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Do Male Students Use More Language Learning Strategies than Female Students? A Case Study of ESL Students in Macau

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Abstract: Language Learning Strategies as a pluralistic strategic system always attach great importance to second language learning, and it has attracted broad scholarly research since the 1970s. Given that students differ from person to person in their adoption of learning strategies, gender differentiation has arisen in the LLSs. However, a review of previous studies has revealed insufficient research on gender differences in China. This paper then investigated the use of LLSs by a group of Chinese ESL learners (M=92; F=96). Results showed that female students more frequently used strategies than male students, and they both used metacognitive strategies the most and memory strategies the least. In terms of gender and frequency of LLSs use, metacognitive strategies showed the strongest correlation, and memory strategies presented the weakest. To sum up, students may learn English more efficiently and effectively with proper learning strategies. Students with gender differentiation will use more valuable strategies when learning a foreign language; teachers may teach students with their actual needs with the help of learning strategies. In this vein, second language learning could be achieved and sustained reasonably.

Keywords: gender; language learning strategies; ESL; Macau

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1. Introduction

With economic globalization and international cooperation, more and more Chinese people have realized the

significance of learning a second language, especially English. Language Learning Strategies (LLSs) (Yan & Zha 2011; Habók & Magyar 2018) permanently attach great importance to second language learning as a pluralistic and pervasive strategic system.

Before the 1960s, behavioristic psychology, which played a dominant role, stressed the “stimulus” and “response” separately but ignored their relationship. Thus, the drawback of behavioristic psychology was extremely obvious. Also, the theoretical foundation was based on experiments mainly with animals rather than human beings. One could imagine that the result may not be appropriate for human beings. In the 1960s, influenced by cognitive psychology, researchers began to realize that cognitive activity was a complex process of both “thinking” and “problem-solving”. Language learners were not only passive stimulated persons or responders but also positive thinkers and problem solvers. Therefore, cognitive psychology offered a new theoretical basis for the research on LLSs. From the 1970s to now, numerous researchers have been working on this topic. However, since students differ from person to person in their adoption of learning strategies, and the research on individuals develops, the topic of gender differentiation has arisen in the LLSs. In the last three decades, research related to gender and LLSs has revealed that gender can significantly impact LLSs (Zafar 2012; Ranjan & Philominarj 2020; Aberle-Grasse 2021).

Previous studies in learning strategies have mostly paid attention to age, motivation, aptitude, educational level, and good language learners in China. Nevertheless, not much has been done in terms of gender and LLSs. Also, as one of the special economic zones in China, researchers may neglect the importance of Macau, for most of them have focused more on Hong Kong. The author strongly argues that it is essential to carry out this study. This paper is a part of an ongoing investigation that aims to determine how gender affects the use of LLSs among 188 students in a Macau public university learning English as a second language. Oxford’s 50-item Strategy Inventory for Language Learning (SILL) questionnaire was adopted, and SPSS 22.0 was used for statistical analysis.

2. Literature Review

2.1 Classifications of LLSs

LLSs are significant for language learning because they are a tool for active, self-directed involvement, essential for developing communicative competence (Zhang 2012; Lestari & Wahyudin 2020). With the development of strategy research, classifying LLSs has been a vital concern for researchers. Then, three of the most well-known frameworks were put forward by O’Malley & Chamot (1990), Oxford (1990), and Wen (1995).

2.1.1 O’Malley and Chamot’s classification

O’Malley and Chamot are probably the pioneers in classifying LLSs. Anderson’s (1983) cognitive theory and information processing theory divided LLSs into cognitive, metacognitive, and social and affective strategies (see Table 1). In their opinion, metacognitive strategies are higher-order executive skills that may entail planning for, monitoring, or evaluating the success of a learning activity (Bransford et al. 1983). Cognitive strategies operate directly on incoming information, manipulating it to enhance learning. It may be limited in application to the specific type of task in the learning activity. Social and affective strategies represent a broad grouping

involving interaction with another person or ideational control over effect (O'Malley & Chamot 1990).

Researcher (s)	Classification of LLSs	
O'Malley & Chamot (1990)	Cognitive strategies	"Resourcing, keyword method, inferencing, note-taking, recombination, translation."
	Metacognitive strategies	"Advance organizers, directed attention, functional planning, selective attention, self-management, self-monitoring, and self-evaluation."
	Social and effective strategies	"Cooperation, the question for clarification."

Table 1 O'Malley and Chamot's classification of LLSs

Source: O'Malley & Chamot 1990: 1

Although O'Malley and Chamot offered a classification emphasizing metacognitive and cognitive strategies, they ignored the role of social and affective strategies in language learning. Therefore, this classification may not be comprehensive enough.

