

Use of Learning Strategies by EFL Learners: A Study of How It Relates to Language Proficiency and Learner Autonomy

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Abstract

This study aims to explore the association between the field of study, gender, language proficiency, and the use of learning strategies in an EFL educational setting. It further intends to gain more insight into the link between learner autonomy and strategy use. The sample included university freshmen who were ability-grouped into three different levels for English classes. The findings indicated that the effects of major, gender, and proficiency on overall strategy use were all significant. As strategy use had a moderate level of association with both listening and reading proficiencies, it was found to have a high level of correlation with learner autonomy. The strategies identified to have the strongest correlations with autonomy in language learning were those in the cognitive and metacognitive categories. Among the subcomponents of learner autonomy, strategy use had the highest correlation with learner degree of involvement in learning activities. Results of the study further established that EFL student use of learning strategies can serve as a good predictor of learner autonomy.

Keywords: language learning strategy, autonomy, language proficiency

1. Introduction

In Taiwan, high school students typically learn English in an examination-oriented environment, and are therefore prone to feeling stressed by the enormous amount of tests (Chung, 2002; Peng, 2011). Traditionally the language learning environment is teacher-centered, rather than learner-centered. The grammar translation method is frequently adopted by teachers, tending to lead to unbalance development of the four skills (Huang, 2014; Yuan, 2009). Students may easily grasp the meaning of a string of written words in English, but cannot easily determine the meaning of the English words when they are spoken (Lin, 2006). According to Yuan (2009), teachers expend more time and effort teaching reading and writing than they do teaching speaking and listening in the EFL classroom. Moreover, Chung (2002) indicated that although students have numerous opportunities to use learning strategies to enhance their English ability, they tend to encounter difficulties, such as unfamiliarity with the learning strategies, incorrect beliefs about the requirement of language competence, an unsupported learning environment, and heavy coursework loads from school. However, because advanced technology has enabled students to access considerable online resources and learning materials more readily, the learner's role in the language learning process is changing. In addition, more attention on enhancing student listening and communicative competence has been demanded.

In addition to the changes in the environment, because of increasing attention paid to learner characteristics, the teacher-centered model in English teaching is shifting to a learner-centered model (Chen & Jonas, 2009; Hashim & Sahil, 2010; Kamalizad & Jalilzadeh, 2011; Nyikos & Oxford, 1993). Learning a foreign language can be a complex and lifelong process. Therefore, language learners should be encouraged to actively participate in their own learning processes and utilize language learning strategies, which are "the tool and the shortcut," to become independent and successful learners (Su, 2005, p. 45). Considerable studies have focused on learning strategy use in an endeavor to identify the strategies employed by more proficient language learners so that they can be taught to less proficient learners (Chamot & El-Dinary, 1999; Cohen, 2003; Rubin, 1975, 1981). The primary goal of the present study is to enhance the understanding of the relationship between language learning strategy use, proficiency, and autonomy in the EFL classroom.

2. Review of Related Literature

2.1 Language Learning Strategies

Oxford (1990) defined learning strategies as “specific actions taken by the learner to make learning easier, faster, more enjoyable, more self-directed, more effective, and more transferrable to new situations” (p. 8); they are conscious measures taken by learners to improve their performance (Cohen, 2002, 2003; Grainger, 2005; Griffiths, 2003; Hsiao & Oxford, 2002; Oxford, 1990, 2003). As many researchers have noted, one of the important features of language learning strategies is that they are teachable (Berger & Karabenick, 2010; Chamot, 2005; Chamot, Barnhardt, El-Dinary, & Robbins, 1996; Dreyer & Oxford, 1996; Hsiao & Oxford, 2002; Lai, 2009; Oxford, 1990, 2003; Oxford & Nyikos, 1989; Rubin, 1987; Yang, 1998). There has been a varying degree of consensus among researchers to support classroom instruction of learning strategies (Chamot, 1998, 2004; Hsiao & Oxford, 2002; Murray, 2010; Nyikos & Oxford, 1993; O’malley, Chamot, Stewner-Manzanares, Russo, & Küpper, 1985; Oxford, 1990; Park, 1997; Peacock & Ho, 2003; Su, 2005).

As learning strategies were gaining increasing attention, Oxford (1990) developed one of the most extensively adopted instruments throughout the world, Strategy Inventory for Language Learning (SILL), to measure ESL/EFL learner strategy use. According to Oxford, language strategies can be classified into two major domains, namely direct and indirect strategies. While direct strategies include memory, cognitive, and compensation strategies, indirect strategies are composed of metacognitive, affective, and social strategies. In contrast with direct strategies, which “require mental processing of the language” (p. 37), indirect strategies “provide indirect support for language learning through focusing planning, evaluating, seeking opportunities, controlling anxiety, increasing cooperation and empathy, and other means” (p. 151).

