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Language Learning Aptitude (LLA) and Language Learning Strategy (LLS) use among Iranian university EFL students: Patterns and relationships

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Abstract

Fundamental to any consideration of research into students' roles in any educational program is the focus on the most efficient way(s) of learning for students. Following the same thread, this study aimed to explore the patterns of language learning strategy (LLS) use (based on Oxford's SILL, 1990a) and its links with language learning aptitude (LLA) (as measured by Carroll and Sapon's MLAT, 1983) of a cohort of male (N = 16) and female (N = 32) Iranian students at Urmia University. One-way ANOVA indicated significant differences between the two genders on their use of cognitive and metacognitive LLSs in favor of males but not on their aptitude scores. Two-way ANOVA revealed a significant role for aptitude level but not gender on students' language learning strategy use. Pearson product-moment correlation also revealed significant relationships among the components of MLAT and LLSs. Detailed findings and discussions are presented in the paper.

Keywords: Iranian EFL students; Language learning aptitude; Language learning strategy use

1. Introduction

Most similar to height, working-memory capacity, and intelligence quotient, language learning aptitude (LLA) is measurable, but its quantity varies among the learners in any distinct community. However, unlike those concepts, LLA cannot be directly observed, yet it is inferred from students' performances on relevant psychological tests. It can be assumed that higher levels of LLA in second or foreign language learning contexts would represent more successful adjustments to instructed and naturalistic exposures to the target language, as estimated by arguably faster progression in learning and achieving higher levels of ultimate achievement in proficiency at the end of an instructional programme, or followed by a period of naturalistic exposure to the target language. Therefore, LLA is described as a theoretical construct that is operationalized in the form of a test to predict the

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phenomena which feature second language acquisition as well as the extent to which successful acquisition will result (Jordan, 2004).

LLA has been described as a complex of basic requisite abilities that make foreign language learning easier (Carroll & Sapon 1959 as cited in Dörnyei, 2005); it includes distinguishing sounds and making associations between them and written symbols and identifying the regularities in the grammatical system of a language (Ellis, 1985). More recent research, however, suggests that LLA consists of even more aspects. Some scholars argue that LLA is just an umbrella-term for a collection of particular cognitive abilities and skills, for example phonological coding/decoding or working memory which are well above the skills typically measured to recognize linguistic aptitude (Dörnyei, 2005). According to Carroll (1981 as cited in Ellis, 1997), aptitude refers to the "specific ability for language learning which learners are hypothesized to possess" (p. 36). It is hypothesized that this capability is dependent on some characteristics of the language learners. Although it is commonly accepted that the best language learners are privileged by a specific knack for languages, which, compared to the others, helps them in learning languages more quickly (Lightbown & Spada, 2006), aptitude is the term more common in an academic contexts. For example, Cook (2001) distinguished between the broad term knack and aptitude stating that the latter usually refers to differences in language learning and that "aptitude has almost invariably been used in connection with students in classrooms" (p. 124) whereas knack is a term used to refer to real-life contexts.

Like LLA, language learning strategies (LLS) are among the cognitive factors highly related to success and achievement in language learning. Not only are the choice and frequency of use of LLSs determining variables for success and higher attainment, but the ability to combine those LLSs that are convenient to a certain learning situation is also of paramount significance. In this respect, studies have revealed that more proficient learners not only make more frequent use of a wider range of LLSs, but they also have the ability to mix various types of strategies in a harmonious model in order to meet the requirements of a particular task at hand (e.g., Oxford, 2008). So, it might be inferred that if learners are acquainted and equipped with LLSs, then they will be actively involved in the learning process.

Different scholars have defined LLSs in different ways, but seemingly, there is a consensus over LLSs as being actions deliberately taken by learners that result in some kind of facilitation or effectiveness of language learning (Chamot, 1987; MacIntyre, 1994). Chamot and O'malley (1994, p. 1) describe LLSs as "the special thoughts or behaviors that individuals use to help them comprehend, learn, or retain new information". Likely, Oxford (2003, p. 274) points out that LLSs help learners with "perception, reception, storage, retention, and retrieval" steps in language learning. LLSs have also been defined as "thoughts and actions, consciously selected by learners, to assist them in learning and using language in general, and in the completion of specific language tasks" (Cohen, 2010, p. 682).

2. Literature review

Research on LLSs has taken many directions. Five main directions in LLS research as outlined by Chamot (2004) are as follows: a) studies dealing with the identification and determination of LLSs used by second or foreign language learners (e.g., Vossoughi & Ebrahimi, 2003; Nikoopour, Amini Farsani, & Nasiri, 2011); b) studies providing taxonomies or classifications of LLSs by putting particular strategies among broader groups of strategies (e.g., Rubin, 1981; Oxford, 1990a); c) research studies investigating factors influencing LLS use, for instance personality types, age, learning styles, attitude, aptitude, and motivation (e.g., Chang, 2005; Magogwe & Oliver, 2007; Rahimi, 2005); d) studies on the effect of contextual and cultural variables on LLS use (e.g., Wharton, 2000; Oliveras-Cuhat, 2002), and finally e) research studies that delve into examining strategy instruction (Oxford, 1990; Tabrizi, Nikoopour, & Amini Farsani, 2010).