2.1.2 Oxford's classification

Oxford further divided LLSs into six categories, three of which belonged to direct strategies, and the other three belonged to indirect strategies. Memory, cognitive, and compensatory strategies are direct strategies, while metacognitive, affective, and social strategies are indirect (see Table 2).

From her point of view, for direct strategies, memory strategies are about creating mental linkages, applying images and sounds, reviewing well, and employing action. Cognitive strategies are essential in practicing, receiving, sending messages, analyzing and reasoning, and creating input and output structures. Compensatory strategies are about guessing intelligently and overcoming limitations in speaking and writing (Oxford 1990). For indirect strategies, metacognitive strategies aim at centering one's learning, arranging and planning one's learning, and evaluating one's learning. Affective strategies contribute to lowering one's anxiety, encouraging oneself, and taking one's emotional temperature. Social strategies ask questions, cooperate with others, and empathize with others (Oxford 1990).

Researcher	Classification of LLSs		
Oxford (1990)	Direct strategies	Memory strategies	"Creating mental linkages, applying images and sounds, reviewing well and employing action."
		Cognitive strategies	"Practicing, receiving and sending messages, analyzing, reasoning and creating a structure for input and output."
		Compensatory strategies	"Guessing intelligently and overcoming limitations in speaking and writing."
	Indirect strategies	Metacognitive strategies	"Centering one's learning, arranging and planning one's learning and evaluating one's learning."
		Affective strategies	"Lowering one's anxiety, encouraging oneself, and taking one's emotional temperature."
		Social strategies	"Asking questions, cooperating with others, and empathizing with others."

Table 2 Oxford's classification of LLSs

Source: Oxford 1990: 245-247

Oxford’s classification is regarded as the most understandable and acceptable one. Ellis (1999) also stated that the most comprehensive classification of learning strategies to date was Oxford’s. Meanwhile, Oxford’s questionnaire Strategy Inventory for Language Learning (SILL) was widely adopted in later research.

2.1.3 Wen’s classification

Wen stressed the relationship between learning strategies and the learning process and paid attention to the relationship between learning strategies and materials. Therefore, she divided learning strategies into management strategies and LLSs (see Table 3). The former concept consists of cognitive and affective processes, while the latter is composed of traditional LLSs and non-traditional LLSs.

In management strategies, the cognitive process aims to set a goal, make a plan, select strategies, self-monitoring, and self-evaluation. Managing the practical process is related to self-management. In the LLSs, traditional LLSs are related to form-focused, accuracy, and mother-tongue-using strategies. Non-traditional LLSs is about meaning-focused, fluency, and mother-tongue-avoidance strategies.

Researcher	Classification of LLSs		
Wen (1995)	Management strategies	Cognitive process	“Setting a goal, making a plan, selecting strategies, self-monitoring, and self-evaluation.”
		Affective process	“Self-management”
	LLSs	Traditional LLSs	“Form-focused strategies, accuracy strategies, and mother-tongue-using strategies.”
		Non-traditional LLSs	“Meaning – focused strategies, fluency strategies, and mother-tongue-avoidance strategies.”

Table 3 Wen’s classification

Source: Wen 1995: 159

Wen’s classification is very concise but somewhat over general as well. It is difficult to classify some of the learning strategies, e. g. , communication strategies. To summarize, Oxford’s classification may be the most comprehensive one, and it is also easy for others to understand. Her SILL questionnaire is also an excellent tool for researchers to determine what LLSs people tend to use. Therefore, Oxford’s framework was adopted for further research in this paper.

2.2 Research on gender differences in LLSs outside China

The past four decades have seen an upsurge of interest in LLSs. Numerous researchers have begun to realize the significance of the loss. Of course, gender as a crucial variable also plays a vital role in LLSs. In the recent two decades, research on LLSs has been more and more comprehensive. Since this paper examined the relationship between gender and LLSs, related studies were discussed chronologically.

2.2.1 Research in the 1970s

Research on LLSs started in the 1970s. Researchers examined English as an L2 as the object of study to do their research. Among the originators are Rubin (1975), Naiman et al. (1978), Wong-Fillmore (1976), Stern (1983), and so on.

Rubin (1975) is regarded as one of the most influential researchers for she carefully observed the learning behaviors of “good language learners” and designed questionnaires and interviews to investigate their LLSs. In 1975, her classic *What the “Good Language Learner” Can Teach us* was published in *TESOL Quarterly*. She found that excellent language learners were accurate guessers. They could get and store important information in a quick way; good language learners had a powerful ability to interact with others; good language learners were not inhibited. They were not afraid to learn something from those mistakes; good language learners often practiced. They emphasized practicing word pronunciation and sentence making up, and good language learners paid much attention to their performance. They focused on whether they met the standards when they talked to others.

