JOURNAL FOR THE PSYCHOLOGY OF LANGUAGE LEARNING

Research Article

The Development of a Self-Regulated Second Language Learning Questionnaire for an L2 Self-Study Setting

Akiko Fukuda, *Toyo University, Japan*

https://orcid.org/0000-0002-4911-8873

akikof@toyo.jp

ABSTRACT

This study developed a Self-Regulated Second Language Self-Study Questionnaire that addresses the self-regulated learning (SRL) skills of learners of English as a foreign language in a self-study setting. Much attention has been paid to SRL in second language acquisition; however, contexts outside school have hardly been explored. To address this issue, based on the Motivated Strategies for Learning Questionnaire, a new questionnaire was created and applied to a sample of 112 Japanese university students. The exploratory factor analyses extracted three factors (i.e., self-efficacy, learner values, and test anxiety) from the motivation section of the questionnaire. Additionally, four factors (i.e., metacognitive strategies, problem solving, learning maintenance, and learning effort) were extracted from the learning strategy section. All seven factors showed adequate internal reliability. Additional confirmatory factor analyses demonstrated sufficient model fit indices for construct validity, whereas some were disputable.

Keywords: self-regulated learning, questionnaire, self-study, English language learning, university students

Journal for the Psychology of Language Learning
ISSN: 2642-7001
(2022) Volume 4, Issue 2. e426222.
https://doi.org/10.52598/jpll/4/2/3

INTRODUCTION

Interest in self-regulated learning (SRL) has been expanding steadily for many years in the discipline of second language acquisition (SLA). Self-regulation refers to self-generated thoughts, feelings, and behaviors oriented toward attaining goals (Zimmerman, 2000). SRL has contributed to SLA research by offering the benefit of a comprehensive understanding of second language (L2) learners' complex psychological factors in terms of motivational, cognitive, and environmental aspects (Dörnyei, 2005; Dörnyei & Ryan, 2015). Research has revealed that a high level of SRL is related to a high level of L2 proficiency, and that self-regulated learners are apt to show better linguistic performance in classroom activities, successfully demonstrating self-regulation in L2 classroom learning (Csizér & Tankó, 2017; Seker, 2016).

SRL is also considered important for engaging in independent L2 learning in addition to classroom learning, especially in an English as a foreign language (EFL) environment (Nitta, 2019; Takeuchi, 2007). In such an environment, the time required to learn an L2 through school education is insufficient, as it is too limited to foster proficiency (Hiromori, 2015). However, the characteristics and relatedness of SRL in an independent L2 learning context are still unclear, despite the recognition of the need to expand the area of SRL outside of school (Schunk & Greene, 2018). SRL depends highly on the learning context, situation, and environment (Wolters & Won, 2018), which implies that SRL characteristics can differ from inside to outside of a classroom.

To address an as-yet-unknown learning environment, this study newly defined self-study as individual language learning independent of classroom-related compulsion such as homework, assignments, grades/credits, and teachers. That is, it signifies a language learning setting that occurs spontaneously and independently according to one's own objectives rather than as an activity to do as a task assigned in class. Exploring this SRL context possibly contributes to understanding L2 learners' learning preferences and cognitive and motivational attitudes in self-study. L2 learners with a high level of SRL are expected to metacognitively evaluate themselves to discover their improvements, utilize and adjust various resources, control waves of motivation, and hold sufficient motivational beliefs in their L2 self-study. This study will contribute to the field if it can provide perspectives on whether these traits are found in L2 self-study environments and whether highly contextual strategies and characteristics exist.

The purpose of this study is to clarify SRL contextual characteristics by developing an SRL questionnaire regarding L2 self-study. Following SRL rationale, a new questionnaire based on the one developed by Pintrich et al. (1991) was created and administered to Japanese university students. The reliability and validity of the questionnaire were then tested, and the characteristics of SRL in an L2 self-study setting were discussed.

LITERATURE REVIEW

Self-Regulated Learning in a Self-Study Setting

SRL (Schunk, 2001) was founded based on social cognitive theory (Bandura, 1986), which insists that people are capable of learning through interacting with psychological, behavioral, and environmental influences. Learners are expected to regulate their cognition, motivation, and behavior for the attainment of targeted goals (Zimmerman, 2000). SRL positively relates to proficiency and academic achievement (Pintrich & De Groot, 1990; Zimmerman & Martinez-Pons, 1990; Zimmerman & Schunk, 2011). Highly proficient L2 learners tend to engage in SRL better than L2 learners with low proficiency. These proficient learners feel a high level of self-efficacy and use multiple metacognitive strategies, and these SRL skills predict their L2 English achievement (Fukuda, 2018a, 2018b; Seker, 2016). This general tendency in SRL has also been found to be critical in specific L2 skills (Csizér & Tankó, 2017; Kormos, 2012; Nitta & Baba, 2015; Sasaki et al., 2018; Teng, 2021; Teng & Huang, 2018; Teng et al., 2018). Given these findings, L2 engagement is fostered by SRL, as self-regulated L2 learners show sufficient self-efficacy for L2 performance and efficient strategy use in learning processes (Zhou & Hiver, 2022).

Most studies have discussed the importance of SRL, particularly in L2 classroom activities. Conversely, little attention has been paid to environments outside a classroom where learners voluntarily work on L2 study. Several concepts correspond to this environment, such as independent language learning. Hurd and Lewis (2011) described independent language learning as an approach to fostering learners' independence and autonomy and the

setting of occasional individual L2 learning. The independent language learning entails various learning settings, such as distance learning, computer-assisted language learning, and online learning. Hence, independent language learning is not contradictory to, or mutually exclusive from, classroom activities. Kominato (2016) and Sebesta and Speth (2017) identified SRL attitudes in the "self-study" context, defined as homework activities or term-test preparation, and showed these were partially bound to classroom performance.

The current study emphasized the act of L2 learning not forced by classroom-related restrictions and focused instead on self-study. The L2 self-study referred to in this study is intended to be performed by individuals rather than pairs or groups, for example, practicing for private English qualification exams, studying English to prepare for study abroad, and reading articles to improve one's language skills. These are commonly referred to as "self-study" in EFL settings. Individual and voluntary self-study requires learners to control and sustain their cognition, motivation, and behavior, oriented by their goal pursuit. Thus, a crucial association between self-study and regulating learning behavior is likely to exist. This study examines the SRL characteristics that such L2 learners possess in an independent learning environment by developing a questionnaire.

Measurement of Self-Regulated L2 Learning

SRL is highly influenced by a learning context and environment; thus, developing an SRL questionnaire requires paying attention to that learning context (Wolters & Won, 2018). Wang et al. (2013) focused on the cultural and linguistic differences that may influence learners' SRL strategies and self-efficacy. These scholars investigated the relationship between self-efficacy, SRL strategies, and English proficiency by comparing German and Chinese university EFL students. They created two questionnaires for self-efficacy and SRL strategies based on the strategic self-regulation (S^2R) model advocated by Oxford (2011, 2017); SRL strategies were confirmed to be a multidimensional construct with 11 factors, such as self-evaluation, organizing and transforming, opportunity seeking, use of native language, and interpretative guessing strategies.