2.2 Strategy Use and Other Learner Variables

The frequency of strategy use has been examined by a considerable number of studies to assess its association with many other learner variables, e.g., gender (Green & Oxford, 1995; MacIntyre & Noels, 1996; Oxford & Nyikos, 1989; Oxford, Park-Oh, Ito, & Sumrall, 1993; Sheu, 2009), motivation (Lan & Oxford, 2003; MacIntyre & Noels, 1996; Oxford & Nyikos, 1989; Wharton, 2000), beliefs about language learning (Yang, 1992, 1999; Yin, 2008), self-perceived proficiency (Liu, 2013; Oxford & Nyikos, 1989; Su, 2005) and academic self-concept (Liu & Chang, 2013).

Since early research in the 1970s attempted to identify the characteristics or learning strategies of “good language learners” (Rubin, 1975, p. 41), it is not surprising that a great deal of research in this area has focused on the relation between strategy use and language proficiency. Although there are inconsistencies in the results about the most frequently used strategies by learners at different proficiency levels, the positive association between the two variables has usually been established in previous studies conducted in Hong Kong (Bremner, 1998; Peacock & Ho, 2003), Taiwan (Lai, 2009; Sheu, 2009; Su, 2005; Wu, 2008), Singapore (Wharton, 2000), Korea (Park, 1997), Puerto Rico (Green & Oxford, 1995), South Africa (Dreyer & Oxford, 1996), and New Zealand (Griffiths, 2003). For example, a positive correlation between strategy use and learner proficiency was consistently found by Park (1997), Griffiths (2003), and Su (2005).

Lee and Oxford (2008) examined strategy use among Korean EFL students and how it may be affected by factors such as gender, major, age, considered importance of English, strategy awareness, and self-rated proficiency. Their findings suggested that (1) females students, (2) students with a major in humanities, (3) older students, (4) students who considered English to be important, (5) students who were aware of learning strategies, and (6) students who had a higher evaluation of their own proficiency tended to have better strategy use than the others. Among these factors, strategy awareness was determined to be the best predictive variable of strategy use, followed by self-perceived proficiency.

Some research studies conducted in the Taiwanese (Lai, 2009; Liu & Chang, 2013; Sheu, 2009; Wu, 2008) and Hong Kong context (Bremner, 1998; Peacock & Ho, 2003) suggested that compensation was the most frequently used type of strategy. To better comprehend this important learner variable, Lan and Oxford (2003) examined the strategy use of EFL elementary school children in Taiwan. Their findings revealed that compensation and affective strategies were the two most frequently used strategies by these young EFL learners. Overall, strategy use was found to be significantly related to gender, language proficiency, and degree of liking English, which served as an indicator of learner motivation and appeared to have the strongest impact on strategy use.

2.3 Learner Autonomy

Encouraging the idea of autonomous learning has become a central concern in the literature pertaining to language learning and teaching over the last three decades (Benson, 2006). One reason for the promotion of

learner autonomy and independence is a shift from teacher-centered education towards learner-centered education (Benson, 2001; Ciekanski, 2007; Little, 2007). Owing to this change in learning environment and curriculum, a growing number of researchers and educators have begun to emphasize the role of language learners as “active agents in their own learning” (Benson & Voller, 1997, p. 7). Little (2007) even suggested that the core of autonomy is “the ability to take charge of one’s own learning” (p. 15). Autonomous learners are therefore believed to be more motivated and more effective learners (Dickinson, 1995; Little, 1989, 2007; Ushioda, 1996).

Although there is a widespread notion that autonomous learners should be freed from the control of others and be responsible for decisions regarding all aspects of learning, researchers such as Nunan (1997), Benson (2006), and Scharle and Szabó (2000) suggested that it is unlikely that each language learner develops autonomy to the same degree. As a matter of fact, there are different degrees of autonomy. For instance, Nunan (1997) divided the process of implementing learner autonomy into five levels: awareness, involvement, intervention, creation, and transcendence. Starting from the awareness level, where learners are able to “identify their own preferred learning styles/strategies,” learners at the final level can “make links between the content of classroom learning and the world beyond” (p. 195). Benson (2001) defined autonomy as the ability to take charge of one’s own learning at three levels of control which are interdependent: learning content, cognitive processes, and learning management. Littlewood (1996) agreed that there are different degrees of autonomy within three different domains: communication, learning, and personal life. He further made a distinction between two forms of autonomy, “proactive” and “reactive” (Littlewood, 1999, p. 75). Proactive autonomy is the form of autonomy “usually intended” by researchers and educators in the West, which “regulates the direction of activity as well as the activity itself.” Reactive autonomy “regulates the activity once the direction has been set,” and therefore can be considered as the “preliminary” level of autonomy (ibid.).