After Rubin, Naiman (1978) and others made some further steps in LLSs. In 1978, they wrote a classic *The Good Language Learner* (Naiman et al. 1978, 1996). Compared with previous research, their research had huge improvements from breadth, depth, and research method. They found that good language learners found and took full advantage of a helpful academic environment to take part in language learning; good language learners formed the awareness that language is a formal system; good language learners took language as a medium to communicate and interact with others; good language learners positively accepted and handled affective needs when learning a foreign language; and good language learners expanded and amended their foreign language system by deducing and monitoring, etc. Wong-Fillmore’s (1976) research was also indispensable for she took five Mexican children learning English in America as participants and investigated how these children improved their English communicative competence. She found that LLSs played an essential role during their learning process.

These findings all laid a solid foundation for later research. However, whether gender played an important role in language learning or not remains uncertain.

2.2.2 Research from the 1980s to now

From the late 1970s to the early 1980s, researchers realized the critical relationship between gender differences and LLSs when learners acquired an L2, but the literature on gender differences in L2 reading performance was relatively scarce (Phakiti 2003; Zarobe & Smala 2020). Politzer (1983) stated that variance due to the sex of learners did exist concerning such variables as social interaction. He also showed that females used social learning strategies more than males. Oxford, Nyikos & Ehrman (1988) published *The Role of Styles and Strategies in Second Language Learning*. Their study indicated that females had more positive attitudes to a second language compared with males. Females more used learning strategies than males, especially for social strategies.

From the late 1980s to the 1990s, Wenden and Rubin (1987) published *Learning Strategies in Language Learning*, O’Malley and Chamot (1990) published *Learning Strategies in Second Language Acquisition*, and Oxford (1990) published *Language Learning Strategies: What Every Teacher Should Know*. Their masterpieces mainly reflected research achievement on LLSs in the 1980s and represented research quality at that time. Green & Oxford (1995) experimented at a university and found that female students used more metacognitive, memory, social, and affective strategies than male students. As for the SILL questionnaire, 14 of the 50 items were used more often by female students, but merely one was more often used by male students, “watching TV programs and video movies in English”. Meanwhile, according to the findings of their study, they concluded that it was unsure enough whether male students or female students were more successful at language learning. Purpura

(1997) researched 1382 students from seventeen centers in three European countries. Students were asked to finish an 80-item metacognitive and cognitive strategies questionnaire and a 70-item language test. He found that metacognitive strategies had a significant, positive, and direct impact on cognitive strategies; cognitive strategies had no significant influence on grammar or reading ability; the more the students used memory strategies, the worse they performed. Goh & Kwah (1997) used Oxford's SILL questionnaire in Singapore to test LLSs with 175 Chinese students. They concluded that female students used all LLSs more frequently than male students.

Phakiti (2006) examined 358 EFL learners and asked them to finish an 85-item reading comprehension achievement test (only multiple choice) followed by a cognitive-metacognitive questionnaire on their performance. The results showed that metacognitive and cognitive strategies positively correlated with reading test performance; superior learners showed higher metacognitive strategy use than average learners. Radwan (2011) did research on 128 major English students with the SILL questionnaire. One of the results was that female students used social strategies more than male students for they were more superior to building social networks; the other was that higher proficiency levels' language learners more used metacognitive, cognitive, and effective strategies. Zhang, Goh, and Kunnan (2014) examined 593 Chinese college test takers and asked them to respond to a metacognitive and cognitive strategies questionnaire with 38 items and a reading test with 50 items. They concluded that test takers' metacognitive strategy use was related to cognitive strategy use for improving their reading test performance; test takers' strategy use had a significant effect on their lexico-grammatical reading ability.

However, some of the studies did not prove that gender affected LLSs. We must admit that this variable is not universal. For instance, Kim (1995) took Korean adults learning English as an example and found no difference between male and female students using LLSs. Also, Heuring & Zhou (1995) adopted the SILL questionnaire, researched in China, and pointed out that the frequency of using LLSs between male and female students was the same. Phakiti (2003) did research on 384 Thai university students. They were asked to take a reading comprehension test (only multiple choice) and a questionnaire on strategy use. He concluded that male students more used metacognitive strategies than female students. However, gender showed no differences in both reading test performance and metacognitive and cognitive strategy use questionnaire.