More recently, Wang and Bai (2017) validated the existing instruments developed by Wang et al. (2013) and addressed the predictability of self-efficacy and SRL strategies in the language proficiency of secondary-level Chinese EFL learners. Although the structural validity of the questionnaire on self-efficacy was confirmed, the questionnaire on SRL strategies was not validated with confirmatory factor analysis (CFA) because SRL strategies converged on a single latent factor (named *self-regulated learning*). Their SRL instrument emphasized learning strategies, indicating that they defined self-regulated language learning skills in cognitive activities.

Habók and Magyar (2018) also developed an SRL questionnaire based on the S^2R model (Oxford, 2011, 2017). They focused on the strategic aspects of SRL in secondary school students with low or average levels of L2 (English), aiming to measure its use by EFL students in compulsory classes. They assumed that their new questionnaire would lead to educational intervention in EFL classrooms.

These previous studies provide some insights into the different relationships between SRL and achievement in terms of cultural background (Wang et al., 2013) and the use of unique self-regulatory strategies in a specific context (Habók & Magyar, 2018). However, it seems that these studies have only recognized self-efficacy as a self-regulatory factor of motivation and affect, even though SRL theory advocates several noncognitive elements, such as interest, value, and goal orientations. The current study aims to address more comprehensive aspects of SRL.

The Motivated Strategies for Learning Questionnaire

The Motivated Strategies for Learning Questionnaire (MSLQ) (Pintrich et al., 1991, 1993) is one of the most widely adopted questionnaires for SRL, as it is a comprehensive tool for assessing learners' SRL capacity in the field of educational psychology (Schunk & Greene, 2018). The MSLQ was intended to adapt to various classroom subjects. Hence, its strength includes its versatile application to any subject and its ability to capture motivational, metacognitive, and resource-managing elements.

Due to this comprehensive applicability, many studies have verified the MSLQ conceptually. For example, it was translated into Portuguese and reexamined for its validity in

the Brazilian L2 learning context (Brown et al., 2001), and it was modified and applied to suit the Japanese EFL context when examining the relationship between SRL and English proficiency (Fukuda, 2018a). Rovers et al. (2019) acknowledged the MSLQ is among the most well-established questionnaires and utilized it for assessing and comparing previous studies on self-reported and actual SRL strategies in various contexts.

Meanwhile, critical methodological issues remain. Pintrich et al. (1991, 1993) reported that the MSLQ obtained only marginal goodness of fit indices for the motivation section (goodness of fit index [GFI] = .77; adjusted goodness of fit index [AGFI] = .73; root mean square residual [RMR] = .07) and the learning strategy section (GFI = .78; AGFI = .75; RMR = .08). Many other researchers (Dunn et al., 2012; Teng & Zhang, 2016) have pointed out that the MSLQ does not meet the model fit criteria when estimating a CFA, implying that the validity of the MSLQ was not guaranteed in Pintrich et al.'s (1991, 1993) work. Hence, the psychometric construct evidence for the original MSLQ was not fully validated in either of the two sections.

Given that the validity of the MSLQ is still problematic, the current study created a new questionnaire based on the MSLQ because of its comprehensibility and transparency. As for comprehensibility, the MSLQ attains the combination of cognitive, motivational, behavioral, and affective elements declared in existing definitions of SRL. Most studies that developed their original SRL questionnaires in language learning tend to attach importance to strategic aspects or emphasize only self-efficacy as a motivational state (Habók & Magyar, 2018; Kobayashi, 2017; Wang et al., 2013). Regarding transparency, although the MSLQ has been criticized for its statistical and conceptual flaws, there is no doubt that it has been tested from different angles by diverse domains and disciplines and has withstood critical discussion in various studies. Given the theoretical background of SRL, the MSLQ serves as a springboard for developing new data elicitation tools as it contains theoretical subcomponents that were deemed applicable to this study.

Research Problem and Question

SRL strongly depends on what is learned, who learns, when and where they learn, and why they learn (Winne, 2010). Wolters and Won (2018) warned that researchers should be prudent when using an SRL questionnaire in a study, and when precisely applying the same items and factors or sharing the same questionnaire with a new sample and context. They asserted that when adopting an existing questionnaire in a different study, its application to the current population and context must be validated using agreed on statistical procedures. Thus, it is meaningful to develop a new scale to measure SRL attitudes in self-study contexts by Japanese EFL learners. This is also meaningful because there is currently no such data elicitation measure. This study aimed to shed light on self-study activities unrelated to the classroom and build a self-regulated second language self-study questionnaire (SRSLSSQ), identifying Japanese EFL learners' SRL attitudes in self-study.

METHOD

Participants

The participants in this study were 112 EFL university students (67 females and 45 males). They were first-year students and seniors (M = 18.8 years, SD = 0.73). They majored in Economics (n = 65), Literature (n = 31), Sociology (n = 7), Intercultural Communication (n = 6), Business Administration (n = 2), and Science (n = 1). All participants were taking English classes as a mandatory subject. Their Test of English for International Communication (TOEIC) scores were reported in an index of their latest English proficiency; the mean score was 554.93 (SD = 128.76). The highest score was 850, and the lowest score was 200. They had studied English for 7.43 years, on average. Most of the participants (n = 95) had no experience studying English abroad, but eight had been in English-speaking countries for one month and seven for three months. One participant had studied English abroad for four months and another for four years.

Materials and Procedures

The question items were created based on the MSLQ (Pintrich et al., 1991). To suit the environment of Japanese

EFL learners' SRL in a self-study setting, an item pool was generated. Initially, it had 81 items divided across 15 factors that included six motivation scales, five others which were cognitive and metacognitive strategies, and four which were resource management strategies (see the Appendix). The MSLQ was developed to suit a range of subject lessons in the classroom; therefore, it was corrected for suitability in the self-study context.

The factor of peer learning in the MSLQ is defined as "collaborating with one's peers" (Pintrich et al., 1991, p. 28), and includes items related to cooperative learning. This category was removed from this study because in this self-study context, studying English individually was the expected norm. Meanwhile, the help-seeking strategy in the MSLQ includes help and tutoring from peers and teachers (items 76 and 77). This factor is primarily concerned with seeking assistance and is a learning resource management strategy for temporarily obtaining support from others. This factor was retained because it was judged not to contradict individuals' language learning; items were reworded to reframe this help-seeking as a conceivable learning resource. After the first modification was completed, the researcher refined each item repeatedly with the help of two graduate students. Finally, 31 items within the motivation scale and 47 items from the learning strategy scale were retained.

The researcher called for participation in several English classes after obtaining each instructor's permission. The collection of responses was conducted via email exchanges entirely separate from their lessons. All participants voluntarily joined and provided their email addresses, which the researcher used to send them the questionnaire link. For data collection, the Web service Questant was used to ensure that the questionnaire was easily accessible. The participants consented to participate in the survey three times: at recruitment, when receiving the email with the link to the questionnaire, and when filling out the questionnaire.

