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Researchers, especially in the field of educational psychology, have argued that self-efficacy plays an important role in self-regulated learning. As such, teaching of self-regulated learning often focuses on enhancing self-efficacy. However, few studies have examined how the process of self-regulated learning might lead to the enhancement of self-efficacy. Therefore, the aim of this study was to investigate the effects of the self-regulated vocabulary learning process on self-efficacy. A total of 303 learners of English as a Foreign Language from two universities participated in the study. They completed a questionnaire measuring the process of self-regulated learning (i.e. forethought, performance or volitional control, and self-reflection). They also completed a vocabulary test as a measure of learning outcome. Correlation analysis was employed to evaluate the relationships between various variables investigated in the study. The results showed that self-regulated learning process can boost self-efficacy and increase vocabulary knowledge. The pedagogical implications of the current study are discussed mainly in terms of incorporating instructions aimed at enhancing self-efficacy and self-regulation in vocabulary teaching.

Keywords: self-regulated learning, learning strategy, self-efficacy, vocabulary learning, motivation

Introduction

Research on language learning strategies has been ongoing for almost 40 years. Numerous theoretical and empirical studies have been conducted thus far, and as a result, language learning strategy research has firmly established itself in the field of applied linguistics (Cohen and Macaro 2007; Oxford 2011).

Nevertheless, according to Gu (2012, 330), 'research interest in language learning strategies is at an all-time low'. This somewhat ambivalent status stems in part from a series of severe critiques directed at the definitional fuzziness and lack of rigorous measurement of language learning strategies (Dörnyei 2005; Tseng, Dörnyei,

and Schmitt 2006). This criticism has recently led to theoretical advances, amounting to a redefinition of the field.

One such attempt is the inclusion of self-regulated learning, which is rooted in educational psychology (Dörnyei 2005). Among several theories of self-regulated learning (see Zimmerman 2001, for a review), the most cited is Zimmerman's cyclical model of self-regulation (1989). A crucial component of this model is that, learners can enhance their self-efficacy.

Although there has been extensive research utilizing Zimmerman's model of self- regulated learning, the causal relationship between the process (or cycle) of self-regulated learning and the enhancement of self-efficacy has yet to be validated through empirical investigations.[1]

Therefore, the goal of this study was to examine the effects of self-regulated vocabulary learning process on self-efficacy. The study focuses on one specific domain of learning, vocabulary learning, because the effect of self-efficacy on vocabulary learning in L2 studies has been under-researched, despite an increased interest in vocabulary research (Nation 2001; Schmitt 2010).

As background to the study, the present understandings of language learning strategies and self-regulated learning in L2 studies are first reviewed, followed by a review of the roles of self-efficacy reported in L2 studies.

Language learning strategies and self-regulated learning

As discussed above, the field of language learning strategies, after a prosperous research period in the 1990s, has recently gone through a time of profound change in theory. The field has amassed a large body of knowledge about how languages are learned from descriptive studies of learners' use of learning strategies.

In addition, experimental research on L2 strategy instruction is equally important. In a recent meta-analysis of 61 strategy instruction studies, Plonsky (2011) reported a modest overall effect of strategy instruction, indicating that strategy instruction can be beneficial to L2 learners. Since its inception (Rubin 1975), language learning strategy research has aimed to apply its findings in practice. Therefore, in a sense, the field of language learning strategies has accomplished the first goal of its mission. With a wealth of research evidence, it could be argued that both descriptive and intervention studies of language learning strategies have largely contributed not only to the development of strategy research itself but also to the advancement of the field of second language acquisition (SLA) as a whole.

However, recently there have been theoretical advances in redefining language learning strategies, in response to a wave of criticism directed at the paucity of rigid theoretical underpinnings (see Cohen and Macaro 2007; Dörnyei 2005, for a detail). Advances are particularly conspicuous in two types of research frameworks: (a) establishing elaborate refinements in the definition of language learning strategies and (b) integrating the concept of language learning strategies into a more extensive notion of self-regulated learning.

The first direction involves establishing elaborate refinements in the definition of language learning strategies. In an attempt to circumvent any terminological fuzziness, Macaro (2006) has proposed a theoretical framework which posits 'learner strategies occur only in working memory and that they become other constructs elsewhere' (327). Within this framework, constructs that are often interchangeable with learning strategies, such as processes and skills can be clearly distinguished. Recently, the validity of Macaro's model of strategies has been tested and supported by using a brain-imaging technique (Takeuchi, Ikeda, and Mizumoto 2012).