2.3 Research on gender differences in LLSs in China

In China, research on LLSs started from the mid of the 1980s. Huang (1985), Zhuang (1989), Wen (1996) are regarded as the most well-known researchers. To begin with, Huang's (1985) investigation of learning strategies in oral communication that Chinese EFL learners in China employ marked the beginning of LLSs research on Chinese learners learning an L2. In the late 1980s, researchers in China gradually researched the relationship between gender and LLSs. Zhuang (1989) highlighted that it was believed that males and females were born with different linguistic advantages, such as females learning to speak earlier than males and females learning a foreign language faster and better than males. Then, Wen (1996) stated that research related to LLSs indicated that learning strategies had a decisive impact on grades when other variables were almost on equal terms. In 2003, she wrote *Chinese Contemporary English Learning and Learning Strategies Research* to ensure her viewpoint.

Rao (2005) used the SILL questionnaire to examine 217 Chinese students learning English as their second language. He found that female students more used the overall strategy. Zhuang and Wang (2009) found that female students more used all the LLSs than male students. They were relatively reserved and cautious but more comprehensive in information processing than male students. When they acquired a second language, Huang (2012) found that male and female students used different strategies, especially for social strategies, affective strategies, compensatory strategies, and social strategies. Liu (2012) examined senior high school students to understand the relationship between gender and LLSs. The result was that female student more used all the LLSs than male students.

Therefore, gender differences did influence LLSs. Foreign countries have researched more on gender differences in LLSs than China. Thus, it is essential to do more research on this topic in China. It is not difficult to find that this paper aims to investigate the relationship between gender and LLSs. To be more specific, the core research questions of the current study are:

Research Question One: Is there a difference in LLSs used by gender?

Research Question Two: What is the relationship between gender and frequency of LLSs use?

3. Methodology

3.1 Participants

A total of 188 Chinese ESL students (M=92, 48.9%; F=96, 51.1%) in a Macau public university participated in this research. Their first language is Chinese Mandarin or Cantonese, and their second language is English. They all have at least six years' English learning experience. English is designed to teach students listening, speaking, reading, and writing skills in this university. Students are taught in English, but they are divided into different levels due to their varied English proficiencies.

3.2 Instruments

The Strategy Inventory for Language Learning (SILL, version 7.0), designed by Oxford (1990), is a self-rating, paper-and-pencil questionnaire that has been the key instrument in more than 40 studies (Zou 2007). The whole questionnaire is composed of 50 items: memory strategies (items 1–9), cognitive strategies (items 10–23), compensatory strategies (items 24–29), metacognitive strategies (items 30–38), affective strategies (items 39–44) and social strategies (items 45–50). Students were required to read each statement carefully and circle the option (1 = Never or rarely true of me, 2 = Usually not true of me, 3 = Somewhat true of me, 4 = Usually true of me, 5 = Always or almost always true of me) that most accurately describes his or her actual situation.

The author made an online form including Part A with students' personal information, including name, student ID, gender, age, major, nationality, first language, second language, and English levels, and Part B for responses to the SILL questionnaire. Liao's (2002) Chinese version of the SILL questionnaire was also adopt-

ed considering students' English proficiency.

3.3 Data collection

In this paper, only the frequency of high strategy use and low strategy use were considered. According to Oxford and Burry Stock (1995), 3.5–5.0 reflects the high use of that strategy, 2.5–3.4 means medium use, and 1.0–2.4 represents low use. Table 4 shows the number of students' strategies used within each range. The mean of strategy use for each student was computed via SPSS 22.0. If the mean falls into the range from 3.5 to 5.0, then the student belongs to high strategy use; if the mean falls into 1.0 to 2.4, he or she belongs to low strategy use. Table 8 also displays the number of students' strategies used by gender.

Strategies	Gender	Number of high strategy use	Total	% (3.5–5.0)	Number of low strategy use	Total	% (1.0–2.4)
Memory	M	18	27	9.57	39	83	20.74
	F	9		4.79	44		23.40
Cognitive	M	7	20	3.72	34	86	18.09
	F	13		6.91	52		27.66
Compensatory	M	9	22	4.79	57	105	30.32
	F	13		6.91	48		25.53
Metacognitive	M	13	23	6.91	48	101	25.53
	F	10		5.32	53		28.19
Affective	M	15	29	7.98	52	109	27.66
	F	14		7.45	57		30.32
Social	M	17	30	9.04	44	102	23.40
	F	13		6.91	58		30.85

Table 4 Number of high or low strategy use by gender (N=188)

3.4 Data analysis

Statistical Package for the Social Sciences (SPSS, version 22.0) was used to calculate descriptive statistics such as mean, standard deviation, significance, and correlation. T-test was used to examine the relationship between gender and LLSs.

4. Results and Discussion

Research Question One: Is there a difference in LLSs used by gender?