A seven-point Likert scale was used for all responses; thus, the participants were required to choose from 1 (not at all true for me) to 7 (very true for me) to answer their thoughts and attitudes. It took approximately 20 minutes to complete the questionnaire. Every item was shown randomly to avoid an ordering effect. The instructions emphasized that participants were required to answer all the items by imagining and remembering their English self-study situation.

Analysis

To identify the factor structure of the SRSLSSQ, an exploratory factor analysis (EFA) was conducted using the Statistical Package for the Social Sciences (SPSS) software (ver. 24.0). As the original MSLQ had two separate sections for motivation and learning strategy, Pintrich et al. (1991) performed separate exploratory factor analyses on them. Following Pintrich et al.'s (1991) procedure, the current study used independent statistical methods. Parallel analysis and Velicer's (1976) minimum average partial (MAP) using R (ver. 3.5.1), as well as the Kaiser–Guttman criterion, were applied to determine the number of factors. After the factors were estimated, every item was inspected and arranged. Coefficient alpha was used to analyze the internal reliability of each factor. This study then confirmed the factor structure obtained by the exploratory factor analyses by conducting a CFA to assess the validity of the modified questionnaire using Analysis of Moment Structures (AMOS) software (ver. 26.0). Descriptive statistics and factor correlations were also calculated.

RESULTS

Exploratory Factor Analyses for the SRSLSSQ

The motivation scale was analyzed using the maximum likelihood EFA with promax rotation. Based on the attenuation of the initial eigenvalue and its interpretability, three- or five-factor solutions were plausible. Parallel analysis suggested that the number of factors was five, and the number of components was four. Based on the MAP, the three-factor solution was the most plausible for the current data. Items that loaded under .40 in a factor and that loaded over .35 in multiple factors were suppressed. The analysis was repeated until the factor structure converged. The final factor pattern is shown in Table 1. All factors accounted for 41.8% of the total variance in the motivation scale.

Factor 1 contained items regarding self-expectations and positive evaluations of one's capabilities in L2 performance, such as "I am certain that I can do well with difficult English materials." Therefore, this factor was named *self-efficacy*. Factor 2 included items about beliefs and the value of learning English, such as "It is essential for me to acquire English skills;" thus, it was called *learner values*. Finally, Factor 3 was named *test anxiety* because all three items were statements about feelings while in an exam situation. Coefficient alpha demonstrated sufficient levels of over .70

for all three factors (self-efficacy = .84, learner values = .79, and test anxiety = .71), confirming that the internal reliability of the items was guaranteed. Inter-factor correlations showed a positive correlation between self-efficacy and learner values, and test anxiety was negatively correlated with self-efficacy and learner values (see Table 2). Pintrich et al. (1991) demonstrated that test anxiety showed a small and negative correlation with all 14 factors found in the original paper; as such, these results are in line with those of previous studies.

Table 1. *Exploratory Factor Analysis of the Responses to the Motivation Scale*

		Factor loading					
Items (translated into English)		F1	F2	F3	*M*	*SD*	h^2
Self-efficacy (α = .83)							
Q20	I am certain that I can do well with difficult English materials.	.933			3.27	1.88	.761
Q22	I am confident that I can understand difficult questions or content when I am learning English.	.768			3.30	1.71	.617
Q21	I am confident that I understand the basic concepts of English.	.618			4.22	1.75	.443
Q24	I expect to do well in English learning.	.609			3.11	1.38	.398
Q4	I prefer English material that arouses my curiosity, even if it is unrelated to the grade or score.	.513			4.51	1.70	.240
Q9	Studying English allows me to apply the content to other things.	.500			4.71	1.80	.319
Q5	Getting a good grade or score on the test is the most satisfying for me.	.484			3.79	2.01	.165
Q7	I want to study English by myself because I get better scores or grades than most of the other students can.	.445			3.37	1.75	.242
Q19	I am certain that I can master English skills.	.436			4.22	1.82	.642
Learner values (α = .79)							
Q10	It is essential for me to acquire English skills.		.777		5.88	1.39	.621
Q14	Understanding English is important to me.		.757		5.93	1.33	.608
Q12	I think that the English learning will be useful in the future.		.736		6.19	1.22	.577
Q17	If I try hard enough, then I will master English skills for sure.		.563		5.34	1.69	.326
Q18	If I do not improve my English ability enough, it is because I did not try hard enough.		.542		5.56	1.54	.291
Q11	I am very interested in English.		.476		5.30	1.75	.467
Q15	If I study English in appropriate ways, then I will be able to master it.		.469		5.53	1.64	.196
Q16	It is my own fault if I do not learn English.		.404		5.32	1.69	.177
Test anxiety (α = .71)							
Q27	When I think of tests, I realize how poorly I am doing compared with other students.			.777	4.08	1.89	.505
Q29	Before and during a test, I tend to think of the consequences of failing.			.717	3.38	1.80	.461
Q30	When I think of tests, I have an uneasy and upset feeling.			.531	4.07	1.99	.312

Note. h^2 = communalities for each variable, α = coefficient alpha

Table 2. *Factor Correlation of the Motivation Section*

	SE	LV	TA
SE	-	.47	–.51
LV	-	-	–.27
TA	-	-	-

Note. SE = self-efficacy, LV = learner values, TA = test anxiety.

In the same way as the global motivation scale, the learning strategy scale was also analyzed using the maximum likelihood EFA with promax rotation. The scree plot and the Kaiser–Gutman criterion suggested a four- or seven-factor solution. Parallel analysis showed that the suitable number of factors was seven, and Velicer's MAP showed it was four. From this, a four-factor solution was determined because an EFA with a seven-factor structure resulted in an improper solution. After inspecting the items based on factor loadings, 28 items remained. Table 3 presents the items in the final factor structure, accounting for 40.6% of the total variance in the learning strategy scale.

Table 3. *Exploratory Factor Analysis of the Responses to Learning Strategy Scale*

Items		Factor loading						
		F1	F2	F3	F4	*M*	*SD*	h^2
Metacognitive strategies (α = .85)								
Q49	When I study English, I often speculate about my own ideas related to what I am learning.	.861				3.97	1.60	.571
Q48	I treat the English material as a starting point and try to develop my own ideas about it.	.683				4.02	1.77	.446
Q59	When studying English, I try to think through a topic and decide what I am supposed to learn from it rather than just reading it over.	.677				3.88	1.76	.454
Q38	When I study English, I try to relate the content to what I already know.	.589				4.93	1.51	.394
Q46	Regarding what I read or hear while learning English, I often consider whether I find it convincing.	.585				4.46	1.64	.525
Q50	Whenever I read or hear an assertion or conclusion in English, I think about possible alternatives.	.548				3.94	1.66	.290
Q36	When I learn English, I pull together information from different resources.	.468				3.66	1.63	.547
Q52	When reading English articles, I make up questions to help focus my reading.	.453				3.75	1.68	.508
Q55	Before I study new English course material thoroughly, I often skim it to see how it is organized.	.447				4.24	1.78	.270
Problem solving (α = .81)								
Q76	I ask others who are good at English to clarify concepts I do not understand well.		.676			4.25	1.73	.433
Q53	When I become confused about English readings, I go back and try to figure them out.		.622			4.84	1.57	.303
Q72	I work hard to do well in English learning even if I do not like what I am doing.		.614			4.34	1.61	.342
Q43	When studying English, I go through the materials I used before and try to find the most important ideas.		.567			4.00	1.75	.361
Q60	When I learn English, I try to determine which part of the content I do not understand well.		.546			4.54	1.60	.503
Q33	When learning English, I read the English materials over and over again.		.538			4.15	1.54	.391