Another type of theoretical refinement of language learning strategies has been achieved by Gu (2012), who has attempted to anchor the concept of learning strategies through a prototype perspective. Gu defines prototypes as 'Prototypes are the ideal forms, so to speak, of target concepts. Particular instances are evaluated by means of comparing them to the prototypical exemplars to see how much common variance they share' (336). The prototypical exemplars of language learning strategies, in Gu's definition, are as follows:

- Attending selectively to learning problems and tasks
- Analysing the task at hand
- Making decisions and choices
- Executing plans
- Monitoring progress and modifying plans
- Evaluating results
- Coordinating an orchestrating strategic behaviour (Gu 2012, 336–337)

Accordingly, any actions (behaviors), thoughts, and feelings that share similar properties with the above core features can be considered strategies. One of the notable strengths of Gu's model is that it does not introduce anything new or alien to researchers and practitioners in the field. Thus, it does not replace (and possibly waste) the accumulated research knowledge in search of a new paradigm, and those interested in strategy research can make the best use of existing research findings.

The second type of research direction seeks to integrate the concept of language learning strategies into a more extensive notion of self-regulated learning. It was Dörnyei (2005) who first made the strong argument that the concept of language

learning strategies should be replaced by self-regulation.[2] Self-regulated learning, or self-regulation, has been researched mainly in the field of educational psychology.

Although several theories of self-regulation exist, Zimmerman's social-cognitive model of self-regulation (1989) defines it as: 'self-regulation involves learners who proactively direct their behavior or strategies to achieve self-set goals. They also rely on affective, cognitive, motivational, and behavioral feedback to modify or adjust their strategies and behaviors when unable to initially attain their goals' (Cleary and Zimmerman 2004, 538).

As clearly seen in this definition, strategies are an integral component of self-regulated learning. With the framework of self-regulated learning, therefore, learning strategies fall under the umbrella of a larger concept of self-regulated learning.

Tseng, Dörnyei, and Schmitt (2006) have developed a *Self-regulating Capacity in Vocabulary Learning Scale* and demonstrated that it can be a psychometrically sound measure of volitional (action) control in self-regulated vocabulary learning. This study made a successful conceptual advance by introducing self-regulated learning to the field of L2 research. Subsequently, several strategy researchers have utilized the concept of self-regulated learning in their research programs (e.g. Oxford 2011; Rose 2012a).

In a similar vein, Tseng and Schmitt (2008) have put forward 'A model of motivated vocabulary learning', which incorporates goals and motivation. Tseng and Schmitt divided the vocabulary learning process into three phases: the preactional, actional, and postactional phases, and explored 'the process of how vocabulary learning behaviors are initiated, maintained, and evaluated during the course of learning' (360).

Their model of motivated vocabulary learning is, in essence, a derivative of self-regulated learning. Thus, it is similar to Zimmerman's (1989) cyclical model of self-regulated learning, which considers self-regulated learning as a process. Zimmerman's

cyclical model has three phases: forethought, performance or volitional control, and self- reflection.[3]

Note that the characteristics of self-regulated learning bear a striking resemblance to those of Gu's (2012) model of 'learning strategies through a prototype perspective'. Gu (2012) claims that:

> the core concept of strategy is a dynamic process involving noticing and selectively attending to a problem, analyzing the self, the task and the situation, making decisions and plans, executing plans, monitoring, and evaluating the effectiveness of the whole process. A strategy includes strategy competence and strategy performance. In addition to purposefulness and self-initiation, the prototypical strategy is intentionally selected and used, consciously monitored and evaluated. (348)

On the face of it, the renewed concept of language learning and self-regulated learning are two sides of the same coin, with goal-oriented strategic learning at its core. Hence, one practical suggestion for researchers would be to clearly identify the framework on which their work is based. Whatever framework researchers draw on to investigate strategic learning, they should consider what can be expected and gained as an outcome of learning, for testing the effectiveness of the framework. In the case of self-regulated learning, it is self-efficacy. In Zimmmerman's cyclical model of self-regulated learning, self-efficacy emerges as a key concept: 'Self-regulation affects motivation, emotions, selection of strategies, and effort regulation and leads to increases in self-efficacy and improved academic achievement' (Bembenutty 2011, 4). In other words, through the process of self-regulated learning, learners' self-efficacy will be heightened (Zimmerman, Bandura, and Martinez-Pons 1992). Obviously, the notion of self-efficacy should be considered worthy of attention in the framework of self-regulated learning.

Self-efficacy

Self-efficacy refers to 'the belief in one's capabilities to organize and execute the courses of action required to manage prospective situations' (Bandura 1995, 330). Those who have higher levels of self-efficacy are confident about reaching a higher level of performance or achievement; they are therefore highly motivated and they make choices and take actions accordingly. 'Such beliefs influence the amount of effort people put forth and how long they continue to pursue tasks, including learning tasks, in the face of obstacles and failures' (Ehrman, Leaver, and Oxford 2003, 321). On the other hand, those who have lower levels of self-efficacy tend to attribute their failure to their low ability or factors beyond their control such as the difficulty of the tasks (Graham and Macaro 2008, 755). It is reported that higher levels of self-efficacy are linked to high motivation levels and better academic performance (Wong 2005; Woodrow 2011).