4.1 Results for students' SILL questionnaire

4.1.1 Overall strategy use

Table 5 displays that the overall mean of the strategy used for all study participants is 3.24. According to

Oxford and Burry Stock (1995), 3.5–5.0 reflects the high use of that strategy, 2.5–3.4 means medium use, and 1.0–2.4 represents low use. Thus, the mean of strategy use fell from 2.5 to 3.4, which is the medium use. It indicates that students “sometimes” use LLSs.

From Figure 1, it is evident that, among these six strategies, metacognitive strategies were the most frequently used and memory strategies were the least frequently used. Rankings of the other four strategies were cognitive, affective, compensatory, and social strategies.

Metacognitive strategies as the highest focus on centering, arranging and planning and evaluating one’s learning. According to Shmais (2003), Khalil (2005), Goh & Kwah (1997), Bremmer (1999), and Liu (2004), they all found that Chinese students or even students from Asia countries put metacognitive strategies at the first place. For one thing, when students have classes in school, they mainly focus on understanding language, and they are accustomed to knowing what to learn or how to learn. Thus, learning becomes essential to study; for another, since English is not their first language, they do not have many chances to practice or speak English all the time. It leads to that it is relatively complex for them to master an L2. However, students now have much more consciousness of learning a foreign language. With the help of metacognitive strategies, they can make up for what they lack.

An exciting outcome was that memory strategies were the least frequently used among 188 ESL students. This result may show that students spent less time creating mental linkages, applying images and sounds, reviewing well, and employing action. Goh & Kwah (1997), Lan & Oxford (2003), and Liu (2004) also found a similar result. Kohn (1992) claimed that Chinese students always memorize words or phrases but ignore to think about the meaning or usage of those words or phrases. However, the least frequently used by students did not mean those memory strategies were abandoned. It just meant that it was not such high compared with other strategies.

Strategies	\bar{X}	S. D.
Memory	3.06	0.78
Cognitive	3.32	0.62
Compensatory	3.22	0.63
Metacognitive	3.45	0.64
Affective	3.24	0.73
Social	3.16	0.58
Overall Total	3.24	0.57

Table 5 Mean and standard deviation of LLSs indicating strategy use (N=188)

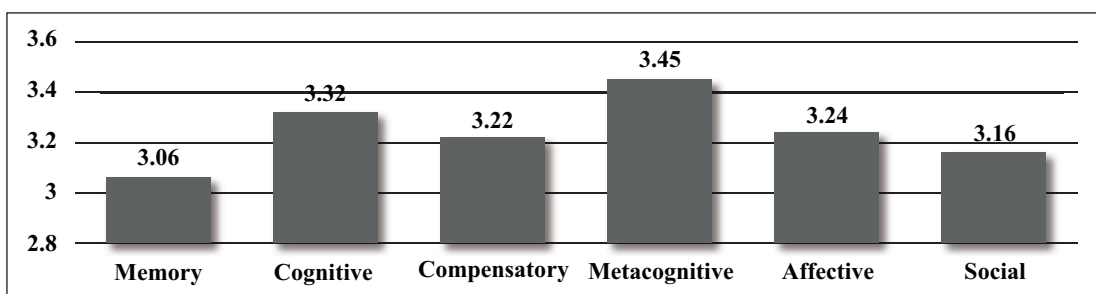


Figure 1 Meanscores for strategy use (N=188)

4.1.2 Overall strategy use by gender

T-test was performed to examine the mean, standard deviation, and significance of LLSs indicating strategy use by gender (see Table 6). According to Table 6, the overall total mean of male students is 3.22 and 3.26 for female students, which indicates that gender showed differences on LLSs. Male students used compensatory and affective strategies more than female students used memory, cognitive, metacognitive, and social strategies. The result of significance indicates that there was a statistically significant difference between gender and memory ($p = .03$), compensatory ($p = .05$), metacognitive ($p = .02$) and social ($p = .05$) strategies. But there was no significant effect on cognitive ($p = .19$) and affective ($p = .61$) strategies.

The overall total mean for male students' strategy use is 3.22, which is higher than the mean of memory ($\bar{X} = 3.01$) and social strategies ($\bar{X} = 3.12$), but lower than the mean of compensatory ($\bar{X} = 3.24$), metacognitive ($\bar{X} = 3.41$) and affective strategies ($\bar{X} = 3.27$). Among them, male students used metacognitive strategies the most and memory strategies the least. The overall total mean for female students' strategy use is 3.26, which is higher than the mean of memory ($\bar{X} = 3.11$), compensatory ($\bar{X} = 3.20$) and social strategies ($\bar{X} = 3.20$) but lower than the mean of cognitive ($\bar{X} = 3.35$) and metacognitive strategies ($\bar{X} = 3.49$). Among them, female students used metacognitive strategies the most and memory strategies the least.