Q62	If I get confused while taking notes when learning English, I make sure I sort it out afterwards.	.529			3.91	1.76	.447
Q77	When I cannot understand English well, I ask other people for help or search the Web.	.461			5.26	1.70	.261
Q45	I go over the materials I used before and make an outline of important concepts while studying English.	.451			3.71	1.71	.336
Learning maintenance (α = .75)							
Q39	When reading English, I write brief summaries of the main ideas and important words.		.901		3.01	1.67	.762
Q44	I make simple charts, diagrams, or tables while learning English.		.652		2.30	1.43	.460
Q42	When I read English, I write some memos to help me organize my thoughts.		.597		3.48	1.81	.333
Q74	Even when learning English is dull and uninteresting, I manage to keep working until the end.		.418		3.81	1.58	.371
Learning effort (α = .69)							
Q71	I often feel so lazy or bored when I study English that I quit before I finish what I planned to do (R).			–.754	4.40	1.67	.534
Q51	While learning English, I often miss important points because I am thinking of other things (R).			–.599	4.28	1.66	.346
Q67	I make sure I keep up with what I plan to do when learning English.			.502	3.28	1.34	.422
Q65	I find it hard to stick to a study schedule (R).			–.471	5.23	1.54	.200
Q68	I begin to learn English as scheduled.			.445	2.86	1.55	.334
Q58	I often find that I have been reading English outside the class but do not know what it is at all (R).			–.445	3.71	1.43	.222

Note. h^2 = communalities for each variable. Four out of 28 were reversed items, which are marked as "R" in the table.

On naming each factor, Factor 1 concerned the ways to study English elaborately or critically to expand one's knowledge and thoughts: for example, "When I study English, I often speculate on my own ideas related to what I am learning." Thus, this factor was named *metacognitive strategies*. Factor 2 included items such as "I ask others who are good at English to clarify concepts I do not understand well." This factor describes learners' actions to find support and solutions more attentively when they do not fully understand, which represented the strategy of *problem solving*. Factor 3 involved making a summary or memo to avoid becoming confused while learning English; thus, this factor was named *learning maintenance*. Finally, Factor 4 included four reversed items out of six and concerned the difficulty of learning English on schedule and the mindset of overcoming negative feelings. This factor was named *learning effort*.

The internal reliability of factors based on coefficient alpha demonstrated sufficient scores over .70 for metacognitive strategies (α = .85), problem solving (α = .81), and learning maintenance (α = .75), but slightly below .70 for learning effort (α = .69). However, it was approaching .70, and the reversed items might have affected it; thus, it was concluded that all seven factors sufficiently satisfied the criteria for internal reliability. The inter-factor correlation of the learning strategy scale is shown in Table 4. Weak-to-moderate correlations were obtained for all extracted factors, and the results were judged to support Pintrich et al.'s (1991) original MSLQ.

Correlations of Extracted Factors and English Proficiency

Table 5 summarizes the descriptive statistics and the results of the correlation analysis for the subscales in both the motivation and learning strategy sections. Learner values obtained the highest mean of the seven factors (M = 5.63), suggesting that Japanese EFL learners engaged in L2 self-study have strong values and beliefs about this component among others measured by the SRSLSSQ. Also, mean

responses to metacognitive strategies and problem solving were above 4.0, and learners reported using these strategies more than cognitive activities (i.e., learning maintenance) and effort regulation (i.e., learning effort).

Table 4. *Factor Correlation of the Learning Strategy Section*

	MS	PS	LM	LE
MS	-	.53	.39	.23
PS	-	-	.40	.29
LM	-	-	-	.30
LE	-	-	-	-

Note. MS = metacognitive strategies, PS = problem solving, LM = learning maintenance, LE = learning effort.

Regarding the correlation analysis, and looking back to SRL theory, it can be hypothesized that all the factors except for test anxiety have a positive correlation, whereas test anxiety has a negative correlation. The results of the factor correlation appeared to confirm this hypothesis, demonstrating that most factors were significantly correlated with the other components. Self-efficacy was significantly correlated with all other factors, especially moderately correlating with metacognitive strategies ($r = .63$, $p < .001$). When learners take advantage of metacognitive strategies in their self-study, their self-efficacy may see a corresponding increase. Self-efficacy also showed a weak but significant correlation with all the other factors; this pivotal connection to the other factors seems to indicate that self-efficacy is the core of learning English in self-study. All five factors, except learning maintenance, had a negative correlation regarding test anxiety, which appears to support the hypothesis tested. Test anxiety had a weak negative correlation with self-efficacy ($r = –.32$, $p < .001$) and learning effort ($r = –.35$, $p < .001$), indicating that learners who feel less anxious about test-taking are likely to also feel positive self-expectations and be able to overcome challenging situations while engaged in L2 self-study.

Table 5. *Summary of Descriptive Statistics and Correlation Analysis of the Extracted Factors*

			Motivation scale			Learning strategy scale			
	M	*SD*	SE	LV	TA	MS	PS	LM	LE
TOEIC	554.93	128.76	.275**	.251**	–.210*	.269**	.154	.050	.031
SE	3.83	1.16		.413***	–.321**	.634***	.478***	.392***	.389***
LV	5.63	0.99			–.156	.365***	.433***	.122	.052
TA	3.85	1.51				–.084	–.067	.046	–.352***
MS	4.09	1.12					.500***	.388***	.203*
PS	4.33	1.06						.394***	.208*
LM	3.15	1.23							.170
LE	3.42	0.97							

Note. SE = self-efficacy, LV = learner values, TA = test anxiety, MS = metacognitive strategies, PS = problem solving, LM = learning maintenance, LE = learning effort, * $p < .05$, ** $p < .01$, *** $p < .001$

Metacognitive strategies were significantly correlated with all the factors except test anxiety. In particular, they had a moderate positive correlation with problem solving ($r = .50$, $p < .001$) alongside self-efficacy. This makes sense because evaluating one's understanding and revisiting what they do not understand can be considered a kind of

metacognitive strategy. There seems to be a connection between using such strategies and self-efficacy. Learning maintenance was only correlated with metacognitive strategies, problem solving, and self-efficacy. The strategies for practicing language and organizing learning content were not related to beliefs or values, anxiety about tests, or strategies for overcoming difficulties. Nevertheless, at this phase, reasonable correlations among motivational and learning strategic factors were confirmed.

Additionally, the L2 proficiency score was weakly but significantly correlated with self-efficacy (r = .27, p < .01), learner values (r = .25, p < .01), test anxiety (r = –.21, p < .05), and metacognitive strategies (r = .26, p < .01). Students who showed strong expectations and clear beliefs and values about learning L2 felt less anxiety about taking tests; they relied on metacognitive strategies, such as elaboration and critical thinking. Hence, they were more likely to gain higher L2 proficiency in L2 self-study.

