Language Learner Strategy Use and English Proficiency on the Michigan English Language Assessment Battery

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Using a 43-item strategy-use questionnaire, this study examines the nature of language strategies reported by test takers of the Michigan English Language Assessment Battery (MELAB). It further investigates the relationships between test takers' reported strategy use and language test performance on the MELAB in the context of English as a second language (ESL). The results show that MELAB test takers' perceptions of cognitive strategy use primarily fall into six dimensions: *repeating/confirming information strategies*, *writing strategies*, *practicing strategies*, *generating strategies*, *applying rules strategies*, and *linking with prior knowledge strategies*. MELAB test takers' perceptions of metacognitive strategy use fall into three dimensions: *evaluating*, *monitoring*, and *assessing.* The results also reveal that some strategies had a significant, positive effect on language performance and some had a significant, negative effect on language performance, whereas others seemed to have no effect with this group of participants.

Language testing researchers have been concerned with the identification of individual characteristics that influence variation in performance on language tests since the 1970s. One important variable that may account for the differences on language performance, according to Dreyer and Oxford (1996), is the use of language strategies, which are thought to be used by students at all instructional levels with various outcomes. The present study examines the nature of learner strategies reported by test-takers of the Michigan English Language Assessment Battery (MELAB). This study also investigates the relationships between reported learner strategy use and language test performance on the MELAB in the context of English as a second language (ESL).

Factors Affecting Second Language Performance

Language researchers have long held an interest in factors that may affect performance and scores on language tests. Bachman (1990) proposed a model to investigate the effects of three types of systematic sources of variability on test scores: communicative language ability, the personal characteristics of test takers, and the characteristics of the test method or test tasks. Among the three types of systematic sources of variability, communicative language ability was considered the central factor accounting for the variation of test scores in second language learning. It consists of three components: language competence, strategic competence, and psycho-physiological mechanisms. Bachman also argued that the second factor that influences test performance—test-taker characteristics—includes a variety of personal attributes such as age, gender, native language, educational background, attitudes, motivation, anxiety, learning strategies, and cognitive style. Bachman's third factor—test method—refers to the characteristics of the test instruments used to elicit test performance and the effects that they may have on test score variation. The current study examines the second factor—cognitive and metacognitive strategy use as a part of test-taker characteristics. The study also examines the relationships between English proficiency test scores on the MELAB and cognitive and metacognitive strategy use.

Language Strategy Use

Research has investigated the individual learner's learning behaviors in relation to second language acquisition (SLA) since the 1970s. Since Rubin (1975) and Stern (1975) first explained their tentative conceptions of strategies used by "good" language learners, advances made in cognitive psychology have led to an ever-growing interest in language strategies. Learning strategies are broadly defined as operations and procedures employed by learners to facilitate the acquisition, storage, retrieval, and use of information in their learning (Rigney, 1978). Oxford (1990) expanded this definition by saying that learning strategies are "specific actions taken by learners to make learning easier, faster, more enjoyable, more self-directed, more effective, and more transferable to new situations" (p. 8). Studies that examine how strategies play a role in language learning and development have been conducted not only in the first language area but also in the second language area (e.g., Baker & Brown, 1984; O'Malley & Chamot, 1990; Oxford, 1990; Paris, Cross, & Lipson, 1984).

The earliest concerns were with identification of characteristics of the "good language learner." Researchers expected to identify strategies used by successful learners with the idea that they might be transferred to less successful learners. Based on videotaped classroom observations, Rubin (1975) first identified seven strategies that seemed to characterize "good" learning behaviors. Stern (1975) summarized ten strategies of "good learners": planning, active, empathic, formal, experimental, semantic, practice, communication, monitoring, and internalization strategies. In 1978, Naiman, Frohlich, Stern, and Todesco used semistructured interviews with 34 "successful" students to explore learning strategies that were commonly used among these "good" learners. However, they found that their initial expectation of isolating specific learning strategies of successful learners was not met, and they concluded that "this approach [had] not been successful" (p. 65). The researchers explained that systematic patterns of learning behaviors were rarely evidenced in classrooms. Though there is an absence of firm theoretical frameworks and successful results, these studies have aroused much interest in examining the behaviors that distinguish between successful and unsuccessful learners in SLA.

Advances made in second language acquisition, cognitive psychology, and information processing systems have allowed studies to be conducted employing a wide range of methods of data collection and criteria to categorize learning strategies used by EFL/ESL language learners when they are performing different language tasks, including reading, listening, writing, and speaking. The methods of data collection can be direct, such as observation (e.g., Stern, 1975), interview (e.g., Naiman et al., 1978), think-aloud (e.g., Anderson & Vandergrift, 1996), and diary (e.g., Oxford, Lavine, Felkins, Hollaway, & Saleh, 1996). The methods can also be indirect, such as written questionnaires (e.g., Bialystok, 1978). However, as some researchers have indicated (Cohen, 1998; McDonough, 1995; O'Malley & Chamot, 1990), each kind of data collection method has its own limitation, and one method alone does not enable learners to demonstrate all of their strategies in language learning.

Therefore, most successful research has employed multiple data collection procedures for gathering and validating learning strategies data (Ellis, 1994). For instance, O'Malley and Chamot and their colleagues asked students to retrospectively report strategy use through group-interview in the descriptive phase, and then the researchers used the think-aloud method when students were engaged in language tasks in the longitudinal phase of their study (1990). Nevertheless, multiple data collection procedures may lead to another problem. O'Malley and Chamot (1990) pointed out that results from different data collection procedures varied considerably, and thus there was no consensus on the classification of language strategies. Although there is lack of agreement in data collection procedures for strategy use, a large number of studies conducted in this field have developed from simple collections of strategies by classroom observation to more sophisticated investigations, which increase generalizability and explanatory power.

Besides using different data collection methods to categorize language strategies, researchers also classify strategies on the basis of contrasting criteria. For example, early research was mainly based on the criterion of "good language learners." Afterwards, Rubin (1981) proposed a direct/indirect dichotomy, whereas Bialystok (1981) defined four learning strategies: formal practicing, functional practicing, monitoring, and inferencing. Wenden (1991) suggested cognitive strategies and self-management strategies, whereas Ridley (1997) defined lexical problem-solving, monitoring, and deliberate study strategies. Even though O'Malley and Chamot's (1990) strategy system and Oxford's (1990) classification, which are considered the two most influential classifications of language strategies, show a considerable degree of overlap, some disagreement exists concerning strategy classification. O'Malley and Chamot (1990) distinguished three broad types of learning strategies: cognitive, metacognitive, and socio-affective strategies, whereas Oxford (1990) categorized strategies as memory, cognitive, compensation, metacognitive, affective, and social. However, O'Malley and Chamot did not provide reliability or construct validity for their taxonomy of strategy use (Oxford & Burry-Stock, 1995). Although Ellis (1994) deemed Oxford's classification as the most comprehensive classification of learning strategies, Hsiao and Oxford (2002) conducted confirmatory factor analysis (CFA) and found that the six-factor model did not provide a fully adequate fit to the data.