Dörnyei & Csizér (1998) collected data from 200 English teachers in Hungary to examine the importance and frequency of use of 51 motivational strategies and discovered that the promotion of learner autonomy was among the top ten. The association between motivation and autonomy has been the focus of many other researchers as well (Dickinson, 1995; Ryan & Deci, 2000a, 2000b; Spratt, Humphreys, & Chan, 2002; Ushioda, 1996; Zhou, Ma, & Deci, 2009).

According to one of the most influential motivation theories, the self-determination theory, the basic needs for feelings of relatedness, competence, and a sense of autonomy have to be supported before intrinsic motivation can be enhanced (Ryan & Deci, 2000a, 2000b). In Ushioda’s (1996) view, motivation is an essential precondition for learner autonomy.

Yang (1998) designed a study to help students develop autonomy by integrating strategy training. Subjects were university students asked to set their own proficiency goals and made their own study plans. During the study, the researcher also modeled some useful learning strategies. The results showed that students tended to set unrealistic goals at the beginning and hold some erroneous beliefs about strategy use.

Teachers play a vital role in supporting and encouraging their students to use strategies effectively and to enhance learner autonomy. As was noted by Benson (2001), learner autonomy should be more related to the concept of “interdependence” rather than “independence” (p. 14). Some empirical research findings indicated that the achievement of autonomy needs support from teachers and other learners (Chan, 2003; Chang, 2007; Jing, 2006; Üstünlüoğlu, 2009).

2.4 Research Questions

Compared with the large amount of work that has been carried out concerning the use of learning strategies in the language classroom, there is still a need for more insight into the relation between strategy use, language proficiency, and learner autonomy. After all, there is not much empirical research on learner autonomy, and research on the link between autonomy and other learner variables is still rather limited as well. Therefore, this study intends to ascertain the answers to the following research questions:

1. Are there any significant differences between majors in terms of strategy use?
2. Are there any significant differences by gender and language proficiency in terms of strategy use?
3. To what extent does strategy use relate to learner listening proficiency, reading proficiency, and autonomy?
4. What are the greatest differences in learner autonomy between students with the lowest and highest levels of strategy use frequency?
5. Is it possible to use strategy use as a predictor for learner autonomy?

3. Method

3.1 Participants

The participants of the present study included 150 university freshmen taking English classes in central Taiwan. Before school started, they were administered the intermediate level listening and reading tests of the General English Proficiency Test (GEPT) and then placed in different proficiency levels for English instruction. Two classes of students from each ability level, basic, intermediate, and advanced, participated in the study, making a total of six classes. Table 1 summarizes the average total proficiency scores of the subjects in each ability group. Table 2 and 3 list the numbers and percentages of the participants broken down by sex and major, respectively. The instruments used to measure student strategy use and autonomy were administered approximately three to four weeks after the students began their first academic year.

Table 1. GEPT proficiency test results of students at each ability level

Proficiency Group	Listening		Reading		Total	
	Mean	SD	Mean	SD	Mean	SD
Basic	28.67	7.64	26.44	7.15	55.12	11.99
Intermediate	43.57	11.17	39.56	9.74	82.94	11.89
Advanced	75.17	14.30	73.92	12.07	149.09	19.80

Note. Basic = Low-Proficiency Level; Intermediate = Intermediate-Proficiency Level; Advanced = High-Proficiency Level.

Table 2. Number and percentage of male and female participants in each ability level

Gender	Basic	Intermediate	Advanced	Total (%)
Male	25	31	15	71 (47.3%)
Female	18	23	38	79 (52.7%)
Total	43	54	53	150

Table 3. Number and percentage of participants from different disciplines

Major	Basic	Intermediate	Advanced	Total (%)
Engineering	2	17	0	19 (13%)
Management	0	0	23	23 (15%)
Foreign Languages	3	11	0	14 (9%)
Design and Arts	16	0	26	42 (28%)
Biotechnology	16	19	0	35 (23%)

Note. The percentages do not add up to 100% because there are missing values.

3.2 Instrument

The instrument used in the present study was adapted from Oxford's (1990) 50-item version of SILL. It was slightly modified and translated into Chinese to better measure the strategy use of university students in the Taiwanese EFL context. The SILL is a self-scoring survey for measuring learning strategy use in six categories: memory strategies for remembering and retrieving information more effectively (items 1-9), cognitive strategies for mental processing and practicing of information (items 10-23), compensation strategies for making up missing knowledge (items 24-29), metacognitive strategies for planning, organizing, and evaluating one's learning (items 30-38), affective strategies for coping with one's emotions and attitudes (items 39-44), and social strategies for asking questions and cooperating with others (items 45-50). All the items have a Likert-scale format, asking participants to report on a scale of one to five how frequently they use each strategy (1 = never; 2 = seldom; 3 = sometimes; 4 = usually; 5 = always). The reliability of this instrument has been extensively verified in a considerable number of studies (Green & Oxford, 1995; Griffiths, 2003; Oxford & Burry-Stock, 1995; Peacock & Ho, 2003). According to Griffiths (2003), the SILL has a reliability coefficient ranging from 0.89 to 0.98 in many major studies. The internal-consistency reliability index obtained for the scale used in this study was .94.