Confirmatory Factor Analyses for the Motivation and Learning Strategy Sections

The EFA functioned as a preliminary evaluation of the item loading and factor structure presented in this modified new questionnaire. As a follow up step, a CFA was then performed to assess construct validity with the same data set as the EFA, to see whether convergent and discriminant validity were confirmed. Table 6 depicts the selected fit indices of the CFA model of SRL in the self-study of English.

Table 6. *Model Fit of the Confirmatory Factor Analyses for all Sections*

Scale	χ^2	*df*	*p*	TLI	CFI	RMSEA
Motivation	174.851	149	.073	.960	.968	.040
Learning strategy	371.238	320	.025	.936	.946	.038

Note: χ^2 = chi-square statistics, *df* = degrees of freedom, *p* = p-value, TLI = Tucker–Lewis index, CFI = comparative fit index, RMSEA = root mean square error of approximation.

The GFI and AGFI represent the variance explained by the hypothesized model; however, Sharma et al. (2005) argued that these indices are inadequate measures of fit because they can be sensitive to sample size and insensitive to discriminating lack of model fit. Instead, Sharma et al. (2005) recommended using the root mean square error of approximation (RMSEA). Thus, model fit was also examined by evaluating the conventional RMSEA, Tucker–Lewis index (TLI), and comparative fit index (CFI).

For the RMSEA value, a score under .05 is acceptable; a TLI and CFI exceeding .95 is preferable, with at least .90 required (Tasaki, 2015). The configural model for motivation ($\chi^2_{(149)}$ = 174.851; TLI = .960; CFI = .968; RMSEA = .040) indicated a model with excellent fit, and the configural model for learning strategy ($\chi^2_{(320)}$ = 371.238; TLI = .936; CFI = .946; RMSEA = .038) demonstrated a good overall model fit. However, given the detailed model's coefficients and paths (see Figure 1), convergent and discriminant validity were not sufficiently confirmed.

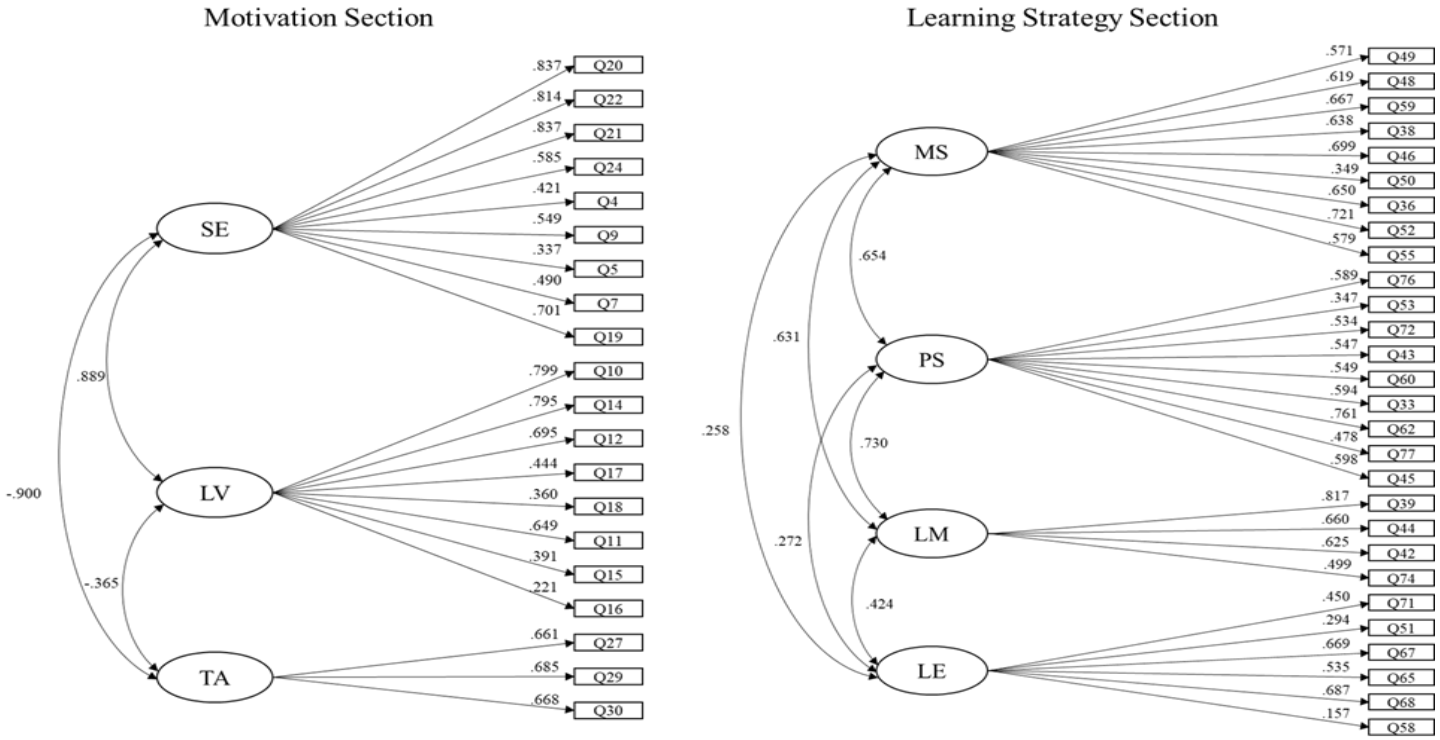
Regarding convergent validity, the path coefficient from learning effort to the subscale score of Q58 was not significant. Other items with low path coefficients also existed (learner value to Q16, learning effort to Q51). This result indicates that the items did not sufficiently converge. Regarding discriminant validity, considering the correlations among the extracted factors, there was a strong correlation between self-efficacy and learner values (r = .89), which might have arisen from these being placed among the same elements for motivation in self-regulated L2 self-study. There were also moderate to strong correlations between metacognitive strategies, problem solving, and learning maintenance. Although the value of the inter-factor correlations should be smaller than the path coefficients from each factor to the subscale scores,

relatively large inter-factor correlations indicate that discriminant validity was not fully observed.

DISCUSSION AND CONCLUSION

This study developed a new questionnaire that measured SRL levels among Japanese university students engaged in self-study. This has revealed SRL characteristics in an insufficiently explored area of L2 learning, namely self-study that is conducted voluntarily and primarily for individual purposes. The EFA results demonstrated that the motivation section obtained a three-factor solution, including self-efficacy, learner values, and test anxiety. The learning strategy section had a four-factor solution that included metacognitive strategies, problem solving, learning maintenance, and learning effort. Sufficient internal reliability and constructive validity were confirmed for all seven factors of the SRSLSSQ.

Figure 1. *The Model of Confirmatory Factor Analysis for Motivation and Learning Strategy Sections*



Note. Error terms omitted. All modeled correlations and path coefficients were significant ($p < .05$), except for Q58 in the learning strategy, which was nonsignificant.

