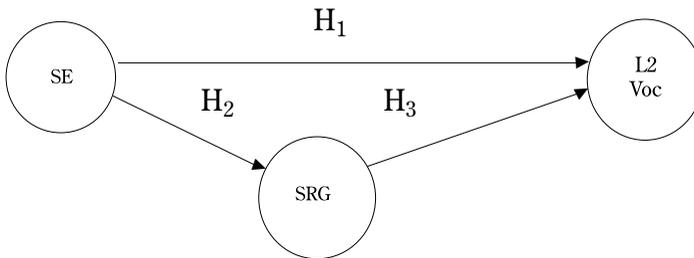


Figure 1. A hypothesized model that explicates the relationships among self-efficacy, self-regulation strategies, and L2 vocabulary skills.

Note. SE = self-efficacy; SRG = self-regulation strategy use; L2 Voc = L2 vocabulary skills.

Method

The participants in this study were 145 second-year English majors (31 males and 114 females) in six sections of a Media English course at a private Japanese university in 2012. The participants' ages ranged from 19 to 21. The participants' general English proficiency was measured using TOEFL. Their scores ranged from 340 to 525, and the mean (*SD*) was 456.03 (37.85).

The Use of a Focus Group

A focus group of students from the Media English class was formed for a number of purposes used in this research. At the beginning of the research, six students volunteered to join the focus group at the request of the researcher. They turned out to be good language learners who participated actively in class, were well prepared, completed all assignments thoroughly, and demonstrated high TOEFL scores ranging from 505 to 535. They accepted responsibility for helping with the research by (1) attending meetings to help develop and revise the questionnaire items, (2) giving their feedback on the results of the pilot questionnaire, (3) giving their interpretations of the misbehaving items identified in the analysis of the Vocabulary Size Test results, and (4) attending meetings to help interpret the results of the main study.

Given the quantitative nature of the present study, the feedback from the focus group is necessary in developing and revising questionnaire items and accurately interpreting the results.

Instruments

The Motivated Strategies for Learning Questionnaire

The original Motivated Strategies for Learning Questionnaire (MSLQ) (Pintrich, Smith, Garcia, & McKeachie, 1991, 1993) was developed based on the social-cognitive framework of motivation and learning (Bandura, 1986) and self-determination theory (Deci & Ryan, 2002). Because the social-cognitive view of motivation presupposes that motivation and learning strategy use are situation-specific, the MSLQ is best used for a specific course. The original MSLQ is an 81-item self-report instrument with a seven-point scale designed to measure

two constructs: motivation and learning strategies. Motivation constructs include self-efficacy for learning and performance items, and learning strategy items include metacognitive self-regulation strategy and effort regulation strategy, both of which are important for vocabulary learning.

The self-efficacy items and self-regulation strategy items suitable for L2 learning in a Japanese university were created based on the original MSLQ, but were modified based on L2 literature, feedback from the focus group of six students, piloting of the questionnaire, and Rasch analyses of the pilot version. As a result, four items were selected for self-efficacy, e.g., *I am confident that I can learn vocabulary effectively in the class*. Also, six items for self-regulation strategies were selected, e.g., *Even if I am tired, I try to follow my vocabulary study plan and study words*.

Finally, using factor analysis, four high-loading items (above 0.5) were selected for structural equation modeling (See Appendix A).

The Vocabulary Size Test (Nation, 2001)

Several versions of the Vocabulary Size Test have been developed (e.g., Meara and Buxton, 1987), but in this study one version of the test, developed by Nation (2001), was used. In this vocabulary test, 10 items were selected for each 1000-word level. Therefore, 140 total items were included in a multiple-choice format. For the present investigation, the words from the 1,000 word level to 8,000 word level were used with the participants. It is generally agreed that the goal of the English Department for its students is acquiring a vocabulary of 8,000 words.

The questionnaire and the Vocabulary Size Test were administered in January,

2012. The Vocabulary Size Test data were all normally distributed and no outliers were identified, as indicated below.

Table 1. *Descriptive Statistics for the Vocabulary Size Test Scores (N = 145)*

	Vocabulary Size Test
M	<i>44.47</i>
SE	<i>0.81</i>
95% CI Lower Bound	<i>33.04</i>
95% CI Upper Bound	<i>54.17</i>
SD	<i>9.70</i>
Skewness	<i>-.26</i>
SES	<i>.201</i>
Kurtosis	<i>.98</i>
SEK	<i>.40</i>

Skewness and kurtosis for the Vocabulary Size Test data was acceptable and no problems were identified with regard to potential outliers. The Vocabulary Size Test demonstrated a high reliability coefficient of $\alpha = .91$.

Structural Equation Modeling (SEM)

Structural equation modeling was employed in this investigation in order to test the causal relationships of the target variables. Structural modeling indicates regression where the predictors have regression weights in relation to the criterion variable (Maruyama, 1998, p. 21). This allows researchers to determine which particular variables have the strongest predictive power and to determine how well the predictors explain the criterion variable. Thus, SEM enables

researchers to utilize all the information provided by regression analyses, and further, to consider additional information provided by indirect predictors.

Results

The research question concerned the relationships among self-efficacy, self-regulation strategy use, and the L2 vocabulary skills. Using data from the questionnaire and the Vocabulary Size Test scores, the structural equation modeling was run using AMOS 7.0J (Arbuckle, 2006). The correlation matrix for the latent variables is presented in Table 2.