Learner autonomy was measured with the 43-item questionnaire used by Liu (2012) which was adapted from the instruments developed by Chan, Spratt, and Humphreys (2002) and Üstünlüoğlu (2009) and was translated into a Chinese version for use in the Taiwanese EFL setting. The scale can be divided into three sections, assessing

students' perceptions of their own responsibilities (items 1 to 12), learning activities (items 13 to 33), and self-evaluation of their decision-making abilities (items 34 to 43). The Cronbach's alpha coefficients for the complete scale and three subscales were: .89, .86, .84, and .88, respectively.

The GEPT employed to assess student English proficiency was developed by the Language Training & Testing Center in Taiwan. It is a widely acknowledged English proficiency test that has been used in many universities in Taiwan as a criterion for either placement or graduation. The subjects in this study were administered the GEPT listening and reading tests as soon as they entered the school.

3.3 Data Analysis

To investigate the first and second research questions concerning the effects of major, gender, and language proficiency on strategy use, multivariate analysis of variance (MANOVA) was performed on the data twice. The first time major served as the independent variable and the second time both gender and proficiency were entered as the independent variables. Next, Pearson correlation coefficients between all the variables related to strategy use, language proficiency, and autonomy were calculated and analyzed. To contribute to a better understanding of the relation between strategy use and learner autonomy, the participants were further divided into three groups based on their strategy use frequency: low-use, medium-use, and high-use. The perceptions of responsibility, engagement in learning activities, and evaluation of decision-making abilities of each group were then examined. Finally, multiple regression analysis was used to analyze the data and determine whether strategy use is a good predictor of learner autonomy.

4. Results and Discussion

4.1 Strategy Use and Field of Majors

Before any statistical analysis was undertaken, students who had science-related majors (such as majors relating to engineering, biotechnology, and bioresources) were divided into one group, while those who had social science majors (including majors relating to management, foreign languages, and design and arts) were divided into another group. Table 4 depicts the means and standard deviations of the students' strategy use scores classified according to the two fields of majors and sex groups. To ascertain the answers to the first research question concerning the effect of major on strategy use, a one-way MANOVA was conducted on the strategy use scores, using major as the independent variable. The results suggested that all of the differences between the students in the two major groups were highly significant (Table 5). Students who majored in the social sciences had significantly higher strategy use frequency in all six categories than did their counterparts majoring in the sciences. This finding differed only slightly from that of Sheu (2009), who concluded that the only insignificant major difference was in the compensation category. Moreover, the current results indicated that both major groups had a similar propensity for the types of strategies used. Among students studying social sciences, compensation strategies were the most frequently used, followed by cognitive and metacognitive strategies. Similarly, among students studying sciences, compensation strategies were the most often used, followed by metacognitive and cognitive strategies. The finding that compensation strategies, used to compensate for missing knowledge, were most often used supported the findings of previous studies by Liu and Chang (2013), Sheu (2009), and Wu (2008). Irrespective of major, social strategies were the least used.

Table 4. Means and standard deviations of strategy use scores by students of different majors and gender

Strategy Use	Science		Social Science		Males		Females	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Memory	2.46	.65	2.84	.61	2.47	.65	2.81	.59
Cognitive	2.56	.59	3.01	.59	2.58	.60	2.99	.59
Compensation	2.73	.74	3.03	.54	2.72	.73	3.02	.56
Metacognitive	2.60	.68	3.01	.68	2.62	.70	2.98	.69
Affective	2.44	.64	2.90	.63	2.52	.69	2.82	.62
Social	2.30	.73	2.70	.68	2.35	.73	2.67	.72
Overall	2.52	.57	2.93	.55	2.55	.59	2.90	.55

Note. Overall = Overall Strategy Use.

The result indicated that the strategy use frequency between the two groups of learners significantly differed, a finding that was not surprising because foreign language classes tend to interest students with social science majors more than they interest students with science majors. In addition, social science majors may feel required

to use and practice the target language in preparation for their future jobs. Thus, they are more willing to use various learning strategies to improve their language performance.