In the field of applied linguistics, it has been demonstrated that self-efficacy is linked to motivation to learn (Clément and Kruidenier 1985; Graham 2004; Graham and Macaro 2008; Kormos, Kiddle, and Csizér 2011; Mills, Pajares, and Herron 2007; Woodrow 2011), learning strategies (Ehrman, Leaver, and Oxford 2003; Horwitz, Horwitz, and Cope 1986; Magogwe and Oliver 2007; Mills, Pajares, and Herron 2007; Mizumoto 2012; Oxford 2011; Oxford and Shearin 1994; Wenden 1998; Wong 2005; Yang 1999), academic achievement or L2 proficiency (Ehrman, Leaver, and Oxford 2003; Gan, Humphreys, and Hamp-Lyons 2004; Mills, Pajares, and Herron 2007; Woodrow 2006, 2011), and learner autonomy (Ching 2002).

From these findings, it can be assumed that L2 learners with high self-efficacy embark on language learning with high motivation and use learning strategies effectively, resulting in proficiency gains. This cycle would further elevate self-efficacy. Two strategy instruction studies have provided evidence to support this line of argument

by showing that strategy instruction can enhance self-efficacy (Graham 2006; Graham and Macaro 2008).

In their recent book on metacognitive instruction of listening, Vandergrift and Goh (2012) have proposed: 'The goal of a metacognitive approach to listening is to develop learners who . . . have greater self-efficacy and motivation' (83). Thus it is evident that self-efficacy plays a vital role in L2 learning and it can be used as an outcome measure for assessing the effectiveness of the instruction of learning strategies or self-regulated learning.

Although studies using Zimmerman's (1989) model of self-regulated learning are plentiful, the assumption that the process (or cycle) of self-regulated learning boosts self-efficacy has rarely been examined. Furthermore, very few studies to date have investigated the effects of self-regulated learning process on self-efficacy in vocabulary learning, with Tseng and Schmitt's study (2008) using self-efficacy as one indicator of initial level of motivation. Therefore, current study aimed to examine the effects of self-regulated vocabulary learning process on self-efficacy.

Current study

The current study aims to examine the effects of self-regulated vocabulary learning process on self-efficacy. The following two hypotheses, based on the findings of the previous studies, were tested:

Hypothesis 1: The process of self-regulated vocabulary learning influences the degree of self-efficacy.

Hypothesis 2: Self-efficacy resulting from the process of self-regulated vocabulary learning influences vocabulary knowledge.

Method

Participants

The study was conducted in 2012. The participants were 303 Japanese university learners of English as a Foreign Language (EFL) (94 females, 209 males; aged from 18 to 20) at two private universities in western Japan. They were first year students enrolled in a compulsory English course at their universities. Their majors were humanities or engineering, and their proficiency level was lower intermediate, according to their schools' in-house proficiency tests.

Measures

The participants were asked to answer a questionnaire encompassing the self-regulatory process of vocabulary learning. The questionnaire was produced on the basis of items selected from previous studies (Barnard-Brak, Lan, and Osland Paton 2010; Mizumoto 2012; Pintrich, Smith, Garcia, and Mckeachie 1993; Tseng and Schmitt 2008).

In total, 21 items were included in the questionnaire (Appendix A). The participants responded on a six-point scale, from 1 (Not at all true of me) to 6 (Very true of me), according to the degree of perception on their learning process.

In addition to the questionnaire, a vocabulary test was administered, as an outcome measure of vocabulary knowledge gained from the process of self-regulated vocabulary learning. The test was made up of 60 items from the 'Academic Vocabulary' section of Vocabulary Levels Test (Schmitt 2000; Schmitt, Schmitt, and Clapham 2001). This test was used as an outcome measure of vocabulary knowledge gained from the process of self-regulated vocabulary learning. Only 60 items were used, because the level of the test would be appropriate for the target learners of the current study (i.e. Japanese university EFL learners). Table 1 summarizes the measures used.

Table 1. Summary of measures.

Phases of Self-regulated Learning	Subscale	Number of Items	Range
Forethought	Goal-setting	4	1-6
Performance	Volitional Control	5	
	Strategy Use	4	
Self-Reflection	Satisfaction with Strategy Use	4	
Learning Outcome	Self-efficacy	4	
	Vocabulary Knowledge	60	0-60

Data analysis

All the analyses in this study were conducted using R version 2.14.2. Descriptive statistics and Cronbach's α coefficients were first obtained for all the measures. Because the decisions about factor models were made a priori, the construct validity of the questionnaires was investigated with confirmatory factor analysis (CFA). To examine the relationship among all the measures, the data set was then analyzed using Pearson correlation coefficients to examine whether self-regulated learning process affects self-efficacy.