Based on Hunt's (1982) and Gagne, Yekovich, and Yekovich's (1993) information processing theories and using a series of statistical methods, Purpura (1997, 1998a, 1998b, 1999) classified three processing variables of cognitive strategies and one process type variable of metacognitive strategies. Conducted with 1,382 EFL test takers and using statistical analyses including exploratory factor analysis, confirmative factor analysis, and structural equation modeling, a three-factor model of cognitive strategy use that involves *the comprehending*, *storing/memory*, and *using/retrieval* processes, and a one-factor model of metacognitive strategy use that involves *assessment* were eventually defined (1999). The process-type variable of the comprehending processes is represented by strategy-type variables called *analyzing inductively* and *clarifying/verifying*; the storing/memory process is represented by *associating*, *transferring*, *repeating/rehearsing*, *applying rules*, and *summarizing*; and the using/retrieval process is presented by *analyzing inductively*, *inferencing*, *applying rules*, *linking with prior knowledge*, and *practicing naturalistically*. Metacognitive strategy use consists of only one underlying factor represented by a general assessment process, which is represented by four strategy-type variables called *assessing the situation*, *monitoring*, *self-evaluation*, and *self-testing.*

Based on the review of the major classifications of strategy use in this area, this study adopted and revised Purpura's strategy use questionnaire to elicit information about test takers' strategy use. From the perspective of this current study, his classification focusing on characteristics of test takers is the most appropriate for studying MELAB test takers. Therefore, Purpura's cognitive and metacognitive strategy-use questionnaire (1999) was employed as a basis to collect information of language learner strategy use in this study.

Michigan English Language Assessment Battery

The Michigan English Language Assessment Battery (MELAB) is used as a measure of communicative language ability within the framework of Bachman's model in this study. The test is developed by the English Language Institute at the University of Michigan. The test is given on scheduled dates and times, at several locations. It is normally held once, twice, or three times a month. The MELAB evaluates advanced-level English language competence of adult nonnative speakers of English. Potential examinees include:

1. Students applying to United States, Canadian, British, and other educational institutions where the language of instruction is English;
2. Professionals who need English for work or training purposes;
3. Anyone interested in obtaining a general assessment of their English language proficiency for educational or employment opportunities.

The MELAB consists of three parts: a composition, a listening test, and a written test containing grammar, cloze, vocabulary, and reading comprehension problems (GCVR). An optional speaking test is also available. Many educational institutions in the United States, Canada, the United Kingdom, and some other countries accept the MELAB as an alternative to the Test of English as a Foreign Language (TOEFL). The entire test takes from 2-1/2 to 3-1/2 hours, including check-in procedures. A description of the test can be seen in Table 1 (see English Language Institute, 2003).

The first section, writing, is a 30-minute impromptu essay response to one of two topics. Test takers may be asked to give an opinion of something and explain why they believe this, to describe something from their experience, or to explain a problem and offer possible solutions (e.g., "What are the characteristics of a good teacher? Explain and give examples"). Most MELAB compositions are one or two pages long (about 200–300 words). Each essay is scored by at least two trained raters based on a clearly developed ten-step holistic scale. The scale descriptors concentrate on topic development, organization, and range, accuracy, and appropriateness of grammar and vocabulary. The ten-point writing scale is set at nearly equal intervals between 53 and 97 to conform to the equated listening and GCVR scales so that the three sections are on the same scale and can therefore be averaged to the final score.

The listening section of the test is a tape-recorded segment containing 50 questions. In the short sentence problems, test takers might be asked a question, hear a statement, or listen to a sentence spoken with special emphasis. In the last half of the listening section, test takers listen to a lecture and a conversation, each followed by several questions. All listening items are multiple choice with three options.

Section 3 of the MELAB usually contains 100 questions: 30 grammar, 20 cloze, 30 vocabulary, and 20 reading. Test takers have 75 minutes to complete the GCVR multiple-choice questions. Sometimes a longer version containing experimental items is given. If a longer test is given, the time limit is extended proportionally. The reported score is scaled from 15 to 100.

The optional speaking section requires test takers to have a 10–15 minute conversation with local examiners, who rate the overall communicative language proficiency. Local examiners consider fluency and intelligibility, grammar and vocabulary, and interactional skills. Functional language use or sociolinguistic proficiency is also considered. Examiners ask test takers questions about their background, future plans, and opinions on certain issues. Local examiners might also ask test takers to explain or describe in detail something about their field of specialization.

Table 1. Description of the MELAB

Sections	Tasks Description	Total N	Time (minutes)	Scoring
Writing	200–300 word composition	1	30	10 pt. holistic scale, 53–97
Listening	Discrete items based on questions and extended discourse	50	30	30–100
GCVR:		100	75	15–100
(Grammar)	Discrete items based on a two-turn conversational format	(30)		
(Cloze)	Discrete items based on one passage	(20)		
(Vocabulary)	Discrete items based on a single-sentence format	(30)		
(Reading)	Discrete items based on four passages	(20)		
Final Score				33–99
Speaking			10–15	holistic scale, 1–4

The MELAB has been shown to be reliable and fair, and the test benefits schools and test takers. The listening and GCVR sections of the test are highly reliable, with reliability coefficients (K-R21 and Cronbach's alpha) ranging from 0.82 to 0.95 (English Language Institute, 1996). Also, MELAB test questions and forms are extensively pretested for optimum reliability. The *MELAB Technical Manual* provides content-related evidence of validity and describes the process of test development, the nature of the skills that the test is designed to measure, and a description of the prompts and item types. The technical manual also presents comparative statistics for test takers grouped by reason for testing, sex, age, and native language groups. It shows that the test minimizes the risk that some test takers would be disadvantaged or advantaged by unequal content knowledge. Tight control of current and retired test forms ensures accurate scores that are undistorted by cram classes or prior knowledge of test questions. As a result, the MELAB helps schools become more effective recruiters by offering test takers more choices and increasing flexibility. Test takers can also benefit from the MELAB because its score report contains not only the scores of each section and the total scores, but also a brief description of each section, along with score ranges, means, and standard deviation for each section and for the final score (Weigle, 2000).

In conclusion, the MELAB is a thoughtfully constructed, reliable, and well-documented test with good fairness. Potential test users are given ample information to look through to access strengths and weaknesses in language learning and using.

Empirical Studies about Strategy Use and Language Performance

Many studies employ quantitative and/or qualitative methods to investigate the relationships between strategy use and language performance (e.g., Bedell & Oxford, 1996; Bialystok, 1981; Mangubhai, 1991; O'Malley & Chamot, 1990). Based on diverse definitions and classifications of language strategies and using different analysis methods, these studies shed light on the relationships between strategy use and language performance from different perspectives. Some studies explore whether students who were better in language performance reported higher levels and frequencies of strategy use (e.g., Green & Oxford, 1995), whereas other studies examine whether higher level and frequency of strategy use contributed to better language performance (e.g., Park, 1997). Some researchers concluded that a causal, reciprocal relationship exists between strategy use and language performance, which indicates strategy use and language performance are both causes and outcomes of each other (e.g., Bremner, 1999).