Table 5. MANOVA results for differences in strategy use between science and social science majors

Dependent Variable	Type III Sum of Squares	df	Mean Squares	<i>F</i>	Sig.
Memory	4.74	1	4.74	12.16	.001**
Cognitive	6.64	1	6.64	18.94	.000**
Compensation	2.83	1	2.83	7.14	.008**
Metacognitive	5.15	1	5.15	11.06	.001**
Affective	6.93	1	6.93	17.47	.000**
Social	5.35	1	5.35	10.93	.001**
Overall	5.37	1	5.37	17.18	.000**

** $p < .01$.

4.2 Strategy Use, Gender, and Proficiency Level

The means and standard deviations for the strategy use scores computed for each proficiency level are presented in Table 6. The findings of a two-way MANOVA, with both gender and proficiency level as the independent variables, showed that both variables had significant effects on overall strategy use, while the interaction effects between these two were non-significant (see Table 7). The insignificance of the interaction effects between the two variables supported the similar findings of Green and Oxford (1995).

Table 6. Means and standard deviations of strategy use scores by students at different proficiency levels

Autonomy Subscale	Basic		Intermediate		Advanced	
	Mean	SD	Mean	SD	Mean	SD
Memory	2.44	.77	2.55	.62	2.92	.43
Cognitive	2.49	.65	2.70	.65	3.15	.39
Compensation	2.67	.73	2.81	.76	3.11	.37
Metacognitive	2.50	.77	2.72	.76	3.15	.44
Affective	2.43	.76	2.61	.68	2.95	.46
Social	2.16	.80	2.45	.78	2.88	.44
Overall	2.46	.66	2.65	.62	3.05	.32

Table 7. MANOVA results for learning autonomy by gender and proficiency

Source/Dependent Variable	Type III Sum of Squares	df	Mean Squares	<i>F</i>	Sig.	Post Hoc Test Results
Gender						
Memory	147.82	1	147.82	5.04	.026*	
Cognitive	536.47	1	536.47	8.88	.003**	
Compensation	58.22	1	58.22	4.03	.046*	
Metacognitive	136.50	1	136.50	3.87	.051	
Affective	57.22	1	57.22	3.95	.049*	
Social	40.86	1	40.86	2.42	.122	
Overall	4704.50	1	4704.50	6.53	.012*	
Proficiency						
Memory	370.78	2	185.39	6.32	.002**	L3>L1, L3>L2
Cognitive	1558.49	2	779.24	12.90	.000**	L3>L1, L3>L2
Compensation	125.62	2	62.81	4.35	.015*	L3>L1
Metacognitive	689.48	2	344.74	9.77	.000**	L3>L1, L3>L2
Affective	166.58	2	83.29	5.74	.004**	L3>L1, L3>L2
Social	370.09	2	185.04	10.98	.000**	L3>L1, L3>L2
Overall	16421.13	2	8210.56	11.40	.000**	

Gender * Proficiency					
Memory	71.34	2	35.67	1.22	.300
Cognitive	58.00	2	29.00	0.48	.620
Compensation	23.52	2	11.76	0.82	.445
Metacognitive	71.77	2	35.88	1.02	.364
Affective	16.74	2	8.37	0.58	.563
Social	15.25	2	7.63	0.45	.637
Overall	971.23	2	485.61	0.67	.511

* $p < .05$, ** $p < .01$.

Note. L1 = Low-Proficiency Level; L2 = Intermediate-Proficiency Level; L3 = High-Proficiency Level.

It should be noted that although females scored higher than males in all six strategy categories, the gender differences in the use of metacognitive and social strategies were not statistically significant. While metacognitive strategies were one of three most used types of strategies by both males and females, social strategies were the least used type of strategies by both genders. The current findings were generally consistent with those of many prior studies that determined females had greater strategy use than males (Green & Oxford, 1995; Lan & Oxford, 2003; Oxford & Nyikos, 1989; Oxford, Nyikos, & Ehrman, 1988; Sheu, 2009). However, there were also inconsistencies. For example, Green and Oxford (1995) and Peacock and Ho (2003) reported significant gender differences in the use of metacognitive and social categories. In contrast, researchers such as Griffiths (2003), Lee and Oxford (2008), Nisbet, Tindall, and Arroyo (2005), and Wharton (2000) reported a lack of significant gender differences.

As to the significant effects of proficiency on strategy use, the Scheffé follow-up test results suggested that high-proficiency students significantly had greater strategy use compared to their low-proficiency counterparts in all six categories (see Table 7). Differences in strategy use between high- and average-proficiency learners were also significant, except in the compensation category.

Regardless of the learners' proficiency levels, social strategies were the least used. Consistent with previous findings by Lai (2009), Mochizuki (1999), and Wu (2008), cognitive and metacognitive strategies were the most preferred types of strategies used by the more proficient EFL language learners. For learners in both the low and average levels, their first choice of strategy type was compensation. This latter discovery only partially agreed with Wu's (2008) findings, which indicated that compensation strategies were the most often used by both higher- and lower-level students. It should be noted that the finding that proficiency level had significant effects on all six categories of strategy use supported the findings of Lai (2009). However, inconsistencies also existed because when Green and Oxford (1995) and Bremner (1998) reported a significant proficiency level effect on strategy use, the former found significant differences in four out of the six categories while the latter only found significant differences in three.