Results and discussion

The descriptive statistics and Cronbach's α coefficients of all the measures are displayed in Table 2. Overall, there was no problem in the descriptive statistics, including individual items (See Appendix B), which were within acceptable ranges with

high values of Cronbach's α coefficients. Also, the subscales in the questionnaire showed a good fit to the data in CFA.

Table 2. Descriptive statistics of measures used in the study (n = 303).

Measure	Mean	*SD*	Min	Max	Skewness	Kurtosis	α
Goal-setting	3.53	1.05	1	6	-0.12	0.08	.90
Volitional Control	3.14	0.92	1	6	-0.03	0.27	.89
Strategy Use	3.52	0.91	1	6	-0.39	0.71	.85
Satisfaction with Strategy Use	3.51	1.06	1	6	-0.33	-0.12	.93
Self-efficacy	3.02	0.94	1	6	-0.09	-0.12	.88
Vocabulary Knowledge	40.40	10.16	13	59	-0.43	-0.49	.91

Note. SD = Standard Deviation.

The intercorrelations among measures are presented in Figure 1. In the figure, scatter plots of the measures, with the Loess lines superimposed, are below the diagonal; histograms are on the diagonal; and the Pearson correlation coefficients are above the diagonal.

The figure shows that the correlation coefficient of adjacent variables (e.g. goal-setting and volitional control) is higher than that with other variables (e.g. goal-setting and variables other than volitional control). At the same time, the fact that the adjacent variables yielded higher correlation coefficients demonstrates that they are close in their constructs, and causal relationships can be expected.

Since the correlations obtained and described above are in the expected directions, the subscales of the questionnaire as a whole (goal-setting, volitional control, strategy use, satisfaction with strategy use, and self-efficacy) can be considered to represent valid measures for assessing the process of self-regulated vocabulary learning.