Regarding the motivation section, it was found that self-efficacy and learner values appeared to be the factors most important to L2 learners' self-study, and a low level of test anxiety represented a characteristic of L2 learners' affective status in L2 self-study. Self-efficacy is an essential source of energy for launching SRL (Mills, 2014). In SRL theory, self-efficacy also plays a role as a precursor, mediator, and concomitant outcome; it is thus related to all phases of SRL (Zimmerman & Schunk, 2008). The results also support previous studies that investigated the necessity of self-efficacy in learning an L2 autonomously (e.g., Bai et al., 2019) and show that a belief in one's capabilities for learning and mastering an L2 appeared as the foundation of SRL, not only inside but also outside the classroom self-study.

Learner values represent the beliefs that create the compass that guides learners in the process of developing an L2. In an independent self-study setting, no compulsion from others normally exists. Even in such situations, learners can be engaged in L2 self-study, supported by their

own values. From the viewpoint of expectancy–value theory (Eccles, 2005), the characteristics of the questionnaire's items can be explained. Realizing values requires learners to determine *attainment*, *interest*, *utility*, and the *cost* of task values. Considering the context of L2 self-study, although some advice and supportive encouragement can be provided in educational settings, learners might not launch their L2 self-study unless they recognize the significance and value of working on L2 learning. Therefore, attainment and interest values seem essential for autonomous learning. However, utility value that relates to whether individual learners feel it is helpful and useful to study the L2 and whether they see the need for the L2 as an urgent problem (such as a criterion for job hunting and studying abroad) is further influential in deciding whether to implement self-study. By contrast, the cost in expectancy–value theory indicates a negative aspect of engaging in a task, which relates to weighing the effort required and the hardship caused by self-studying L2 English against the results and outcomes of doing so. Therefore, learner values alongside self-efficacy seem important for starting self-study.

In a learning context in which Japanese EFL learners study English by themselves, attainment and interest values did not seem to be the most influential factors. This finding might be expected in such an L2 learning environment, as Pintrich (2004) indicated that the SRL process depends on the learning context. In a self-study setting, learners might be more motivated by their confidence in achieving a good score or grade than by their intrinsic interest in L2 English and its content. Here, the L2 might not appear to be part of the learner's identity; instead, competence in English might indicate a superior status. The learners who participated in this present study were all freshmen; they had just passed the examination required to enter a competitive private university in Japan. Thus, their motivation for learning English possibly depended on their success in the entrance examination. This exam-oriented attitude toward studying L2 English is supported by Kim and Kim's (2014) findings that Korean EFL learners highly emphasize acquiring English to demonstrate achievement on standardized language certification exams, which is a criterion for being hired by some companies. Being biased against the value of utility and cost in self-study settings might be inevitable in an EFL environment.

Comparing the SRSLSSQ with the MSLQ (Pintrich et al., 1991, 1993), the original MSLQ posits intrinsic goal orientation as the subject interests and preferences that constitute SRL. However, the items that represented intrinsic goal orientation were dropped during the process of EFA because of small factor loadings; the SRSLSSQ eventually did not include them. Generally, both self-efficacy and intrinsic goal orientation are considered the most important factors for learning because learning does not start without a learner's will and motivation (Kage, 2013). Hence, it is expected that L2 learners who are intrinsically goal-oriented will formulate goals related to their satisfaction in acquiring or mastering a language based on their preferences and work voluntarily on their self-study. However, intrinsic goal orientation was not included in this L2 self-study context, indicating that self-efficacy for learning English autonomously and learners' beliefs about the value of learning English might be a firmer construct of motivation in the population included in this study. Alternatively, it is possible that the participants answered the questions by recalling their self-studies for an examination, which made their responses more distinctive in terms of extrinsic goal orientation (discussed in detail below). Therefore, it might be inferred that the extrinsic goal orientation included in the MSLQ was most prominent in the SRSLSSQ. For Japanese university-level EFL learners, self-regulated L2 learning can be influenced by grades and external performance goals rather than intrinsic curiosity about English.

The learning section in the SRSLSSQ included metacognitive strategies, problem solving, learning maintenance, and learning effort. Previous studies have found that SRL comprises metacognitive strategies to manage cognition and affect, seek social assistance, and arrange a suitable study environment (Habók & Magyar, 2018; Wang et al., 2013). Therefore, it can be said that in a self-study context, the importance of metacognitive strategies, whether they are influential in learning activities or in the management of learning resources, was highlighted.

Regarding problem solving, various strategies to manage the clarification of ambiguous understandings were found. For example, even in self-study, where the learner often studies an L2 individually, the item Q77's, "When I cannot understand English well, I ask other people for help…" applies to self-regulation. According to Weiner (1992), an essential role of SRL research is to describe how learners

perceive the resources available to them and whether they seek solutions to learn better, especially in investigating the role of causal attribution in the SRL cycle. Thus, this insight suggests that help-seeking does not pertain to the strategies themselves but to how a learner uses them as resources in seeking solutions. Item Q77 was extracted as a representative of the problem-solving strategies.

According to Dunn et al. (2012), regulating effort in learning and solving complicated problems are significant factors in the self-study of L2 English. These attitudes can enable good progress in L2 self-study instead of causing one to give up quickly. For example, L2 learners may find maintaining motivation difficult, especially when they feel reluctant. This strategy was also identified in previous studies as persistence (Wang et al., 2013), emotional control (Teng & Zhang, 2016), and environmental regulation and cognitive transformation strategies (Umemoto & Tanaka, 2012). This study found that effort regulation involved maintaining concentration and following study plans, which might be strongly associated with motivational regulation. The role of regulating motivation in SRL should be further examined in future research.

Significant correlations among the extracted factors were found. However, a weak correlation was found between L2 English proficiency and SRL components. This might be due to the characteristics of SRL. SRL is fundamentally a goal-driven process; however, this study defined self-study as proactive and voluntary L2 learning outside a classroom, and the learners might have had various reasons for working on their self-study. In contrast, L2 English proficiency was measured by standardized TOEIC scores, which are often used for the objectives of securing a job, passing a class, or studying abroad. Thus, this proficiency score might be obtained based on the extrinsic goals of most Japanese university students, indicating that the difference in inherent purposes for studying an L2 might be reflected in the results of correlation analysis.

The results of the CFA showed that although the indices of the EFA model seemed adequate, there was much room for improvement in terms of convergent and discriminant validity. A satisfactory model fit might not have been obtained for the following reasons. First, the model fit did not converge because of the relatively small sample size—a limitation in this and other studies. This study followed the general view that the sample should include at least 100 participants to maintain the robustness of the factor construction (Gorsuch, 1983). However, having only 100 participants is sometimes seen as inadequate (Comery & Lee, 1992). These scholars recommended that the number of participants preferably be at least five times the number of variables when performing multivariate analysis. Second, this study performed the CFA on the same data set as the EFA, which did not allow for fully cross-validating and generalizing the results of the questionnaire but only to confirm its internal validity. This issue may be reflected in the results of the CFA. In future studies, the SRSLSSQ should be modified, and another CFA should be conducted with a large and different sample, which could confirm the hypothesized model following SRL theory. Third, some of the items were inverted scales, which might have influenced the results of the fit indices. Also, although the extraction of factors was conducted following a prior theoretical rationale, it is possible that the extracted factors have subfactors.