As a result of the different perspectives that these studies produced, researchers have adopted various methods to measure strategy use and language performance. As stated earlier, methods used to assess strategy use include interview, think-aloud, observation, questionnaire, diary, and other methodologies. Methods used to gauge language performance are also various, such as professional language career status (e.g., Ehrman & Oxford, 1989), entrance and placement examinations (e.g., Sheorey, 1999), self-rating of language proficiency (e.g., Glenn, 2000), and language achievement and proficiency tests (e.g., Phakiti, 2003). In the last case, studies using language achievement and proficiency tests employ different language tasks. Some focus on oral tasks (e.g., Bruen, 2001) and some on reading tasks (e.g., Phakiti, 2003), whereas some use reading, writing, listening, and speaking tasks to measure language performance (e.g., Bremner, 1999).

Early studies in the 1980s reported differentiating results about the relationships between strategy use and language performance. Bialystok (1981) found that three strategies (functional practice, formal practice, and monitoring) were linked to language performance in Grade 12 students, whereas only functional practice was significantly related to language performance in Grade 10 students in the context of French as a second language. In contrast, in a study conducted with Chinese EFL university students, Huang and Van Naerssen (1985) found only functional practice strategies were linked to oral proficiency. Another important study with ESL learners by Politzer and McGroarty (1985) found few statistically significant correlations between strategy use as a whole and language performance, although certain individual strategy items showed significant correlations with language performance.

Since Oxford developed the Strategy Inventory for Language Learning (SILL) in 1990, a majority of subsequent studies have used the SILL or adapted the SILL as an instrument to investigate strategy use and the relationships between strategy use and language performance. Generally speaking, in a large number of these SILL studies, conducted in various geographical and cultural settings, a positive relationship between strategy use and language performance was reported (e.g., Bruen, 2001; Glenn, 2000; Park, 1997; Sheorey, 1999). "In most but not all instances, the relationship is linear, showing that more advanced or more proficient students use strategies more frequently" (Oxford & Burry-Stock, 1995, p. 10). "Students who were better in their language performance generally reported higher levels of overall strategy use and frequent use of a greater number of strategy categories" (Green & Oxford, 1995, p. 265).

Unlike previous researchers, Purpura (1997, 1999) conducted studies investigating the psychometric characteristics of a strategy use questionnaire and a language proficiency test. Then, he employed a series of statistical methods to investigate the relationships between strategy use and language performance. As stated before, a three-factor model of cognitive strategy use that involves the *comprehending*, *storing/memory*, and *using/retrieval processes*, and a one-factor model of metacognitive strategy use that involves *assessment* were defined. Two underlying factors of the language test were found: reading ability and lexico-grammatical ability. Results showed that metacognitive strategy use did not directly impact on language performance, but did have a significant, positive, direct effect on cognitive strategy use. Specifically, metacognitive strategy use had "a moderate, direct influence on the comprehending processes and a strong, direct impact on both the memory and retrieval processes" (Purpura, 1999, p. 172). Cognitive strategy use had no significant, direct influence on reading ability but had an impact on reading indirectly through lexico-grammatical ability. The test takers' lexico-grammatical ability was closely related to the reading ability. However, the relationships between cognitive strategy use and lexico-grammatical ability were complex. In the three-factor model of cognitive strategy use, the comprehending processes had an insignificant effect on lexico-grammatical ability and the retrieval processes had a significant, positive impact on lexico-grammatical ability, while the memory processes produced a significant, negative effect on lexico-grammatical ability. Purpura concluded that the "greater degree to which a strategy was used did not necessarily correspond to the better performance" (1999, p. 180). Using a 35-item questionnaire derived from Purpura's (1999) study, Phakiti (2003) explored the relationships between strategy use and reading performance with Thai EFL university students. He found a positive relationship of cognitive strategy use and metacognitive strategy use on the reading performance, but the relationship was weak ($r = 0.391$ and 0.469, respectively).

In summary, there seems to be neither consensus regarding strategy use in language learning nor agreement about the relationships between strategy use and language performance. This may be partially due to the fact that different strategy definitions, classifications, and measurement techniques have been utilized, as well as the existence of different interpretations of what it means to be proficient in language performance. Another important reason that contributes to these differences is that these studies were conducted in different cultural surroundings, some dealing with second language learning and some with foreign language learning. Participants also varied in terms of education levels and background. Thus, this current study aims to contribute to this field with information about

MELAB ESL test takers' reported strategy use and the relationships between their reported strategies and language performance.

Method

Participants

The participants in this study were MELAB test takers from a major MELAB test center in North America. A total of 179 test takers, who took the MELAB between July and November 2004 were recruited to participate in this study. Among the 161 respondents to the valid questionnaires, 146 were females and 15 were males. The age of the test takers ranged from 16 to 52, with a mean of 34.14. Through conversations with the test takers, it was found most of them took the MELAB to become recognized professionals in North America, such as nurses. Others intended to apply to higher educational institutions in North America. The participants had various English-learning experiences. Some had studied English since primary school, while a few had studied English for only several months. The mean for the period of time for English study was 12.16 years. These participants' first languages include 30 different languages across five major language sectors (Afro-Asian, Austronesian, Eurasian, Sino-Indian, and Indo-European). The most frequently reported first language is Tagalog/Filipino/Llokano (24.2%), followed by Russian (9.6%), Hindi (6.6%), Malayalam (5.9%), Romanian (5.1%), Spanish (5.1%), Farsi/Persian (4.4%), Punjabi (4.4%), Tamil (4.4%), Chinese/Mandarin (3.8%), Arabic (2.9%), Urdu (2.9%), Japanese (2.2%), Korean (2.2%), Polish (2.2%), English (2.2%), Portuguese (2.2%), Slovak (2.2%), Gujarati (2.2%), Amharic (2.2%), Somali (0.7%), Tigrinya (0.7%), Thai (0.7%), Telegu (0.7%), Bulgarian (0.7%), Dutch (0.7%), French (0.7%), and Bengali (0.7%). Interestingly, some test takers claimed English was their first language because they had learned English and primarily used English in their daily lives since they were young. Still, these test takers came to take the MELAB, which is designed for nonnative speakers.

Instruments

Purpura's cognitive and metacognitive strategy use questionnaire (1999) was revised for this study to elicit information on strategy use. The MELAB scores were adopted as a measure of language performance. Both the survey questionnaire and the MELAB were used to understand the relationships between strategy use and language performance.

The questionnaire of strategy use for this study consisted of two parts. Demographic information including student ID, gender, years of English study, age, and first language was requested in the first part. The second part contained 27 items of cognitive strategy use and 16 items of metacognitive strategy use, which were adapted from Purpura's metacognitive strategy use questionnaire (1999). The questionnaire used in this study was expected to measure ten scales of cognitive strategy use and four scales of metacognitive strategy use. The questionnaire used a 6-point Likert scale: 0 (never), 1 (rarely), 2 (sometimes), 3 (often), 4 (usually), and 5 (always), which is the same as Purpura's (1999) study. Table 2 presents the composite scales of the questionnaire (the complete questionnaire is given in Appendix A).