Strategies	Gender	\bar{X}	S. D.	Sig.
Memory	M	3.01	.48	.03 *
	F	3.11	.53	
Cognitive	M	3.29	.57	.19
	F	3.35	.57	
Compensatory	M	3.24	.64	.05 *
	F	3.20	.48	
Metacognitive	M	3.41	.63	.02 *
	F	3.49	.61	
Affective	M	3.27	.56	.61
	F	3.21	.58	
Social	M	3.12	.49	.05 *
	F	3.20	.67	
Overall Total	M	3.22	.52	.04 *
	F	3.26	.54	

Table 6 Mean and standard deviation of LLSs indicating strategy use by gender (N=188)

4.1.3 The five most and least frequently used strategies by male and female students

Table 7 and Table 8 present the five most and least frequently used strategies by male and female students. Focusing on the five most frequently used strategies by male and female students. It found that both male and female students highly used "I watch English language TV shows spoken in English or go to movies spoken in Eng-

lish” ($\bar{X}=3.77$; $\bar{X}=4.17$), which belongs to a cognitive strategy. Nowadays, it is not strange that people are accustomed to watching various TV shows in their spare time, such as American dramas, Britain dramas. Among students, this kind of situation is much more commonplace. During the process of watching these English TV shows, it is also a good chance for them to learn a foreign language.

Then, Table 12 shows the five most frequently used strategies by male students, and “If I cannot think of an English word, I use a word or phrase that means the same thing” ($\bar{X}=4.16$) classified to a compensatory strategy is at the top place. Imagine when someone wants to say “Thanks for giving me this opportunity!” but you forget how to say “opportunity” in English. Will you use the word “chance” to take the place of it? I beg most of the people will say “yes.” That is why No. 29 is in the first place. Followed by “I pay attention when someone is speaking English” ($\bar{X}=3.89$), showing that male students may have the subconsciousness to concentrate on the one who speaks English. “When I cannot think of a word during a conversation in English, I use gestures” ($\bar{X}=3.67$) indicates the importance of body language. “I encourage myself to speak English even when I am afraid of making a mistake” ($\bar{X}=3.63$) may argue that male students are more self-confident so that they will encourage themselves when they meet any communication blockages.

No.	Strategy Content	\bar{X}	Classification
29	If I cannot think of an English word, I use a word or phrase that means the same thing.	4.16	Compensatory
32	I pay attention when someone is speaking English.	3.89	Metacognitive
15	I watch English language TV shows spoken in English or go to movies spoken in English.	3.77	Cognitive
25	When I cannot think of a word during a conversation in English, I use gestures.	3.67	Compensatory
40	I encourage myself to speak English even when I am afraid of making a mistake.	3.63	Affective

Table7: Five most frequently used strategies by male students (N=92)

Compared with male students, female students’ five most frequently used strategies seemed slightly different (see Table 4-4). “I notice my English mistakes and use that information to help me do better” ($\bar{X}=3.88$) in the second place, indicating that female students are aware of their mistakes when they learn English. They focus on what they do wrong and then find a solution to do better next time. “I practice the sounds of English” ($\bar{X}=3.82$) indicates that female students concentrate more on sounds and pronunciation than male students. Because someone has a good accent may win the reputation and respect from native speakers or English people.

In contrast to male students, female students are shier when they speak English. Thus, “I try to relax whenever I feel afraid of using English” ($\bar{X}=3.69$) is at such a high place. “To understand unfamiliar English words, I make guesses” ($\bar{X}=3.62$) may reflect that female students think more than male students, and sometimes their intuition is more accurate than male students.

No.	Strategy Content	\bar{X}	Classification
15	I watch English language TV shows spoken in English or go to movies spoken in English.	4.17	Cognitive
31	I notice my English mistakes and use that information to help me do better.	3.88	Metacognitive
12	I practice the sounds of English.	3.82	Cognitive
39	I try to relax whenever I feel afraid of using English.	3.69	Social
24	To understand unfamiliar English words, I make guesses.	3.62	Compensatory

Table 8 Five most frequently used strategies by female students (N=96)

As for the five least frequently used strategies by male and female students, “I review English lessons often” ($\bar{X}=2.88$; $\bar{X}=2.58$) indicates that both male and female students do not like reviewing English during learning. This situation indeed fits the current Chinese L2 learners. I once worked as a teaching assistant (TA) at Shanghai New Oriental School. Students there wanted to pass CET-4 or CET-6 (College English Test Band-4 or Band-6). Every day the teacher asked students to review what they had learned that day, and there would be a dictation for the next day. To our surprise, most of the students got a low mark for that dictation. When I asked some of the students, they responded that they did not like reviewing but liked understanding. Therefore, it is normal that No. 8 is the item that both male and female students do not like. Keeping a diary is also rare for students, let alone writing down some feelings. Information technology develops so fast; few people keep a diary every day. That is why “I write down my feelings in a language learning diary” ($\bar{X}=2.29$) is in the table.