Furthermore, because of the questionnaire's focus on the general self-study context instead of on a skill-specific situation, the participants might have assumed various situations of L2 self-study and responded to the items based on these experiences. Even a questionnaire that focuses extra attention on a particular learning setting might be too general to accurately evaluate the self-study context. For example, some participants might imagine studying English for a specific situation outside of school (e.g., their self-study at a juku, a cram school in Japan). Others might lack experience in the self-study of L2 English defined in this study (i.e., English self-study that is not related to classroom activities), so they might have recalled a learning experience of other subjects. Those who had completed too little self-study at a university might have responded to the questionnaire by thinking about their junior high/high school days. These possibilities should be considered in future research that is focused on situations in which SRL is required.

Despite these limitations, the SRSLSSQ has shown important the SRL characteristics in deliberate language learning outside the classroom and in L2 learners' tendencies toward SRL in their self-study. Future empirical research is required to build on this preliminary work in developing this questionnaire. This may help determine what differences exist in SRL based on different objectives in English language learning.

Acknowledgments

I would like to thank the editors and anonymous reviewers for their constructive and insightful feedback. This paper was based on part of my doctoral research at Rikkyo University, Japan. I am grateful to Prof. Satomi Takahashi for her understanding and encouragement of the current study. Also, in the item-generation stage, Masaki Kumagai of Ibaraki University and Yuki Nakano, a former graduate student at Rikkyo University, kindly cooperated.

Authors' Contributions

The author alone contributed to all stages of research planning, designing, data collecting, analyzing, interpreting the results, and writing the manuscript reported in this study.

Ethics Approval & Consent to Participate

All participants provided written and web-based informed consent prior to enrollment and data collection in the study.

Funding

This study was supported by Rikkyo University Special Fund for Research (Rikkyo SFR) in 2017.

REFERENCES

Bai, B., Chao, G. C. N., & Wang, C. (2019). The relationship between social support, self-efficacy, and English language learning achievement in Hong Kong. *TESOL Quarterly, 53*(1), 208–221. https://doi.org/10.1002/tesq.439

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory.* Prentice-Hall.

Brown, J. D., Cunha, M. I. A., Frota, S. de F. N., & Ferreira, A. B. F. (2001). The development and validation of a Portuguese version of the motivated strategies for learning questionnaire. In Z. Dörnyei & R. Schmidt (Eds.), *Motivation and second language acquisition* (pp. 257–280). University of Hawaii, Second Language Teaching and Curriculum Center.

Comrey, A. L., & Lee, H. B. (1992). *A first course in factor analysis.* Erlbaum.

Csizér, K., & Tankó, G. (2017). English majors' self-regulatory control strategy use in academic writing and its relation to L2 motivation. *Applied Linguistics, 38*(3), 386–404. https://doi.org/10.1093/applin/amv033

Dörnyei, Z. (2005). *The psychology of the language learner: Individual differences in second language acquisition.* Routledge.

Dörnyei, Z., & Ryan, S. (2015). *The psychology of the language learner revisited.* Routledge.

Dunn, K. E., Lo, W., Mulvenon, S. W., & Sutcliffe, R. (2012). Revisiting the motivational strategies for learning questionnaire: A theoretical and statistical reevaluation of the metacognitive self-regulation and effort regulation subscales. *Educational and Psychological Measurement, 72*(2), 312–331. https://doi.org/10.1177/0013164411413461

Eccles, J. S. (2005). Subjective task value and the Eccles et al. model of achievement-related choices. In A. J. Elliot & C. S. Dweck (Eds.), *Handbook of competence and motivation* (pp. 105–121). Guilford.

Fukuda, A. (2018a). The Japanese EFL learners' self-regulated language learning and proficiency. *Journal of Pan-Pacific Association of Applied Linguistics, 22*(1), 65–87. https://doi.org/10.25256/paal.22.1.4

Fukuda, A. (2018b). Examining the relationship between self-regulated learning and EFL learners' proficiency. *Intercultural Communication Review, 16*, 17–31. https://icc.rikkyo.ac.jp/wp/wp-content/uploads/2020/09/bulletin_16th_02.pdf

Gorsuch, R. L. (1983). *Factor Analysis* (2nd ed.). Erlbaum.

Habók, A., & Magyar, A. (2018). Validation of a self-regulated foreign language learning strategy questionnaire through multidimensional modeling. *Frontiers in Psychology*, *9*, 1388. https://doi.org/10.3389/fpsyg.2018.01388

Hiromori, T. (2015). *Eigo gakushu no mechanisms: Dainigengoshutokukenkyu ni motoduku kokateki na benkyoho.* [Mechanisms for learning English: Effective study methods based on second language acquisition research]. Taishukan.

Hurd, S., & Lewis, T. (Eds). (2008). *Language learning strategies in independent settings.* Multilingual Matters.

Kage, M. (2013). *Gakushu iyoku no riron* [Theory of learning motivation]. Kanekoshobo.

Kim, T-Y., & Kim, Y-K. (2014). EFL students' L2 motivational self-system and self-regulation: Focusing on elementary and junior high school students in Korea. In K. Csizér & M. Magid (Eds.), *The impact of self-concept on language learning* (pp. 87–107). Multilingual Matters.

Kobayashi, A. (2017). The development and validation of the self-regulated learning in listening questionnaire. *The Journal of the Institute for Language and Culture, 21*, 163–184. http://doi.org/10.14990/00002291

Kominato, A. (2016). The impact of homework on self-regulation and English self-efficacy among Japanese underprepared college students. *KATE Journal*, *30*, 43–56. https://doi.org/10.20806/katejournal.30.0_43

Kormos, J. (2012). The role of individual differences in L2 writing. *Journal of Second Language Writing*, *21*(4), 390–403. https://doi.org/10.1016/j.jslw.2012.09.003

Mills, N. (2014). Self-efficacy in second language acquisition. In S. Mercer & M. Williams (Eds.), *Multiple perspectives on the self in SLA* (pp. 6–22). Multilingual Matters.

Nitta, R. (2019). *Eigo no manabikata nyumon.* [How to learn English: A beginning guide]. Kenkyusha.

Nitta, R., & Baba, K. (2015). Self-regulation in the evolution of the ideal L2 self: A complex dynamic systems approach to the L2 motivational self system. In Z. Dörnyei, P. D. Maclntyre, & A. Henry (Eds.). *Motivational dynamics in language learning* (pp. 367–396). Multilingual Matters.

Oxford, R. L. (2011). *Teaching and researching language learning strategies.* Longman.

Oxford, R. L. (2017). *Teaching and researching language learning strategies: Self-regulation in context* (2nd ed.). Routledge.