The MELAB is a standardized English proficiency test whose stated purpose is to "evaluate the advanced level English competence of adult non-native speakers of English" (English Language Institute, 1996). As explained, the MELAB consists of three required sections (writing, listening, and GCVR) and one optional section (speaking). This study used the scores of each of the three required sections (writing, listening, and GCVR) and the total scores to measure communicative language ability.

Data Collection and Analysis

The questionnaires were collected at a major MELAB test center in North America. With the assistance of this MELAB test center, the researcher had the opportunity to distribute the questionnaires and consent forms either on the day that MELAB test takers registered for the exam or on the test date before the MELAB administration started. Among the 179 questionnaires collected, there were 18 copies with missing values exceeding 10% of the total number of variables; that is, more than four questions were not answered. Those cases were removed from the database, reducing the total number of valid questionnaires to 161. Twenty-one questionnaires with missing values totaling less than 10% were included in the database. The missing data were spread across the questionnaire and did not cluster to particular, hypothesized scales. After obtaining consent from these test takers, their test scores were collected from the English Language Institute at the University of Michigan. Two test takers' scores were not available, which reduced the number of total participants to 159 for the second research question. Then, participants' scores on the MELAB were matched with their responses on the questionnaires. Finally, test takers' scores and responses were coded and entered into an SPSS file with 100% verification to ensure that there were no incorrect data. Some inconsistencies were identified and corrected upon verifying the original data. SPSS Version 11.0 was employed for analyzing the data in this study.

Table 2. Composites for the Strategy Use Questionnaire

Strategy Use	Scales	Items used
Cognitive Strategy Use	Analyzing	23, 26, 27
	Clarifying	13, 25
	Repeating	3, 16, 17
	Summarizing	4, 20
	Applying rules	5, 11, 18
	Associating	6, 7, 8
	Transferring	9, 10, 12
	Inferencing	21, 24
	Linking with prior knowledge	1, 2, 14
	Practicing	15, 19, 22
Metacognitive Strategy Use	Assessing the situation	28, 30, 31
	Monitoring	32, 33, 34
	Self-evaluating	29, 35, 36, 39, 40, 43
	Self-testing	37, 38, 41, 42

Descriptive Statistics

To have an understanding of strategy use at the item level and to enhance factor analysis and regression analysis, descriptive statistics for each questionnaire item were calculated. Distributions were also examined to check the assumptions regarding normality. A normal distribution of each item by all participants should be represented by a graph that approximates a bell-shaped curve (Creswell, 2002). To check normality, I examined the range, mean, standard deviation, skewness, and kurtosis of each questionnaire item. Because the statistical analyses in this study assumed a normal distribution, items with extreme skewness or kurtosis were considered for deletion from further data analyses. A kurtosis and skewness value between +1 and –1 is considered to be excellent, and a value between +2 and –2 is acceptable (Creswell, 2002). Items with an absolute skewness value of more than 4 and an absolute kurtosis value of more than 8 are suggested to be excluded (Kline, 1998).

Internal Consistency Reliability Estimates

Internal consistency reliability estimates were computed to provide an estimate of how the questionnaire items correlated with each other. An instrument that is used to measure samples is reliable to the extent that "it measures whatever it is measuring consistently" (Best & Kahn, 1998, p. 283). Cronbach's alpha is considered to be an appropriate measure of internal consistency with which to estimate the level of reliability of items within an instrument (Pedhazur & Schmelkin, 1991). Instrument items should be related to other items if they measure a single construct. Therefore, reliability estimates using Cronbach's alpha were examined to provide an estimate of whether the questionnaire and each scale had a high level of internal consistency.

Factor Analysis

The aim of exploratory factor analysis is to explore how many main constructs are necessary to explain the relations among a set of indicators. Although Purpura summarized the traits of strategy use, the constructs extracted from his study might be different from this study because "indicators may have different meanings in different places, cultures, subcultures and the like" (Pedhazur & Schmelkin, 1991, p. 53). Therefore, exploratory factor analysis was used to identify how the 43 items clustered together in this study within the ESL context.

This study computed exploratory factor analysis with the reported cognitive strategy use and metacognitive strategy use separately. As was pointed out by Pedhazur and Schmelkin, "exploratory factor analysis is not, or should not be, a blind process in which all manner of variables or items are thrown into a factor-analytic 'grinder' in the expectation that something meaningful will emerge" (1991, p. 591). Since John Flavell and his colleagues introduced the terminology "metacognition" in the 1970s (Flavell, 1971, 1979; Flavell & Wellman, 1977), metacognition has become a widely accepted and distinctive construct in psychological research. In the early 1970s, attracted by the lure of this new-sounding concept "metacognition," psychologists engaged in demonstration studies to see how the new idea would work. Later, Ann Brown and her colleagues stated that the initial stage to see how the new idea of metacognition worked was over (Brown, Bransford, Ferrara, & Campione, 1983). The new stage should be "devoted to the task of developing workable theories and procedures for separate parts of the problem space" (Brown et al., 1983, p.125). Cognitive processes that include cognition and metacognition are operationalized by a variety of strategy types. As found in the literature over the past 30 years, metacognitive strategies are generally considered to be different from cognitive strategies in that they can be applied to a variety of language learning tasks, whereas cognitive strategies are limited to specific types of language tasks (O'Malley & Chamot, 1990; Purpura, 1999). For instance, "reading English books" as one type of cognitive strategy use applies only to the task of reading, whereas "before I begin an English assignment, I make sure I have a dictionary or other resources" as one type of metacognitive strategy use applies to all language learning situations. Based on the existing literature in this area, cognitive strategy use and metacognitive strategy use were factor analyzed independently in this study.

Various methods of factor analysis and rotation techniques were employed to obtain the most meaningful interpretation. Normally, factor loadings are considered to be high when they are greater than 0.6 and moderately high if they are above 0.3 (Kline, 1994). To ensure a meaningful interpretability of the solution, various factor solutions were tested to compare the results. The solution with the most meaningful interpretation was adopted in this study.

Regression Analysis

To address the second research question about the relationships between language strategy use and MELAB performance, regression analysis was performed to examine whether these learner strategies had an effect on the MELAB scores. The stepwise regression method was used in this study because this method is "a model-building rather than model-testing procedure" (Tabachnick & Fidell, 2001, p. 138). It finds an equation that predicts the maximum variance for the specific data set under consideration. To be specific, this study used stepwise regression analysis to examine the relationships of strategy use with the MELAB writing scores, listening scores, GCVR scores, and total scores.

To determine significance throughout the study, I used the standard of $p < 0.05$. This means that the relationships between strategy use and MELAB scores were considered statistically significant if they could have occurred by chance fewer than 5 times out of 100. R square, which indicates the correlations between each independent variable and a dependent variable, was employed to show how well a dependent variable (MELAB) was explained by independent variables (strategy use). The beta weight was also reported to examine the magnitude of the prediction of reported strategy use in this study.