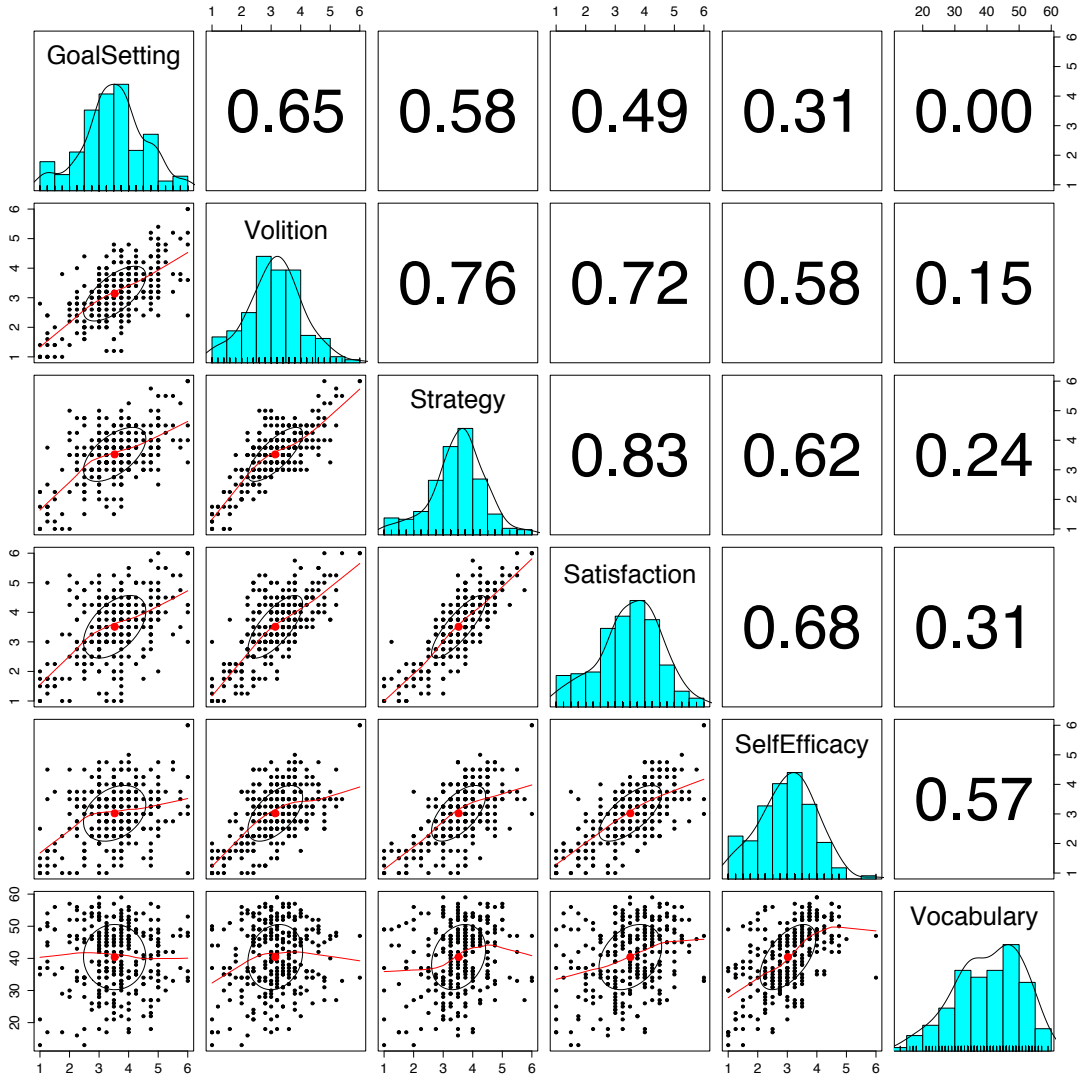

Figure1. Intercorrelations among measures (n = 303).

Correlation coefficients between self-efficacy and other variables in the questionnaire (goal-setting, volitional control, strategy use, and satisfaction with strategy use) become higher as the process of self-regulated vocabulary learning proceeds. These results provide support for Hypothesis 1: The process of self-regulated vocabulary learning influences the degree of self-efficacy. That is, the more self-regulated the learners are, the higher their self-efficacy.

The importance of self-regulated learning of vocabulary as a process can also be seen in the correlation coefficients between vocabulary knowledge and other measures. For instance, the correlation coefficient (*r*) between vocabulary knowledge and goal-setting is .00, whereas coefficient between vocabulary knowledge and self-efficacy is .57. In other words, one-to-one correspondence between vocabulary and other variables indicates a weak relationship at the first phase, but this becomes stronger towards the end of the process of self-regulated learning, reaching the highest level with self-efficacy. These results offer empirical support for Hypothesis 2: Self-efficacy via the process of self-regulated vocabulary learning influences vocabulary knowledge.

Taken together, the findings of the current study provide evidence that the process of self-regulated vocabulary learning not only increases self-efficacy but also leads to the development of vocabulary knowledge. Furthermore, the results of this study highlight the importance of process in self-regulated vocabulary learning. In previous studies of language learning strategy and learning achievement, especially those of Gardner, Tremblay, and Masgoret (1997) and Tseng and Schmitt (2008, 386), it has been reported that greater use of learning strategy results in lower or marginal L2 achievement. Tseng and Schmitt (2008, 386) attribute the cause of such inconsistency to the possibility that: 'The participants in that study might have had adequate strategic learning involvement but failed to use the learning strategies in question effectively'. They thus emphasize the necessity of including metacognitive control of vocabulary learning tactics (strategies) in their model. The present findings may serve as an additional piece of evidence that integrating the notion of motivation (or components of self-regulated learning) in the process model will be necessary for correctly interpreting the relationship between strategy use and achievement in L2 studies.

Conclusion

The current study aimed to explore the effects of self-regulated learning process on self-efficacy. The findings suggest that the process of self-regulated vocabulary learning influences the degree of self-efficacy, and self-efficacy in turn leads to the growth of vocabulary knowledge.

The current study has two limitations that should be acknowledged. First, the scope of the components in a cyclical model of self-regulation (Zimmerman 1989) was quite limited, for example, the forethought phase. In this study, the only construct representative of the forethought phase in a cyclical model of self-regulation was goal-setting. However, Zimmerman's original model includes strategic planning and other motivational beliefs such as goal-orientation, intrinsic interest, and outcome expectations, in addition to goal-setting (and self-efficacy). Accordingly, it may be necessary to examine a broader model reflecting Zimmerman's original theory. Second, although this study was intended to explore the effects of self-regulated vocabulary learning process on self-efficacy, the evidence came from responses to a one-shot questionnaire, so some inference was made with regard to the actual process of self-regulated vocabulary learning. Thus, further research should be conducted with more specific vocabulary learning process.

The pedagogical implications of the current study are discussed mainly in terms of incorporating self-efficacy and self-regulation-enhancing instructions into vocabulary teaching. The findings of the present study suggest that enhancing self-efficacy through the self-regulated learning process will contribute to the development of vocabulary knowledge. Therefore, a scheme for self-efficacy enhancement should be included in vocabulary teaching. Strategy instruction would be the best option in this regard,

because research has shown that strategy instruction can increase self-efficacy (Graham 2006; Graham and Macaro 2008).