Although there were noteworthy differences in strategy use by major, gender, and proficiency level, almost all of the means for overall strategy use for the participants in each major, gender, or proficiency group were between 2.5 and 3.4, the medium-use range defined by Oxford (1990). The only exception was the mean for low-proficiency learners (2.46), which was slightly below 2.5.

4.3 Correlations between Strategy Use, Proficiency, and Autonomy

To examine the correlations between strategy use, language proficiency, and learner autonomy, a Pearson product-moment correlation matrix was calculated for all the related variables (see Table 8). The findings established that the correlation coefficients between all of the studied variables were positive and highly significant. While overall strategy use was found to have a high correlation with autonomy (.770), it was only moderately correlated with language proficiency (.435). More specifically, in terms of the association between student strategy use and language proficiency, strategy use had a slightly higher correlation with reading proficiency (.416) than with listening proficiency (.398), although both correlations fell in a moderate-strength range. Among all six categories, cognitive strategies were found to have the highest correlation with both reading and listening proficiencies (.417 and .451, respectively), followed by social and metacognitive strategies. Compensation strategies were found to have the lowest correlation with total language proficiency (.324). Overall, the top three sets of strategies that were found to have the strongest correlation with learners' total English proficiency scores included cognitive, social, and metacognitive strategies.

As to the link between strategy use and learner autonomy, among the three subcomponents of autonomy, overall strategy use had the highest correlation with frequency of engaging in learning activities (.727), followed by

perception of decision-making ability (.676). Students' perceptions of their own responsibilities appeared to have the least association with strategy use (.439). Categories of strategies that had the strongest relationship with overall autonomy scores included cognitive strategies (.733) and metacognitive strategies (.730), followed by social, memory, affective, and finally, compensation strategies. These findings seem to agree with Little's (2007) interpretation that both learner reflection and learner involvement are essential for developing autonomy in language learning. According to Little, learner reflection requires learners to think critically when they plan, monitor, and self-evaluate their own learning. The strong relationships between autonomy and the use of strategies in the cognitive and metacognitive categories appeared to demonstrate the importance of learner reflection in the development of autonomy.

Table 8. Pearson correlations between listening proficiency, reading proficiency, learning autonomy, and use of learning strategies

Strategy category	Autonomy				English Proficiency		
	Responsibility	Activities	Ability	Overall	Listening	Reading	Total
Memory	.403**	.614**	.583**	.665**	.278**	.352**	.335**
Cognitive	.393**	.724**	.619**	.733**	.451**	.417**	.463**
Compensation	.375**	.543**	.498**	.590**	.311**	.291**	.324**
Metacognitive	.436**	.673**	.647**	.730**	.339**	.376**	.381**
Affective	.351**	.568**	.589**	.624**	.276**	.345**	.331**
Social	.354**	.665**	.633**	.692**	.391**	.387**	.416**
Overall	.439**	.727**	.676**	.770**	.398**	.416**	.435**

** $p < .01$.

Note. Overall = Overall Strategy Use; Responsibility = Perceptions of Responsibility; Activities = Engagement of Learning Activities; Ability = Self-Evaluation of Decision-Making Abilities; Overall1 = Overall Autonomy.

Similarly, the strong relation between strategy use and engagement in learning activities can be explained by Little's (2007) conceptualization of learner autonomy. To develop a higher level of autonomy, learners have to take more initiative in their own learning. It is understandable that students who are more willing to take action to enhance their learning effectiveness, i.e., those who have greater strategy use, are also more willing to take the initiative to get involved in language learning activities.

4.4 Differences in Autonomy between the Low- and High-Use Strategy Groups

To further explore the link between the use of learning strategies and autonomy, students with overall strategy use scores at or below the 25th percentile of the full sample's score distribution were categorized into the low-use group, while those scoring at or above the 75th percentile were assigned to the high-use group. Differences in learner autonomy between these two groups of students were then examined. Out of the 150 participants, 38 students were in the low-use group (with scores ranging from 50 to 120) and 38 were in the high-use group (with scores ranging from 152 to 250). The descriptive statistics of the overall autonomy scores from these two groups are reported in Table 9.