Results

Descriptive Statistics

The descriptive statistics for the item-level data of the strategy use questionnaire were analyzed based on the 161 participants. The distributions for 27 items of cognitive strategy use and 16 items of metacognitive strategy use are presented in Appendix B. The means of these items ranged from 2.41 (*I try to improve my English by looking for words in my own language that are similar to words in English in spelling, pronunciation, or meaning*) to 4.43 (*I try to improve my English by looking for opportunities to speak English as much as possible*). A large number of strategies (72.1%) was reported to be often/always used. The standard deviations ranged from 0.85 to 1.71. A majority of skewness and kurtosis values ranged between +1 and –1. Item 15 and Item 31 had extreme skewness and kurtosis (1.84, 4.49; 1.89, 3.56). Subsequent analyses were computed with an awareness that the two items might be problematic because of the threat to a normal distribution that they posed.

Regarding the instrument of language performance, the MELAB total scores ranged from 53 to 97 with a mean of 75.29 and a standard deviation (SD) of 9.49 (see Appendix B). Writing ranged from 65 to 95 with a mean of 76.42 and a SD of 6.27, listening from 49 to 100 with a mean of 76.38 and a SD of 11.71, and GCVR from 36 to 100 with a mean of 73.14 and a SD of 13.99. All the scores were normally distributed within ±1 for skewness and kurtosis.

Internal Consistency Reliability Estimates

Internal consistency reliability estimates were calculated with the 43-item strategy use questionnaire ($\alpha = 0.94$, see Table 3). The reliability estimate for the 27 cognitive strategy use items is 0.91, and the reliability estimate for the 16 metacognitive strategy use items is 0.89. These estimates are comparatively high. The reliability estimates of the ten scales of cognitive strategy use and four scales of metacognitive strategy use range from 0.49 to 0.89. *Clarifying* and *inferencing*, both consisting of two items, have reliability estimates lower than 0.60.

Table 3. Internal Consistency Reliability Estimates for the Strategy Use Questionnaire

Strategy Use	Scales	Items used	Reliability estimates
Cognitive Strategy Use	Analyzing	23, 26, 27	0.78
	Clarifying	13, 25	0.49
	Repeating	3, 16, 17	0.72
	Summarizing	4, 20	0.62
	Applying rules	5, 11, 18	0.70
	Associating	6, 7, 8	0.66
	Transferring	9, 10, 12	0.89
	Inferencing	21, 24	0.54
	Linking with prior knowledge	1, 2, 14	0.69
	Practicing	15, 19, 22	0.76
	Subtotal		0.91
Metacognitive Strategy Use	Assessing the situation	28, 30, 31	0.60
	Monitoring	32, 33, 34	0.79
	Self-evaluating	29, 35, 36, 39, 40, 43	0.82
	Self-testing	37, 38, 41, 42	0.80
	Subtotal		0.89
	Total		0.94

Factor Analysis

Cognitive Strategy Use

Exploratory factor analysis was performed with the 27 cognitive strategy use items. Principal axis factoring and a varimax solution were used because they seemed to maximize interpretation after comparing with the results from various other methods of factor analysis and factor solutions. Although factor loadings larger than 0.3 were expected to be considered, it was found that factor loadings greater than 0.4 were more acceptable because they maximized parsimony and interpretability. Six factors had eigenvalues greater than 1.0. It was then decided that items loading on more than one factor would be considered for deletion from further factor analyses because these items might not measure the intended factors. Therefore, Items 12, 17, and 20 were deleted after examining the factor loadings and the wording of the items. Item 15 was kept in the factor analysis because this item showed a clear factor loading. As a result, principal axis factoring with a varimax solution yielded six factors with eigenvalues greater than 1.0, accounting for 61.59% of the total variance. A display of the inferential statistics of factor analysis is presented in Table 4.

As shown in Table 4, four items loaded on Factor 1, which accounted for 29.39% of the variance. After reading the individual items scrupulously, I found that these items either repeated or further asked for confirmation of information already received or produced. Factor 1, therefore, was named *repeating/confirming information strategies.* Factor 2 was represented by Items 23, 25, 26, and 27. These items especially dealt with strategies that were employed when test takers engaged in writing tasks. This factor was, therefore, labeled *writing strategies*, and it explained 9.09% of the total variance.

Table 4. Pattern Matrix for Cognitive Strategy Use

Items	F1	F2	F3	F4	F5	F6
Q1						.748
Q2						.548
Q3	.512					
Q4	.564					
Q5					.590	
Q6				.419		
Q7				.455		
Q8				.502		
Q9				.524		
Q10				.533		
Q11					.516	
Q13	.667					
Q14						.462
Q15			.526			
Q16	.642					
Q18					.532	
Q19			.670			
Q21				.514		
Q22			.664			
Q23		.490				
Q24				.545		
Q25		.568				
Q26		.600				
Q27		.628				

Principal Axis Factoring with Varimax rotation and Kaiser Normalization, converged in eight iterations.

Factor 3, accounting for 7.03% of the total variance, measured to what extent test takers improved their English by actual practicing. It was labeled *practicing strategies* as originally designed. Factor 4, explaining 6.49% of the variance, was represented by Items 6, 7, 8, 9, 10, 21, and 24. These six items can be defined as the strategies with which learners transform the unfamiliar into the familiar by generating their own connections among the phonetic, semantic, and syntactic information. Thus, Factor 4 was named *generating strategies*, which represents strategies used to make connections among different parts of information. Factor 5, labeled *applying rules* as originally designed, measured to what extent test takers applied rules to their language learning. This factor explained 4.9% of the total variance. Factor 6 measured strategies used to make connections from that which is already understood to that which is to be learned. Factor 6, accounting for 4.73% of the variance, was labeled *linking with prior knowledge* as hypothesized.

To summarize, based on the method of principal axis factoring with the 6-factor varimax solution, MELAB test takers' perceptions of cognitive strategy use primarily fell into six dimensions: *repeating/confirming information strategies*, *writing strategies*, *practicing strategies*, *generating strategies*, *applying rules strategies*, and *linking with prior knowledge strategies*.

Metacognitive Strategy Use

Exploratory factor analysis was performed with 16 items of metacognitive strategy use. Principal axis factoring with a quartimax solution was adopted because it maximized parsimony and interpretability. Factor loadings greater than 0.4 were accepted because this provided a meaningful interpretation. An examination of initial eigenvalues indicated that three factors had eigenvalues greater than 1.0. Items 31 and 38 were deleted because these items loaded on more than one factor. The final factor analysis extracted three factors with eigenvalues greater than 1.0, accounting for 61.99% of the total variance. Table 5 presents the pattern matrix of metacognitive strategy use.

Table 5. Pattern Matrix for Metacognitive Strategy Use

Item	F1	F2	F3
Q28			.804
Q29			.665
Q30			.541
Q32		.787	
Q33		.783	
Q34		.836	
Q35	.724		
Q36	.650		
Q37	.780		
Q39	.750		
Q40	.711		
Q41	.802		
Q42	.710		
Q43	.779		

Principal Component Analysis, Quartimax Rotation with Kaiser Normalization, converged in 5 iterations.

Factor 1 was represented by Items 35, 36, 37, 39, 40, 41, 42, and 43. Because these items are all concerned with evaluating the effectiveness of test takers' performance, Factor 1 was labeled *evaluating*. This factor accounted for 39.37% of the total variance. Factor 2 was named *monitoring* as originally designed because the items that represented Factor 2 measured how test takers monitored their own or another's performance of a task. Factor 2 explained 14.33% of the variance. Items 28, 29, and 30 represented Factor 3. These three items examined how test takers generated an overall plan of action before engaging in a task. Factor 3, thus, was labeled *assessing*, and explained 8.29% of the total variance.