Table 9 illustrates the five least frequently used strategies by male students. “I use flashcards to remember new English words” ($\bar{X}=2.17$) is at the top place. Nowadays, people have various kinds of mobile phone applications. Those apps are easy and free to download so that students have more ways to learn English. Making a flashcard is helpful, but it costs too much energy, time, and maybe expense. People are more inclined to use a convenient way. We have to admit that it was popular several years ago, but nowadays not many people take it this way. “I ask questions in English” ($\bar{X}=2.52$) is in the third place because since they are all Chinese, it is more convenient for them to interact in their mother tongue. If they want to ask a question, most people prefer to choose an easy way. Sometimes they may think it is troublesome to ask a question in English, but the opposite side does not understand. “I try to learn about the culture of English speakers” ($\bar{X}=2.88$) is also in the table. If one majors in English or history so that he or she has the interest or necessity to understand the culture of western countries. Alternatively, students may not have the chances or interest to learn.

No.	Strategy Content	\bar{X}	Classification
6	I use flashcards to remember new English words.	2.17	Memory
43	I write down my feelings in a language learning diary.	2.29	Affective
49	I ask questions in English.	2.52	Social
50	I try to learn about the culture of English speakers.	2.79	Social
8	I review English lessons often.	2.88	Memory

Table 9 Five least frequently used strategies by male students (N=92)

The five least frequently used strategies by female students are shown in Table 10. "I physically act out new English words" showed that female students are shy so that sometimes they are afraid of making some actions in the case that they will become a laughing stock. "I start conversations in English" ($\bar{X}=2.92$) is similar to "I ask questions in English." Because they are all Chinese students, it is strange to start their conversation without their mother tongue. Only both of them want to practice their oral English, or it is so rare to find this circumstance because they can explain themselves clearly in Chinese. Next, since this university is an international university, students here are from worldwide. However, when one meets any problem, he or she may find his or her friends for help. Sometimes Chinese students are passive in talking with international students. That is the reason "I ask for help from English speakers" ($\bar{X}=3.04$) is in the table.

No.	Strategy Content	\bar{X}	Classification
7	I physically act out new English words.	2.14	Memory
43	I write down my feelings in a language learning diary.	2.32	Affective
8	I review English lessons often.	2.58	Memory
10	I start conversations in English.	2.92	Cognitive
48	I ask for help from English speakers.	3.04	Social

Table 10 Five least frequently used strategies by female students (N=96)

For the most frequently used strategies, male students are more straightforward. They may use body language, a compensatory strategy, to convey the meaning of a word they cannot express in English. While female students are shy, they hardly ever use memory strategies to act out new English words. When speaking English, most male students use effective strategies to encourage themselves, while most female students use social strategies to relax. Most male students use the metacognitive strategies to pay attention to the person who speaks English. However, most of the female students use cognitive strategies emphasizing the sounds of English. However, female students also use metacognitive strategies to notice their mistakes. When meeting a word, both male and female students use the compensatory strategies, but most male students use a synonym to replace the word they have forgotten, while most female students guess what it means.

Most male students do not use social strategies to ask questions in English, for the least frequently used strategies when speaking English. In contrast, most female students do not use cognitive strategies to start conversations in English. Also, female students may not adopt social strategies to ask for help from English speakers as well. Most of the male students do not use memory strategies to make flashcards.

Above all, it could be concluded that though male and female students had some commons in language learning, e. g. , both male and female students like watching English language TV shows; they neither like keeping a diary nor reviewing English lessons. Under most of the circumstances, they used different strategies when they acquired a second language.

Research Question Two: What is the relationship between gender and frequency of LLSs use?

4.2 Results for gender and students' SILL questionnaire correlation

Correlation refers to the degree of relationship (or dependency) between two variables. Two ways were a-

adopted to get the correlation in this paper. A total of 188 ESL students (M=92, F=96) in a Macau public university were required to finish the questionnaire designed by Oxford (1992). They were divided into high strategy use and low strategy use.