Table 9. Means and standard deviations of autonomy scores for participants of varying ranges of strategy use frequency

Strategy Use	Low-Use		High-Use	
	Mean	SD	Mean	SD
Responsibility	39.79	9.40	48.24	5.63
Activities	40.87	7.95	61.21	10.24
Extracurricular	30.47	7.08	45.79	8.29
In-Class	10.39	2.84	15.42	3.41
Ability	23.97	6.01	35.53	6.25
Overall	104.63	16.57	144.97	17.66

It should be pointed out that a one-way MANOVA was conducted on all 43 autonomy item scores for these two groups and significant differences were found for all items. The top three items with the greatest mean differences in each dimension of the autonomy scale are presented in Table 10, and percentages of responses to the items are reported in Table 11. As the results show, among the three autonomy components, there tended to

be greater discrepancies between the low- and high-use groups in terms of perception of decision-making abilities and involvement in learning activities. For example, in response to questions about decision-making abilities regarding choosing learning materials outside the classroom (item 39), 60.5 of the students in the low-use strategy group selected 'very poor' and 'poor,' while only 2.6% of the students in the high-use strategy group answered in the negative direction. When asked about ability to identify one's own weaknesses in English, only 10.5% of the low-use group students responded with 'good' or 'very good,' whereas 60.5% of their counterparts responded in the positive direction.

As to the other component of autonomy, involvement in language learning activities, over two thirds of the students in the low-use level responded to the items about the following activities in the negative direction: (1) reading books or magazines in English (item 17, 84.2%), (3) talking to foreigners in English (item 22, 94.7%), (4) discussing learning difficulties with classmates (item 33, 68.4%), and (5) taking opportunities to speak in English (item 32, 81.6%). There was a drastic drop in the negative percentage of the high-use group that responded '1' or '2' to these items. However, items such as 17, 22, and 32 were responded to negatively by more than one third of the students in the high-use strategy group, which may be the result of limited exposure to the target language in the Taiwanese EFL environment (Lai, 2009). In general, students who used strategies more frequently appeared to be more autonomous learners than those with lower strategy use frequency in all of the following aspects: perception of responsibilities, engagement in learning activities, and decision-making abilities.

4.5 The Significance of Strategy Use as a Predictor of Autonomy

Finally, to ascertain whether strategy use can be a good predictor of learner autonomy, multiple regression analysis using the stepwise method was conducted and the results are presented in Table 12. The findings suggest that three strategy categories, namely cognitive, metacognitive, and memory, were able to significantly contribute to the prediction of learner autonomy. Nearly 60% of the variance in autonomy was explained by the regression model ($F = 69.79$, $p < .001$). Among the three variables, use of strategies in the cognitive category turned out to be the best predictor of learner autonomy, followed by use of strategies in the metacognitive category. Since cognitive strategies had the strongest relationship with autonomy, they alone can predict a very large amount (54%) of the variance in autonomy. Overall, strategy use did serve as a significant and powerful predictor of autonomy in foreign language learners.

Table 10. Autonomy items with the greatest mean differences between students in the lowest- and highest-levels of strategy use

Dimensions of Autonomy Scale Items	Ranking	No.	Mean of Low-Use Group	Mean of High-Use Group	Mean Difference	<i>F</i>	Sig.
Perception of Responsibilities	1	Q6	3.21	4.11	-.89	13.74	.000**
	1	Q11	2.79	3.68	-.89	16.92	.000**
	2	Q3	2.95	3.82	-.87	16.16	.000**
Extracurricular Activities	1	Q15	2.29	3.53	-1.24	31.04	.000**
	2	Q17	1.66	2.87	-1.21	33.83	.000**
	3	Q22	1.45	2.58	-1.13	44.28	.000**
	3	Q25	3.18	4.32	-1.13	18.77	.000**
In-Class Activities	1	Q33	2.11	3.39	-1.29	44.40	.000**
	2	Q30	2.97	4.03	-1.05	20.51	.000**
	3	Q32	1.84	2.87	-1.03	24.12	.000**
Self-Evaluation of Decision-Making Abilities	1	Q39	2.21	3.66	-1.44	62.84	.000**
	2	Q37	2.21	3.47	-1.26	40.21	.000**
	2	Q38	2.32	3.58	-1.26	45.35	.000**
	2	Q42	2.50	3.76	-1.26	32.81	.000**

** $p < .01$.

Table 11. Percentages of responses to autonomy items with the greatest mean differences between students in the lowest- and highest-levels of strategy use

Dimensions of Autonomy Scale Items	No.	Item Description	Low-Use Group			High-Use Group		
			1 or 2	3	4 or 5	1 or 2	3	4 or 5
Perception of Responsibilities	6	Deciding the objectives of the English course	26.3	36.8	36.8	5.3	10.5	84.2
	11	Evaluating the learning performance	28.9	55.3	15.8	5.3	36.8	57.9
	3	Stimulating interest in learning English	23.7	52.6	23.7	5.3	26.3	68.4
Extracurricular Activities	15	Noting down new words and their meanings	60.5	28.9	10.5	10.5	36.8	52.6
	17	Reading books or magazines in English	84.2	10.5	5.3	34.2	44.7	21.1
	22	Talking to foreigners in English	94.7	5.3	0.0	47.4	42.1	10.5
	25	Watching English movies	36.8	18.4	44.7	2.6	13.2	84.2
In-Class Activities	33	Discussing learning difficulties with classmates	68.4	26.3	5.3	15.8	34.2	50.0
	30	Taking notes while listening to the teacher	28.9	44.7	26.3	7.9	15.8	76.3
	32	Taking opportunities to speak in English	81.6	15.8	2.6	39.5	36.8	23.7
Self-Evaluation of Decision-Making Abilities	39	Choosing learning materials outside class	60.5	36.8	2.6	2.6	44.7	52.6
	37	Choosing learning objectives outside class	57.9	42.1	0.0	15.8	36.8	47.4
	38	Choosing learning materials in class	55.3	42.1	2.6	7.9	42.1	50.0
	42	Identifying weaknesses in English	44.7	44.7	10.5	13.2	26.3	60.5