Pintrich, P. R. (2004). A conceptual framework for assessing motivation and self-regulated learning in college students. *Educational Psychology Review*, *16*(4), 385–407. https://doi.org/10.1007/s10648-004-0006-x

Pintrich, P. R., & De Groot, E. V. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology*, *82*(1), 33–40. https://doi/10.1037/0022-0663.82.1.33

Pintrich, P. R., Smith, D., Garcia, T., & McKeachie, W. J. (1991). A manual for the use of the motivated strategies for learning questionnaire (MSLQ). *The Education Resources Information Center (ERIC).*

Pintrich, P. R., Smith, D., Garcia, T., & McKeachie, W. J. (1993). Reliability and predictive validity of the motivated strategies for learning questionnaire. *Educational and Psychological Measurement*, *53*, 801–813. https://doi.org/10.1177/0013164493053003024

Rovers, S. F. E., Clarebout, G., Savelberg, H. H. C. M., de Bruin, A. B. H., & van Merriënboer, J. J. G. (2019). Granularity matters: Comparing different ways of measuring self-regulated learning. *Metacognition and Learning*, *14*, 1–19. https://doi.org/10.1007/s11409-019-09188-6

Sasaki, M., Mizumoto, A., & Murakami, A. (2018). Developmental trajectories in L2 writing strategy use: A self-regulation perspective. *The Modern Language Journal*, *102*(2), 1–18. https://doi.org/10.1111/modl.12469

Schunk, D. H. (2001). Social cognitive theory and self-regulated learning. In B. J. Zimmerman & D. H. Schunk (Eds.), *Self-regulated learning and academic achievement: theoretical perspectives* (2nd ed.) (pp. 125–151). Erlbaum.

Schunk, D. H., & Greene, J. A. (2018). Historical, contemporary, and future perspectives on self-regulated learning and performance. In D. H. Schunk & J. A. Greene (Eds.), *Handbook of self-regulation of learning and performance* (pp. 1–15). Routledge.

Sebesta, A. J., & Speth, E. B. (2017). How should I study for the exam? Self-regulated learning strategies and achievement in introductory biology. *CBE-Life Sciences Education*, *16*(2), 1–12. https://doi.org/10.1187/cbe.16-09-0269

Seker, M. (2016). The use of self-regulation strategies by foreign language learners and its role in language achievement. *Language Teaching Research, 20*(5), 600–608. https://doi.org/10.1177/1362168815578550

Sharma, S., Mukherjee, S., Kumar, A., & Dillon, W. R. (2005). A simulation study to investigate the use of cutoff values for assessing model fit in covariance structure models. *Journal of Business Research*, *58*(7), 935–943. https://doi.org/10.1016/j.jbusres.2003.10.007

Takeuchi, O. (2007). Mizukara manabu sisei wo minitsukeru niha: Jishugakushu no hitsuyosei to sono houhou wo saguru. [Toward acquiring the autonomous learning posture: Seeking the necessity and way of self-study]. *Teaching English Now*, *8*, 2–5.

Tasaki, K. (Ed) (2015). *Communication kenkyu no data kaiseki.* [Data analysis for communication studies]. Nakanishiya Publisher.

Teng, F., & Huang, J. (2018). Predictive effects of writing strategies for self-regulated learning on secondary school learners' EFL writing proficiency. *TESOL Quarterly*, *53*(1), 232–247. https://doi.org/10.1002/tesq.462

Teng, L. S. (2021). Individual differences in self-regulated learning: Exploring the nexus of motivational beliefs, self-efficacy, and SRL strategies in EFL writing. *Language Teaching Research*. Advance online publication. https://doi.org/10.1177/13621688211006881

Teng, L. S., & Zhang, L. J. (2016). A questionnaire-based validation of multidimensional models of self-regulated learning strategies. *The Modern Language Journal*, *100*(3), 674–701. https://doi.org/10.1111/modl.12339

Teng, L. S., Sun, P. P., & Xu, L. (2018). Conceptualizing writing self-efficacy in English as a foreign language contexts: Scale validation through structural equation modeling. *TESOL Quarterly*, *52*(4), 911–942. https://doi.org/10.1002/tesq.432

Umemoto, T., & Tanaka, K. (2012). Daigakusei ni okeru doukizuke chousei houryaku. [Motivational Regulation Strategies in Undergraduates], *The Japanese Journal of Personality*, *21*(2), 138–151. https://doi.org/10.2132/personality.21.138

Velicer, W. F. (1976). Determining the number of components from the matrix of partial correlations. *Psychometrika*, *41*, 321–327. https://doi.org/10.1007/BF02293557

Wang, C., & Bai, B. (2017). Validating the instruments to measure ESL/EFL learners' self-efficacy beliefs and self-regulated learning strategies. *TESOL Quarterly*, *51*(4), 931–947. https://doi.org/10.1002/tesq.355

Wang, C., Schwab, G., Fenn, P., & Chang, M. (2013). Self-efficacy and self-regulated learning strategies for English language learners: Comparison between Chinese and German college students. *Journal of Educational and Developmental Psychology*, *3*(1), 173–191. https://doi.org/10.5539/jedp.v3n1p173

Weiner, B. (1992). *Human motivation: Metaphors, theories, and research.* SAGE.

Winne, P. H. (2010). Improving measurements of self-regulated learning. *Educational Psychologist*, *45*(4), 267–276. https://doi.org/10.1080/00461520.2010.517150

Wolters, C. A., & Won, S. (2018). Validity and the use of self-report questionnaires to assess self-regulated learning. In D. H. Schunk & J. A. Greene (Eds.), *Handbook of self-regulation of learning and performance* (2nd ed.) (pp. 307–322). Routledge.

Zhou, S. A., & Hiver, P. (2022). The effect of self-regulated writing strategies on students' L2 writing engagement and disengagement behaviors. *System, 106.* 102768. https://doi.org/10.1016/j.system.2022.102768

Zimmerman, B. J. (2000). Attaining self-regulation: A social cognitive perspective. In M. Boekaerts., P. R. Pintrich, & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 13–39). Academic Press.

Zimmerman, B. J., & Martinez-Pons, M. (1990). Student differences in self-regulated learning: Relating grade, sex and giftedness to self-efficacy and strategy use. *Journal of Educational Psychology, 82*(1), 51–59. https://psycnet.apa.org/doi/10.1037/0022-0663.82.1.51

Zimmerman, B. J., & Schunk, D. H. (2008). Motivation: An essential dimension of self-regulated learning. In D. H. Schunk & B. J. Zimmerman (Eds.), *Motivation and self-regulated learning: Theory, research, and applications* (pp. 1–30). Routledge.

Zimmerman, B. J., & Schunk, D. H. (Eds.). (2011). *Handbook of self-regulation of learning and performance*. Routledge.

APPENDIX

The Components of the Original MSLQ (Pintrich et al., 1991)

Motivation section	Value component	Intrinsic goal orientation
		Extrinsic goal orientation
		Task value
	Expectancy component	Control of learning beliefs
		Self-efficacy for learning and performance
	Affective component	Test anxiety
Learning strategy section	Cognitive and metacognitive strategies	Rehearsal
		Elaboration
		Organization
		Critical thinking
		Metacognitive self-regulation
	Resource management strategies	Time and study environment
		Effort regulation
		Peer learning
		Help-seeking