Table 2. *Correlation Matrix for All Variables*

Measure	1	2	3
1. SE			
2. SRG	.611.**		
3. VST	.285*	.570**	

Note. SE = self-efficacy; SRG = self-regulation strategy use, VST = Vocabulary Size Test
** $p < .001$ (2-tailed), * $p < .005$ (2-tailed)

The hypothesized relationships represented in Figure 1 are generally supported by the correlation coefficients displayed in Table 2. Self-efficacy is highly correlated with self-regulation strategy use ($r = .611, p < .001$) and is moderately correlated with L2 vocabulary skills ($r = .285, p < .005$). In addition, self-regulation strategy use is highly correlated with L2 vocabulary skills ($r = .570, p < .001$)

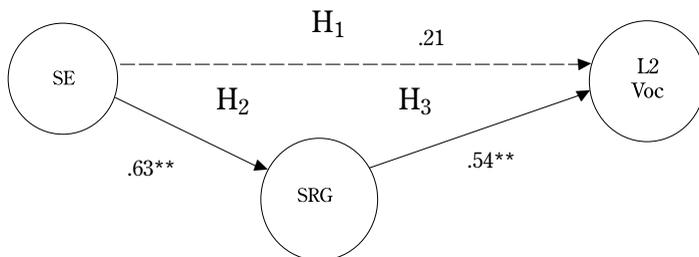


Figure 2. The model explicating the relationships among self-efficacy, self-regulation strategy use, and L2 vocabulary skills.

Note. SE = self-efficacy; SRG = self-regulation strategy use; L2 Voc = L2 vocabulary skills.

In the hypothesized model, self-efficacy directly affects L2 vocabulary skills (H¹). In addition, self-efficacy is hypothesized to have a direct influence on self-regulation strategy use (H²), which in turn predicts L2 vocabulary skills (H³). The results indicated that self-efficacy did not directly influence L2 vocabulary skills ($\beta = .21$, *n.s.*). Instead, self-efficacy significantly predicted self-regulation strategy use ($\beta = .63$, $p < .001$), which in turn predicted L2 vocabulary skills ($\beta = .54$, $p < .001$). Additionally, as the goodness-of-fit statistics indicate, the hypothesized model met multiple criteria for adequate model fit: Chi-square value = 81.81, Chi-square $p = .00$, CFI = .811, RMSEA = .050, SRMR = .06. Values approaching .90 for the CFI, .05 to .06 for the RMSEA, and .05 for SRMR are considered indicative of adequate fit of the proposed model with the observed covariance matrix (Hu & Bentler, 1998). The standardized path coefficients indicated that all the paths, except Hypothesis 1, were statistically significant.

Discussion

The interrelationships among self-efficacy, self-regulation strategy use, and L2 vocabulary skills were investigated using structural equation modeling. The results indicated that self-efficacy significantly predicted self-regulation strategy use, which in turn predicted L2 vocabulary skills. However, the path from self-efficacy to L2 vocabulary skills was not significant.

Self-efficacy did not directly predict L2 vocabulary skills, but it influenced L2 vocabulary indirectly through the mediation of self-regulation strategy use as indicated by Schunk and Pajares (2002) and Pintrich and De Groot (1990). These researchers postulate that learners need both skills and a strong will for good academic performance. Also, Bandura (1977) postulated that one of the essential factors in enhancing self-efficacy is having successful learning experiences that entail the use of self-regulation strategies. Thus, in language learning in which knowledge of learning strategies play an important role, self-efficacy alone does not appear to have significant effects on learning outcomes.

Feedback from the focus group corroborated these results. Based on their previous learning experiences, the focus group reported that learners who are confident in completing a particular vocabulary learning task usually know and autonomously employ effective self-regulation strategies advocated in the L2 literature (Laufer, Meara, and Nation, 2005), such as making study plans, studying words on a regular basis, analyzing word parts, and trying to use them in speaking and writing.

Conclusion

The theoretically based structural model explicating the relationships among self-efficacy, self-regulation strategy use, and L2 vocabulary skills were tested. Two of the three hypotheses associated with the model were supported by the data, indicating that some of the relationships described in the educational literature might also hold true for L2 learning. Self-efficacy significantly influenced self-regulation strategy use, which in turn, significantly predicted L2 vocabulary skills. However, the present findings do not rule out the existence of other potential models (Hagger, Chatzisarantis, & Harris, 2006) because the fit of data to one particular model does not mean that the model is the correct one; it simply indicates that the model is plausible. There are likely alternative models that can be confirmed (Beglar, 2000). Therefore, replication studies using similar participants are necessary in order to lend additional support to the results of the present study.

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Appendix A

Self-Efficacy Questionnaire items

Items presented here are those selected as a result of factor analysis in running structural equation modeling.

- SE 1: I am confident that I can learn vocabulary effectively in this class.
- SE 2: I am confident that I will do well in the vocabulary tests given in this class.
- SE 3: I am confident that I can understand most of the important words that the teacher uses in this course.
- SE 4: Considering the difficulty of this class, the teacher and my English ability, I think I can do better than other students.

Appendix B

Self-Regulation Strategy items

Items presented here are those selected as a result of factor analysis in running structural equation modeling.

- SRG 1: Even if I am tired, I try to follow my vocabulary study plan and study words.
- SRG 2: I usually study words on a regular basis.
- SRG 3: Even if the vocabulary is difficult, I don't give up but try to learn it.
- SRG 4: I manage to prioritize vocabulary learning assignments in the face of other temptations in this course.
- SRG 5: I work harder on words that are difficult to memorize.
- SRG 6: I try to pronounce words and write words to memorize them efficiently.