Table 12. Results of multiple regression model for predicting learner autonomy

Variable	Regression Coefficient	Standard Error	Beta	<i>t</i>	<i>Sig.</i>
Cognitive	.69	.27	.30	2.57	.011*
Metacognitive	1.09	.33	.34	3.30	.001**
Memory	.65	.31	.19	2.14	.034*

Note. $R^2 = .768$; Adjusted $R^2 = .589$; $F(3, 146) = 69.79$; * $p < .05$; ** $p < .01$.

5. Conclusion and Implications

This study attempts to provide more insights into the relations between language proficiency, learner autonomy, and the use of learning strategies in an EFL context. The results establish that both language proficiency and learner autonomy played significant roles in the use of learning strategies. As the level of proficiency and autonomy increased, strategy use frequency also increased. The findings of the present study can be summarized as follows:

First and importantly, regardless of strategy category, strategy use frequency increased as the level of learner proficiency increased. Not only were the effects of proficiency level found to be significant, but the effects of major and gender on overall strategy use were also significant. Similar to many previous studies, this study found that students who had majors in the social science field (Sheu, 2009; Peacock & Ho, 2003), females (Lan & Oxford, 2003; Lee & Oxford, 2008; Peacock & Ho, 2003), and more successful learners (Green and Oxford, 1995; Qingquan, Chatupote, & Teo, 2008) appeared to have greater strategy use than their counterparts. The only insignificant gender differences were found to be in the metacognitive and social strategy categories.

Second, while overall strategy use had a moderate level of correlation with language proficiency, it was found to have a high level of correlation with learner autonomy. Of all the autonomy components, learners' strategy use had the highest association with their frequency of engaging in learning activities, followed by perceptions of their decision-making abilities. Strategy categories that had the strongest associations with overall autonomy

scores were cognitive and metacognitive categories.

Third, due to having the highest correlation with learner autonomy, use of cognitive strategies turned out to contribute the most to the prediction of learner autonomy, followed by use of metacognitive strategies. Cognitive strategies alone could predict 54% of the variance in autonomy. Overall, strategy use functioned as a significant and powerful predictor of autonomy in learning a foreign language.

Several important implications can be derived from the findings of the present study. First, although major, gender, and proficiency all had significant effects on overall strategy use, none of the EFL participants, including the humanities majors, females, and high-proficiency learners, had a strategy use in the high-use range, a standard defined by Oxford (1990). Since one important feature of language learning strategies is that they are teachable (Berger & Karabenick, 2010; Chamot, 2005; Hsiao & Oxford, 2002), there is still much room for improvement by teachers to provide the necessary instruction that will increase awareness about learning strategies and encourage strategy use among language learners. As cognitive and metacognitive strategies were used most often by more successful students and had the strongest association with autonomy, teachers can start by making more effort to teach these strategies to less successful language learners.

Second, the responses of over 80% of the low-proficiency learners from the present study indicated that they never or rarely talked to foreigners in English or took opportunities to speak in English. More than one third of the students in the high proficiency group also had similar responses. The results show that students are learning a foreign language in an environment where there is very limited use of the target language in their daily lives. This should also explain the reason strategies in the social category were the least used by the participants, regardless of their proficiency. Thus, to make up for the constraints of the environment, instructors should provide students with more opportunities to practice strategies and assist them in getting involved in more autonomous learning activities.

Finally, to promote autonomous learning, student learning progress needs to be constantly monitored and evaluated so that support may be provided whenever the students encounter difficulties (Yu, 2005). It is undeniable that most students still need constant direction and guidance in accordance with their learning pace and level of proficiency. Nunan (1997) indicated that it is "ideal" for students to take full charge of their own learning (p. 193) and he suggested that fostering learner autonomy is "best done inside the language classroom" (p. 201).

As there has been a gradual shift towards a learner-centered approach to language instruction (Aliweh, 2011; Benson & Voller, 1997; Ciekanski, 2007; Egel, 2009), teachers play a more important role than before in guiding students to set goals, make academic choices, and become more active learners. Developing learner autonomy is a slow and long-term process that requires considerable practice. The ultimate goal of language teachers should be to help students learn autonomously.

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