In short, metacognitive strategy use had three underlying factors: *evaluating*, *monitoring*, and *assessing*.

Regression Analysis

Relationship between Strategy Use and MELAB Writing

Stepwise regression analysis was performed to examine whether these learner strategies had an effect on the MELAB writing scores. Tables 6 and 7 present the inferential statistics of regression analysis.

As can be seen, *repeating/confirming information*, *linking with prior knowledge*, *writing strategies*, and *generating strategies* had a significant effect on the prediction of the MELAB writing score. The linear regression model presented above is able to explain 21.4% of the total variance on the MELAB. Among these indicators, *repeating/confirming information* and *generating strategies* showed a negative impact on the MELAB writing score, whereas *linking with prior knowledge* and *writing strategies* showed a positive impact on the MELAB writing score. In descending order, *repeating/confirming information*, *linking with prior knowledge*, *writing strategies*, and *generating strategies* contributed significantly to the MELAB writing score.

Table 6. Model Summary for Writing

Model	R	R Square	Adjusted R Square
1	.275(a)	.076	.070
2	.398(b)	.158	.147
3	.429(c)	.184	.168
4	.462(d)	.214	.193

(a) predictors: (constant), repeating/confirming information; (b) predictors: (constant), repeating/confirming information, linking with prior knowledge; (c) predictors: (constant), repeating/confirming information, linking with prior knowledge, writing strategies; (d) predictors: (constant), repeating/confirming information, linking with prior knowledge, writing strategies, generating strategies.

Table 7. Regression Analysis for Variables Predicting Writing

	B	Beta	t	Sig.
(constant)	75.371		33.745	
Repeating/confirming information	−2.181	−.363	−4.108	.000
Linking with prior knowledge	2.060	.287	3.376	.001
Writing strategies	1.371	.211	2.462	.015
Generating strategies	−1.421	−.211	−2.406	.017

Relationship between Strategy Use and MELAB Listening

Tables 8 and 9 show the inferential statistics of multiple regression on the MELAB listening scores. As shown, the significant predictors of the MELAB listening score were *repeating/conforming information*, *linking with prior knowledge*, and *generating strategies*. The linear regression model accounts for 17.2% of the total variance on the MELAB listening score. Among these predictors, *repeating/confirming information* and *generating strategies* showed a negative impact on the MELAB listening score, whereas *linking with prior knowledge* showed a positive impact on the MELAB listening score. The significant contributors to the MELAB listening score, in descending order, were *repeating/confirming information*, *linking with prior knowledge*, and *generating strategies*.

Table 8. Model Summary for Listening

Model	R	R Square	Adjusted R Square
1	.233(a)	.054	.048
2	.376(b)	.141	.130
3	.415(c)	.172	.156

(a) predictors: (constant), repeating/confirming information; (b) predictors: (constant), repeating/confirming information, linking with prior knowledge; (c) predictors: (constant), repeating/confirming information, linking with prior knowledge, generating strategies.

Table 9. Regression Analysis for Variables Predicting Listening

	B	Beta	t	Sig.
(constant)	75.274		18.176	.000
Repeating/confirming information	−2.909	−.259	−2.965	.004
Linking with prior knowledge	4.991	.373	4.544	.000
Generating strategies	−2.689	−.214	−2.392	.018

Relationship between Strategy Use and MELAB GCVR

Stepwise regression analysis was also performed to examine whether these learner strategies had an effect on the MELAB GCVR scores. Tables 10 and 11 present a display of the regression analysis. In the tables it can be seen that *monitoring* and *linking with prior knowledge* had a significant, positive contribution to the prediction of the MELAB GCVR scores, whereas *repeating/confirming information* showed a significant, negative impact on the MELAB GCVR scores. The regression model is able to explain 12.5% of the total variance. The significant contributors to the MELAB GCVR scores, in descending order, were *monitoring*, *repeating/confirming information*, and *linking with prior knowledge*.

Table 10. Model Summary for GCVR

Model	R	R Square	Adjusted R Square
1	.216(a)	.047	.041
2	.296(b)	.088	.076
3	.353(c)	.125	.108

(a) predictors: (constant), monitoring; (b) predictors: (constant), monitoring, repeating/confirming information; (c) predictors: (constant), monitoring, repeating/confirming information, linking with prior knowledge.

Table 11. Regression Analysis for Variables Predicting GCVR

	B	Beta	t	Sig.
(Constant)	64.002		10.823	
Monitoring	2.227	.148	1.855	.066
Repeating/confirming information	−3.806	−.284	−3.484	.001
Linking with prior knowledge	3.520	.220	2.565	.011

Relationship between Strategy Use and MELAB Total Scores

In order to understand how strategy use predicts the MELAB total scores, stepwise multiple regression was performed with strategy use as independent variables and the MELAB total as the dependent variable. Tables 12 and 13 present the inferential statistics of the regression analysis.

Table 12. Model Summary for Total Scores

Model	R	R Square	Adjusted R Square
1	.257(a)	.066	.060
2	.405(b)	.164	.153
3	.435(c)	.189	.173
4	.457(d)	.209	.188

(a) predictors: (constant), repeating/confirming information; (b) predictors: (constant), repeating/confirming information, linking with prior knowledge; (c) predictors: (constant), repeating/confirming information, linking with prior knowledge, generating strategies; (d) predictors: (constant), repeating/confirming information, linking with prior knowledge, generating strategies, monitoring.

Table 13. Regression Analysis for Variables Predicting Total Scores

	B	Beta	t	Sig.
(constant)	70.345		18.135	
Repeating/confirming information	−2.513	−.276	−3.192	.002
Linking with prior knowledge	3.629	.334	3.945	.000
Generating strategies	−2.051	−.201	−2.291	.023
Monitoring	1.538	.150	1.976	.050

As indicated, *repeating/confirming information* and *generating strategies* made a significant, positive contribution to the prediction of the MELAB total scores whereas *linking with prior knowledge* and *monitoring* showed a significant, negative impact on MELAB total scores. The regression model accounts for 18.9% of the total variance. The significant contributors to the MELAB scores, in descending order, were, *repeating/confirming information*, *linking with prior knowledge*, *generating strategies*, and *monitoring*.

Summary and Discussion

The study examines the nature of learner strategies reported by MELAB test takers and how their reported strategy use had an effect on their MELAB performance in the ESL context. Using a 43-item strategy use questionnaire, it was found that cognitive strategy use had six underlying factors and metacognitive strategy use had three underlying factors. Specifically, MELAB test takers' perceptions of cognitive strategy use primarily fell into six dimensions: *repeating/confirming information strategies*, *writing strategies*, *practicing strategies*, *generating strategies*, *applying rules strategies*, and *linking with prior knowledge strategies*. MELAB test takers' perceptions of metacognitive strategy use had three dimensions: *evaluating*, *monitoring*, and *assessing*.