By the same token, incorporating instruction in a process model of self-regulated learning in vocabulary teaching should be effective. The significant positive link in the rocess of self-regulated learning that emerged in the current study indicates that self-regulation-enhancing instructions should be expressed in terms of learning as a sequential process. Focusing on only one component of the process would result in limited success in teaching. Instructions that attempt to enhance self-efficacy and self-regulation also warrant future empirical investigations. This line of research is particularly promising partly because previous research has shown that instructions can be effective in raising learners' self-efficacy (Zimmerman, Bonner, and Kovach 1996) and research on language learning strategies and strategy instruction in the field of applied linguistics has accumulated a body of findings that could be applied practically to teaching.

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Appendix A. Questionnaire items used in the study (Originally in Japanese)

Goal-setting

GS1: I set a goal first when learning vocabulary.

GS2: I plan how and what to learn before I start learning vocabulary.

GS3: I set a standard for what is to be done when learning vocabulary.

GS4: I plan a schedule in order to keep learning vocabulary.

Volitional Control

VC1: When learning vocabulary, I have special techniques to keep my concentration focused.

VC2: I feel satisfied with the methods I use to reduce the stress of vocabulary learning.

VC3: When it comes to learning vocabulary, I have my special techniques to prevent procrastination.

VC4: When learning vocabulary, I know how to arrange the environment to make learning more efficient.

VC5: When feeling bored with learning vocabulary, I know how to regulate my mood in order to invigorate the learning process.

Strategy Use

SU1: I have my own way of learning and reviewing when learning vocabulary.

SU2: I devise various methods to memorize vocabulary.

SU3: I use mnemonic methods to help memorize vocabulary.

SU4: I try to improve the way to learn vocabulary when the current method fails.

Satisfaction with Strategy Use

SSU1: I have my own ways to learn vocabulary.

SSU2: I am satisfied with the vocabulary learning tactics that I am using.

SSU3: I feel that the methods I use for learning vocabulary are better suited to me than those methods used by others.

SSU4: I feel I learn vocabulary in a way that suits me.

Self-efficacy

SE1: I am good at memorizing vocabulary.

SE2: I know more vocabulary than others.

SE3: I know basic vocabulary to some extent.

SE4: I believe that I can get a good score in the vocabulary test.

Appendix B. Descriptive statistics of each item in the questionnaire

Subscale	Item	Mean	*SD*	Skewness	Kurtosis	Corrected Item-Total Correlation
Goal-setting	GS1	3.67	1.18	-0.06	-0.54	.73
	GS2	3.48	1.21	-0.06	-0.40	.83
	GS3	3.75	1.16	-0.33	-0.04	.81
	GS4	3.21	1.24	0.14	-0.44	.76
Volitional Control	VC1	3.10	1.14	0.25	-0.29	.76
	VC2	3.04	1.12	0.14	-0.11	.76
	VC3	2.92	1.07	0.08	-0.32	.72
	VC4	3.48	1.14	-0.04	-0.29	.69
	VC5	3.16	1.07	-0.10	-0.19	.75
Strategy Use	SU1	3.60	1.22	-0.30	-0.27	.70
	SU2	3.49	1.08	-0.17	-0.14	.75
	SU3	3.57	1.06	-0.29	-0.06	.68
	SU4	3.42	1.02	-0.14	0.32	.65
Satisfaction with Strategy Use	SSU1	3.74	1.22	-0.41	-0.29	.8
	SSU2	3.35	1.22	-0.23	-0.48	.84
	SSU3	3.46	1.11	-0.25	-0.07	.84
	SSU4	3.49	1.11	-0.20	-0.10	.86
Self-efficacy	SE1	2.98	1.12	-0.01	-0.37	.70
	SE2	2.55	1.06	0.24	-0.26	.77
	SE3	3.59	1.10	-0.38	-0.29	.72
	SE4	2.96	1.14	0.02	-0.57	.75

Note. SD = Standard Deviation. Corrected item-total correlation is the correlation between each item and subscale total score.