Table 11 directly displays the correlation of high and low LLSs use by each gender and gender and frequency of loss. For high and low LLSs use, the strongest correlation for male students was effective strategies ($r = .86$), and the weakest was cognitive strategies ($r = .41$). It means male students used very similar ways of learning English via affective strategies both from high and low LLSs use, and they used different ways via cognitive strategies. As for female students, both affective ($r = .84$) and social strategies ($r = .84$) had the strongest correlation, and the weakest was memory strategies ($r = .61$). It indicates that female students used very similar ways to learn English via affective and social strategies both from high and low LLSs use and used different ways via memory strategies.

The strongest correlation between gender and frequency of LLSs use falls between gender and metacognitive strategies ($r = .88$). This result was consistent with Liu's (2004) study. In other words, male and female students used very similar ways when they learned English via metacognitive strategies. It may be because Chinese EFL learners do not have much opportunity to be exposed to the target language. Thus, they do not have much chance to practice or pick up the target language. The correlation of gender and compensatory strategies is at second place ($r = .86$). Riazi and Rahimi (2005) once said that high compensatory strategies usually characterized the learners who struggled with low competence. It also fits that Chinese students do not have much chance to learn a target language. Thus, both male and female students may use compensatory strategies to make up for the linguistic deficiencies. The correlation of gender and memory strategies ($r = .64$) has the weakest correlation. It is an exciting result because teachers in China often encourage students to repeat and recite texts to indicate their understanding. Both male and female students receive this kind of education. Therefore, students have created more memorized words, phrases, paragraphs, or even passages. They are more inclined to understand the grammar and linguistic rules. That may be why gender and memory strategies had the weakest correlation because male and female students have various methods to memorize something. The correlation of gender and social strategies ($r = .66$) comes to a similar consequence. Because male and female students may have different ways to interact with other people. They gain the target language unknowingly.

Strategies	Gender	High and Low LLSs user	Gender and frequency of LLSs user
Memory	M	.78	.64
	F	.61	
Cognitive	M	.41	.78
	F		.79
Compensatory	M	.86	.86
	F	.74	
Metacognitive	M	.69	.88
	F	.77	

续表

Strategies	Gender	High and Low LLSs user	Gender and frequency of LLSs user
Affective	M	.86	.71
	F	.84	
Social	M	.82	.66
	F	.84	

Table 11 Correlation of gender and frequency of LLSs use (N=188)

5. Conclusion

5.1 Major findings

For question one, there is a difference in LLSs used by gender. It found that students used metacognitive strategies the most and memory strategies the least. In terms of gender, female students used more strategies when they learned a foreign language. Also, male students used compensatory and affective strategies more, while female students used more memory, cognitive, metacognitive, and social strategies. These findings were similar to Green and Oxford's (1995) and Goh and Kwah's (1997) research. Both male and female students used metacognitive strategies the most and memory strategies the least. This finding was slightly different from Radwan's (2011) study, as he found that female students used social strategies the most. The gender and metacognitive strategies have the highest correlation, indicating that male and female students used similar ways to learn English with metacognitive strategies. Gender and memory strategies had the weakest correlation, indicating that male and female students used relatively different English learning methods. This result was consistent with Liu's (2004) study but slightly different from Oxford and Ehrman (1995)'s study. Because in their study, they found that cognitive strategies had the strongest correlation with gender differentiation.

5.2 Limitations and further directions

First, it was not enough to use the SILL questionnaire only once because sometimes self-report data are unreliable. It was not enough to only use the SILL questionnaire to get final results. Second, some variables such as aptitude and motivation were not controlled in this study. Finally, the participants included in this document were selected only at one university in Macau. Thus, the sample may not be representative of the whole Macau context. Different schools may have different results.

In order to solve the first limitation, it is better to ask this group of students to do the questionnaire for a second time after several days. Then, the reliability of their responses for both the first and second time should be examined to see whether these data are helpful for further research. Also, it is better to combine the SILL questionnaire with students' test performance. In other words, it is better to ask students to finish a test followed by a strategy use questionnaire related to that test. In order to solve the second limitation, it is better to consider variables like motivation and aptitude (Bielak 2021; Dahlan 2021). The author needs to make the outcome more accurate; it is better to control more variables. As a result of solving the last limitation, it is encouraged to select

participants from other schools in Macau whenever time and resources are available.

5.3 Concluding remark

To sum up, this study may bring about some profound contributions to the teaching–learning context and the arena of second language learning to achieve sustainable education. Students can learn English more efficiently and effectively with the guidance of proper learning strategies. Students with gender differentiation will use more valuable strategies when learning a foreign language; teachers can teach students with their actual needs with the help of learning strategies. Second language learning could be sustained and further developed, which benefits both teachers and students.

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