The exploratory factor analysis results in this study were partially consistent with what was originally hypothesized and Purpura's framework. *Practicing*, *applying rules*, *linking with prior knowledge*, and *monitoring* fit with the originally designed framework. *Writing strategies* consisted of the originally designed factor "analyzing" plus Item 25, and *assessing strategies* consisted of "assessing" plus Item 29. *Generating strategies* combined "associating," "transferring," and "inferencing," and *evaluating strategies* combined "self-evaluating" and "self-testing." Additionally, with this group of MELAB test takers, this study found a new construct: *repeating/confirming information*.

There are several reasons why this study extracted different constructs from those in Purpura (1999). First, because the study was conducted in an ESL context, this group of participants generally had great amounts of exposure to English. A majority of the participants might have had to comprehend and produce the language for survival reasons. As a result, their strategy use might be different from that of the participants in Purpura's study, which were mainly EFL learners. Second, due to the small number of participants, this study had difficulties distinguishing "associating" and "transferring" from "inferencing," and "self-evaluating" from "self-testing." A larger number of participants and more questionnaire items are needed for further analysis. Last, some items need to be designed and worded carefully. For example, Item 29 ("before I begin an English assignment, I make sure I have a dictionary or other resources") can be explained as test takers' *assessing strategy* because test takers learn English by assessing their available internal and external resources.

This study also addresses how cognitive and metacognitive strategy use affected MELAB scores. As for how strategy use relates to predicating MELAB writing scores, *repeating/confirming information* and *generating strategies* showed a significant, negative impact, whereas *linking with prior knowledge* and *writing strategies* showed a significant, positive impact. The regression model accounted for 21.4% of the MELAB writing score in total. Regarding predicting MELAB listening scores, *repeating/confirming information* and *generating strategies* showed a negative impact, whereas *linking with prior knowledge* showed a positive impact. The linear regression model explained 17.2% of the total variance.

Regarding predicting of MELAB GCVR scores, *monitoring* and *linking with prior knowledge* had a significant, positive contribution to the prediction, whereas *repeating/confirming information* showed a significant, negative impact. The regression model explained 12.5% of the MELAB GCVR. As for predicating MELAB total scores, *repeating/confirming information* and *generating strategies* had a significant, positive contribution, whereas *linking with prior knowledge* and *monitoring* showed a significant, negative impact. The regression model accounted for 18.9% of the MELAB total scores.

In summary, *repeating/confirming information* consistently had a significant, negative contribution, whereas *linking with prior knowledge* consistently showed a significant, positive effect. The results suggest that the more the test takers mechanically repeated information, the worse they performed; the more the test takers synthesized what was learned and applied it to practice, the better they performed. While *generating strategies* played a negative, significant role in the MELAB writing, listening, and total scores, it produced no significant impact on the GCVR. This might be because the better-performing test takers made fewer connections among the phonetic, semantic, and syntactic language input in the writing and listening sections than the low scorers, but they made the same effort as other test takers in the GCVR section because these multiple-choice tasks require literal information. It is understandable that *writing strategies* only had a significant, positive effect on the MELAB writing score, and not on the listening and GCVR sections. *Monitoring*, a strong positive predictor of the MELAB GCVR, was also a positive predictor of the MELAB total score. It indicates that the more the test takers observed the effectiveness of their own or others' performance, the better they scored in the GCVR and total. However, it is hard to interpret why *monitoring* only predicted the MELAB GCVR score, not writing or listening scores. *Appling rules*, *practicing*, *assessing*, and *evaluating* had no significant effect on any section of the MELAB. The test takers showed no distinctive difference in using these strategies.

This study concludes that not every type of strategy use enhances language performance. Some strategies have a significant, positive effect on language performance, some produce a significant, negative contribution on language performance, and others seem to have no effect. These results corroborate the results of other studies in this area. For example, Gu and Johnson (1996) found some positive and some negative predictors of vocabulary strategies on a language proficiency test. Using a survey questionnaire, Wen and Johnson (1997) concluded that vocabulary strategy, mother-tongue-avoidance strategy, and management strategy had positive effects on English achievement, form-focused strategy and meaning-focused strategy had little effect, and tolerating-ambiguity strategy had a negative effect. Therefore, strategy use can be seen as a set of complex behaviors, dependent on the nature of different tasks and contributing differently to language performance.

The study provides evidence of a linear relationship between strategy use and the MELAB; however, the effect of strategy use on language test performance was weak, explaining about 12.5% to 21.4% of the score variance. This result is consistent with results from some other studies. Park's study (1997) revealed that cognitive strategies and social strategies together contributed to 13% of TOEFL score variance. Phakiti (2003) also found a weak relationship between cognitive and metacognitive strategies to the reading test performance in his study (explaining about 15%−22% of the test score variance). In a Chinese EFL context, cognitive and metacognitive strategy use accounted for 8.6% of the College English Test Band 4 (Song, 2004). In this study, it is not difficult to explain why strategy use predicted a small proportion of the MELAB scores. Bachman (1990) proposed that the factors affecting performance on language tests are communicative language ability, the personal characteristics of test takers, and the characteristics of the test method or test tasks. Strategy use is only one part of the personal characteristics of test takers, and, therefore, would explain only a small proportion of the MELAB performance.

Limitations

Although this study revealed some interesting findings, these findings are certainly not conclusive and comprehensive in nature. There are several limitations that may affect internal and external validity of this study. First, data analyses were based on the assumption that cognitive and metacognitive strategies are two different dimensions. Although researchers have found empirical evidence that they are different constructs, the factor loading structures were not apparent when all cognitive and metacognitive strategy items were factor analyzed together in this study. A number of possible interactions among these strategies exist in the operational setting. Therefore, issues with regard to the nature of strategy use are limitations in this study that may affect internal validity. Also, the analytic procedure of regression analysis has its weakness because of the interrelatedness of cognitive and metacognitive strategy use. Another concern is the question of whether mental processes can be validly elicited by merely using a self-reported questionnaire. It is also difficult to include a comprehensive list of strategies used by test takers. Moreover, because this study focuses on test takers' cognitive characteristics, communication, social, and affective strategies are not discussed in the study. Other potentially influential variables, such as attitudes, anxiety, motivation, and effort, which have been considered to influence language performance, are also not included in this study. Further research is needed to obtain a more comprehensive picture of strategy use and its relationships with language performance.

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Appendix A

Dear friends: My name is Xiaomei Song. Today I invite you to do a survey about English strategy use. It will take you about 20 minutes to complete. Please indicate the degree to which you agree with each of the statements by circling the following scale. 5 indicates that the statement is true of you almost always and 0 indicates that the statement is very rarely true of you. Do not answer how you think you should be, or what other peoples do. There are no right or wrong answers to these statements.

Part One. Some information about you:

MELAB Testing ID:		Years of English studying:
Gender:	Age:	First Language:

Part Two. Cognitive Strategies for Language Learning

0	1	2	3	4	5
		<--------------------------------->			
Never	Rarely	Sometimes	Often	Usually	Always

When I am learning new material in English...