Appendix C. Correlations among all items

Measure	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1. GS1	—																					
2. GS2	.69	—																				
3. GS3	.68	.77	—																			
4. GS4	.61	.73	.71	—																		
5. VC1	.43	.50	.48	.48	—																	
6. VC2	.46	.51	.47	.48	.72	—																
7. VC3	.48	.53	.49	.51	.62	.63	—															
8. VC4	.42	.46	.46	.45	.61	.53	.60	—														
9. VC5	.45	.49	.51	.52	.63	.68	.59	.64	—													
10. SU1	.39	.46	.48	.50	.51	.56	.51	.51	.60	—												
11. SU2	.30	.38	.44	.43	.52	.52	.46	.52	.53	.64	—											
12. SU3	.32	.36	.42	.38	.56	.51	.46	.56	.59	.57	.66	—										
13. SU4	.43	.48	.49	.50	.52	.54	.53	.51	.61	.59	.58	.52	—									
14. SSU1	.37	.41	.46	.45	.55	.56	.52	.56	.59	.73	.67	.65	.58	—								
15. SSU2	.34	.36	.35	.38	.55	.54	.48	.53	.57	.64	.59	.58	.59	.73	—							
16. SSU3	.36	.42	.40	.42	.55	.55	.51	.54	.58	.62	.61	.61	.63	.74	.80	—						
17. SSU4	.34	.40	.41	.43	.56	.59	.55	.55	.62	.68	.67	.63	.64	.77	.81	.79	—					
18. SE1	.21	.20	.26	.22	.45	.46	.45	.44	.46	.45	.43	.45	.47	.52	.59	.56	.57	—				
19. SE2	.22	.21	.21	.26	.42	.39	.39	.37	.42	.38	.41	.43	.44	.48	.55	.49	.50	.66	—			
20. SE3	.26	.24	.32	.25	.37	.35	.38	.41	.42	.43	.44	.49	.44	.50	.52	.48	.53	.56	.66	—		
21. SE4	.20	.21	.24	.27	.38	.44	.39	.39	.44	.46	.46	.44	.45	.52	.59	.50	.60	.63	.66	.67	—	
22. Vocabulary	-.03	-.06	.01	.07	.10	.13	.13	.13	.16	.21	.23	.20	.16	.29	.31	.24	.29	.38	.50	.51	.55	—

Notes

1. This is because self-efficacy is regarded as an antecedent to motivation or a part of motivation.
2. See Gao (2007), Gu (2012), and Rose (2012b) for a critique and discussion of this claim.
3. The reason they are similar is because Tseng and Schmitt's model is based on the 'Process Model of L2 Motivation'(Dörnyei and Ottó 1998), which has its origin in 'Action Control Theory', a component of self-regulation.

References

Bandura, A. 1995. *Self-efficacy in changing societies*. New York: Cambridge University Press.

Barnard-Brak, L., W.Y. Lan, and V. Osland Paton. 2010. Profiles in self-regulated learning in the online learning environment. *International Review of Research in Open and Distance Learning* 11: 61–80.

Bembenutty, H. 2011. Introduction: Self-regulation of learning in postsecondary education. In *Self-regulated learning*, ed. H. Bembenutty, 2–8. San Francisco, CA: Jossey-Bass, a Wiley Imprint.

Ching, L.C. 2002. Strategy and self-regulation instruction as contributors to improving students' cognitive model in an ESL program. *English for Specific Purposes* 21: 261–289.

Cleary, T.J., and B.J. Zimmerman. 2004. Self-regulation empowerment program: A school-based program to enhance self-regulated and self-motivated cycles of student learning. *Psychology in the Schools* 41: 537–550.

Clément, R., and B.G. Kruidenier. 1985. Aptitude, attitude and motivation in second language proficiency: A test of Clément's model. *Journal of Language and Social Psychology* 4: 21–37.

Cohen, A.D., and E. Macaro. 2007. *Language learner strategies: Thirty years of research and practice*. Oxford: Oxford University Press.

Dörnyei, Z. 2005. *The psychology of the language learner: Individual differences in second language acquisition.* Mahwah, NJ: Lawrence Erlbaum Associates.

Dörnyei, Z., and I. Ottó. 1998. Motivation in action: A process model of L2 motivation. *Working Papers in Applied Linguistics (Thames Valley University, London)* 4: 43–69.

Ehrman, M.E., B.L. Leaver, and R.L. Oxford. 2003. A brief overview of individual differences in second language learning. *System* 31: 313–330.

Gan, Z., G. Humphreys, and L. Hamp-Lyons. 2004. Understanding successful and unsuccessful EFL students in Chinese universities. *The Modern Language Journal* 88: 229–244.

Gao, X. 2007. Has language learning strategy research come to an end? A response to Tseng et al. (2006). *Applied Linguistics* 28: 615–620.

Gardner, R.C., P.F. Tremblay, and A.-M. Masgoret. 1997. Towards a full model of second language learning: An empirical investigation. *The Modern Language Journal* 81: 344–362.

Graham, S. 2004. Giving up on modern foreign languages? Students' perceptions of learning French. *The Modern Language Journal* 88: 171–191.

Graham, S. 2006. Listening comprehension: The learners' perspective. *System* 34: 165–182.

Graham, S., and E. Macaro. 2008. Strategy instruction in listening for lower-intermediate learners of French. *Language Learning* 58: 747–783.

Gu, Y. 2012. Learning strategies: Prototypical core and dimensions of variation. *Studies in Self-Access Learning Journal* 3: 330–356.

Horwitz, E.K., M.B. Horwitz, and J. Cope. 1986. Foreign language classroom anxiety. *The Modern Language Journal* 70: 125–132.

Kormos, J., T. Kiddle, and K. Csizér. 2011. Systems of goals, attitudes, and self-related beliefs in second-language-learning motivation. *Applied Linguistics* 32: 495–516.

Macaro, E. 2006. Strategies for language learning and for language use: Revising the theoretical framework. *The Modern Language Journal* 90: 320–337.

Magogwe, J., and R. Oliver. 2007. The relationship between language learning strategies, proficiency, age and self-efficacy beliefs: A study of language learners in Botswana. *System* 35: 338–352.

Mills, N., F. Pajares, and C. Herron. 2007. Self-efficacy of college intermediate French students: Relation to achievement and motivation. *Language Learning* 53: 417–442.

Mizumoto, A. 2012. Exploring the effects of self-efficacy on vocabulary learning strategies. *Studies in Self-Access Learning Journal* 3: 423–437.

Nation, P. 2001. *Learning vocabulary in another language.* Cambridge: Cambridge University Press.

Oxford, R.L. 2011. *Teaching and researching language learning strategies.* London: Pearson Longman.

Oxford, R.L., and J. Shearin. 1994. Expanding the theoretical framework of language learning motivation. *Modern Language Journal* 78: 12–28.

Pintrich, P.R., D.A.F. Smith, T. Garcia, and W.J. Mckeachie. 1993. Reliability and predictive validity of the Motivated Strategies for Learning Questionnaire (MSLQ). *Educational and Psychological Measurement* 53: 801–813.

Plonsky, L. 2011. The effectiveness of second language strategy instruction: A meta-analysis. *Language Learning* 61: 993–1038.

Rose, H. 2012a. Language learning strategy research: Where do we go from here? *Studies in Self-Access Learning Journal* 3: 137–148.

Rose, H. 2012b. Reconceptualizing strategic learning in the face of self-regulation: Throwing language learning strategies out with the bathwater. *Applied Linguistics* 33: 92–98.

Rubin, J. 1975. What the "good language learner" can teach us. *TESOL Quarterly* 9: 41–51.

Schmitt, N. 2000. *Vocabulary in language teaching.* Cambridge: Cambridge University Press.

Schmitt, N. 2010. *Researching vocabulary: A vocabulary research manual.* Basingstoke: Palgrave Macmillan.

Schmitt, N., D. Schmitt, and C. Clapham. 2001. Developing and exploring the behaviour of two new versions of the Vocabulary Levels Test. *Language Testing* 18: 55–88.

Takeuchi, O., M. Ikeda, and A. Mizumoto. 2012. The cerebral basis for language learner strategies: A near-infrared spectroscopy study. *Reading in a Foreign Language* 24: 136–157.

Tseng, W.-T., and N. Schmitt. 2008. Toward a model of motivated vocabulary learning: A structural equation modeling approach. *Language Learning* 58: 357–400.

Tseng, W.-T., Z. Dörnyei, and N. Schmitt. 2006. A new approach to assessing strategic learning: The case of self-regulation in vocabulary acquisition. *Applied Linguistics* 27: 78–102.

Vandergrift, L., and C.C.M. Goh. 2012. *Teaching and learning second language listening: Metacognition in action.* New York, NY: Routledge.

Wenden, A. 1998. Metacognitive knowledge and language learning. *Applied Linguistics* 19: 515–537.

Wong, M. S.-L. 2005. Language learning strategies and language self-efficacy: Investigating the relationship in Malaysia. *RELC Journal* 36: 245–269.

Woodrow, L. 2006. A model of adaptive language learning. *The Modern Language Journal* 90: 297–319.

Woodrow, L. 2011. College English writing affect: Self-efficacy and anxiety. *System* 39: 510–522.

Yang, N.-D. 1999. The relationship between EFL learners' beliefs and learning strategy use. *System* 27: 515–535.

Zimmerman, B.J. 1989. A social cognitive view of self-regulated academic learning. *Journal of Educational Psychology* 81: 329–339.

Zimmerman, B.J. 2001. *Self-regulated learning and academic achievement: Theoretical perspectives (2nd ed.).* Mahwah, NJ: Lawrence Erlbaum Associates Publishers.

Zimmerman, B.J., A. Bandura, and M. Martinez-Pons. 1992. Self-motivation for academic attainment: The role of self-efficacy beliefs and personal goal setting. *American Educational Research Journal* 29: 663–676.

Zimmerman, B.J., S. Bonner, and R. Kovach. 1996. *Developing self-regulated learners: Beyond achievement to self-efficacy.* Washington, DC: American Psychological Association.