1. I try to connect what I am learning with what I already know. 0 1 2 3 4 5 6
2. I try to somehow organize the material in my mind. 0 1 2 3 4 5 6
3. I repeat words to make sure that I have understood them correctly. 0 1 2 3 4 5 6
4. I make written summaries of information that I hear or read in English. 0 1 2 3 4 5 6
5. I learn best when I am taught the rules. 0 1 2 3 4 5 6

I learn new words in English by...

6. relating the sound of the new word to the sound of a familiar word. 0 1 2 3 4 5 6
7. remembering where the new word was located on the page, or where I first saw or heard it. 0 1 2 3 4 5 6
8. thinking of words I know that sound like the new word. 0 1 2 3 4 5 6

I learn grammar in English by...

9. using the grammar of my own language to help me learn the rules. 0 1 2 3 4 5 6
10. comparing grammar rules in my own language with grammar rules in English. 0 1 2 3 4 5 6
11. memorizing the rules and applying them to new situations. 0 1 2 3 4 5 6

I try to improve my English by...

12. looking for words in my own language that are similar to words in English in spelling, pronunciation, or meaning. 0 1 2 3 4 5 6
13. asking other people to tell me if I have understood or said something correctly. 0 1 2 3 4 5 6
14. applying what I have learned to new situations. 0 1 2 3 4 5 6
15. looking for opportunities to speak English as much as possible. 0 1 2 3 4 5 6

I try to improve my oral communication in English by...

16. repeating sentences in English until I can say them easily. 0 1 2 3 4 5 6
17. repeating what I hear native speakers say. 0 1 2 3 4 5 6
18. using my knowledge of grammar rules to help me form new sentences. 0 1 2 3 4 5 6

19. watching TV or listening to the radio. 0 1 2 3 4 5 6

I try to improve my reading in English by...

20. summarizing new information to remember it. 0 1 2 3 4 5 6
21. trying to understand without looking up every new word. 0 1 2 3 4 5 6
22. reading English books, newspaper , and magazines. 0 1 2 3 4 5 6
23. looking for the ways that writers show relationships between ideas. 0 1 2 3 4 5 6
24. guessing the meaning of new words from context. 0 1 2 3 4 5 6

I try to improve my writing in English by...

25. showing my writing to another person. 0 1 2 3 4 5 6
26. analyzing how other writers organize their paragraphs. 0 1 2 3 4 5 6
27. analyzing the ways that other writers show relationships between ideas. 0 1 2 3 4 5 6

Part Three. Metacognitive Strategies for Language Learning

28. Before I talk to someone in English, I think about how much the person knows about what I'm going to say. 0 1 2 3 4 5 6
29. Before I begin an English assignment, I make sure I have a dictionary or other resources. 0 1 2 3 4 5 6
30. Before I begin an English test, I think about which parts of the test are the most important. 0 1 2 3 4 5 6
31. Before I begin an English test, I decide how important it is for me to get a good grade on the test. 0 1 2 3 4 5 6
32. When I listen to English, I recognize other people's grammar mistakes. 0 1 2 3 4 5 6
33. When I am speaking English, I know when I have pronounced something correctly or incorrectly. 0 1 2 3 4 5 6
34. When I speak English, I know when I make grammar mistakes. 0 1 2 3 4 5 6
35. When someone is speaking English, I try to concentrate on what the person is saying. 0 1 2 3 4 5 6
36. When someone does not understand my English, I try to understand what I said wrong. 0 1 2 3 4 5 6
37. When I have learned a new English grammar rule, I test myself to make sure I know how to use it. 0 1 2 3 4 5 6
38. When I have learned a new word or phrase in English, I test myself to make sure I have memorized it. 0 1 2 3 4 5 6
39. After I finish a conversation in English, I think about how I could say things better. 0 1 2 3 4 5 6
40. After I say something in English, I check whether the person I am talking to has really understood what I meant. 0 1 2 3 4 5 6
41. After I have taken a test in English, I think about how I can do better the next time. 0 1 2 3 4 5 6
42. I test my knowledge of new English words by using them in new situations. 0 1 2 3 4 5 6
43. I try to learn from the mistakes I make in English. 0 1 2 3 4 5 6

Thanks for your participation.

Appendix B

Item	N	Min	Max	Mean	SD	Skewness	Kurtosis
Q1	161	0	5	3.75	1.216	−.935	.445
Q2	161	0	5	3.76	1.083	−.820	.433
Q3	159	0	5	3.87	1.241	−.944	.057
Q4	160	0	5	2.78	1.401	−.287	−.787
Q5	160	0	5	3.75	1.293	−1.077	.531
Q6	160	0	5	3.06	1.390	−.596	−.241
Q7	161	0	5	3.22	1.400	−.589	−.423
Q8	159	0	5	3.36	1.255	−.525	−.214
Q9	160	0	5	2.53	1.663	−.147	−1.224
Q10	161	0	5	2.66	1.669	−.247	−1.191
Q11	161	0	5	3.55	1.245	−.797	.176
Q12	160	0	5	2.41	1.706	−.056	−1.354
Q13	161	0	5	3.02	1.410	−.397	−.614
Q14	158	0	5	3.84	1.046	−.883	.775
Q15	161	0	5	4.43	.850	−1.835	4.489
Q16	160	0	5	3.49	1.423	−.789	−.213
Q17	160	0	5	3.54	1.213	−.764	.269
Q18	161	0	5	3.79	1.169	−.886	.322
Q19	161	0	5	4.27	1.019	−1.685	2.963
Q20	161	0	5	3.12	1.247	−.461	−.198
Q21	160	0	5	3.39	1.239	−.767	.008
Q22	158	0	5	4.13	1.023	−1.175	1.304
Q23	159	0	5	3.72	1.096	−.774	.485
Q24	160	0	5	3.27	1.316	−.660	−.079
Q25	161	0	5	3.01	1.487	−.241	−1.037
Q26	159	0	5	3.65	1.120	−.855	.331
Q27	160	0	5	3.53	1.110	−.583	−.137
Q28	161	0	5	2.62	1.491	−.289	−.876
Q29	161	0	5	2.99	1.553	−.506	−.717
Q30	160	0	5	3.52	1.441	−1.016	.295
Q31	161	0	5	4.14	1.212	−1.887	3.578
Q32	159	0	5	3.44	1.230	−.707	.315
Q33	161	1	5	3.93	.997	−.845	.376
Q34	161	1	5	3.81	1.081	−.720	−.073
Q35	158	0	5	4.23	1.157	−1.742	2.611
Q36	161	0	5	3.81	1.175	−.835	.250
Q37	161	0	5	3.65	1.242	−.884	.443
Q38	159	0	5	3.47	1.262	−.783	.117
Q39	160	0	5	3.86	1.184	−1.111	1.065
Q40	161	0	5	3.83	1.233	−1.325	1.739
Q41	161	0	5	4.11	1.090	−1.604	2.909
Q42	161	0	5	3.88	1.133	−1.239	1.896
Q43	161	0	5	4.26	.984	−1.580	2.848
Writing	159	65	95	76.42	6.265	1.038	1.021
Listening	159	49	100	76.38	11.709	−.537	−.343
GCVR	159	36	100	73.14	13.985	−.210	−.513
Total	159	53	97	75.29	9.499	.126	−.535