There is abundant evidence in the literature advocating the idea that proficient language learners use LLSs more frequently and successfully than those at lower proficiency levels (e.g., Bidabadi & Yamat, 2011; Green & Oxford, 1995). Evidence also supports the relationship between frequent LLS use and the learners' language proficiency level (Oxford, 1989) and language learning success (Grifiths, 2010). Yet, it is very unreasonable to claim that unsuccessful learners or those at lower levels of proficiency do not use LLSs at all; rather what differs among different learners is the frequency and choice of LLSs (Chamot & Kupper, 1989) and the way multiple strategies are orchestrated based on the learner's need (Oxford, 1990a). It has been found that less able learners use strategies in an unconnected, random, and even uncontrolled manner while more successful ones show careful orchestration of LLSs all aimed, in a relevant and systematic way, at specific TL tasks (Abraham & Vann, 1987). All in all, LLSs have been proved to be related to a variety of other features and characteristics of the language learner including age, gender, personality, nationality, and LLS (e.g., Griffiths, 2010).

Although LLS use has also been shown to affect second language acquisition, it is unclear how it does so. Studies that have measured LLS use through surveys have reported that learners who use various types of LLSs and use them frequently have more success in instructed second language acquisition contexts (Griffiths, 2003; O'Malley & Chamot, 1990). More recent research suggests that LLS use is a variable that changes over time, depending on second language proficiency and the learning settings (Macaro, 2006), with highly proficient learners using overall fewer strategies than intermediate level learners (Hong–Nam & Leavell, 2006), since at the advanced levels, it is believed that learners' processes for second language acquisition become more automatized; and consequently, a smaller range of strategies are needed for acquisition (cf. Oxford, 2011, for a comprehensive review).

Using Modern Language Aptitude Test (MLAT), Carroll (1962) showed that students who were successful at learning Spanish and other second languages in schools in the United States were, mainly, those who gained high scores on the

MLAT. He then argued that LLA predicts the rate or speed of foreign-language learning. He followed this line of research with several MLAT validation projects (ibid, 1962, 1963, 1966) and concluded that under intensive learning situations with heterogeneous groups of learners, LLA correlates moderately well with second language accomplishment, with most correlation coefficients ranging from .40 to .65 (e.g., Carpenter, 2009; Skehan, 1998). Since the 1950s, researchers have proposed that LLA is a distinct construct from general intelligence and predicts adult classroom-based second language learning achievement (e.g., Corno et al., 2002; Skehan, 2002). Skehan (2002) and Robinson (2005, 2007), respectively stated that LLA abilities are dynamic in that they change over time, and that different LLA abilities are required at different stages of language learning. Furthermore, researchers came to understand LLA as being truly differentiated or multifaceted which means that individuals have unique second language aptitude profiles, consequently one could have high ability in one LLA construct but low ability in others (Skehan, 1998).

Language learning success has long been attributed to a number of non-cognitive variables, like high motivation (e.g., Dörnyei, 1990; Crookes & Schmidt, 1991; Skehan, 1989) and the use of different categories of LLSs (e.g., Cohen, 1998; O'Malley & Chamot, 1989). However, debated in the second language aptitude literature is the question of whether these non-cognitive factors should be considered as a constituent part of a broader construct of LLA in general, and second language learning aptitude in particular. On the one hand, some researchers propose that LLA is not purely a static and cognitive trait that is resistant to any change (Carroll, 1990; Parry & Child, 1990; Pimsleur, 1966; Stansfield & Reed, 2004). On the other hand, some scholars claim that LLA, broadly defined, includes the non-cognitive factors of motivation (Dörnyei, 1990; Gardner, 1990) and LLS use (Ehrman, Leaver, & Oxford, 2003; Ehrman & Oxford, 1990, 1995; Grigorenko, Estenberg, & Ehrman., 2000; Oxford, 1990b; Vandergrift, 2003). Winke (2013) discusses two additional non-significant but interesting results concerning the variables that contribute to LLA: the small effect that working-memory and the reverse effect that grammatical-sensitivity have on LLA. His research showed that LLA had a negative effect on motivation which squares with Dörnyei's (2005) belief that the less LLA a learner has, the more motivation the learner will need to successfully proceed with the language learning. Within the model, LLA, LLS use, and motivation have fairly the same impact on learning, as has been reported by previous research (Dörnyei, 2001; Tseng & Schmitt, 2008; Vandergrift, 2005). Winke (ibid) concludes that LLA, including rote memory, phonetic coding ability, grammatical sensitivity, and phonological working-memory, is only a relatively useful construct in this context and that the effects of LLA on learning at advanced levels are mediated by some affective factors like motivation as well as LLS use.

The literature presented above shows the importance of LLA and LLS use in a variety of learning contexts; therefore, considering the gap for similar studies in Iranian educational programmes, the researchers in this study tried to delve into the

issue and scrutinize the pattern of these two influential factors among a cohort of male and female university EFL students More specifically, the research reported here aimed to find reasonable answers to the following questions:

1. Is there any significant difference between male and female Iranian university EFL students' language learning strategy use?
2. Is there any significant difference between male and female Iranian university EFL students' language learning aptitude?
3. Do gender and aptitude level play any significant role on Iranian university EFL students' language learning strategy use?
4. Is there any significant relationship between Iranian university EFL students' language learning aptitude and their language learning strategy use?

3. Method

3.1. Participants

Forty eight male and female Iranian university EFL students (within the age range of 21 to 23) at Urmia University, Iran, participated in this study. All students had similar first language and cultural backgrounds. The following table represents the distribution of participants in terms of gender.

Table 1. Descriptive statistics of the sample.

	n	%
Male	16	33.33
Female	32	66.70
Total	48	100

3.2. Instruments

Modern Test of Language Aptitude (MLAT) designed by Carroll and Sapon (1983) was the first data elicitation tool used in this research. Except the first ten items in each part, the other items were omitted as the original form was long enough to be tedious for some participants. So the version used had five parts with a total of 50 multiple-choice items including, number learning (items 1-10), phonetic script (items 11-20), spelling clues (items 21-30), words in sentences (items 31-40), and paired associates (items 41-50). The second instrument was Oxford's (1990a) 50-items SILL (version 7.0). Following a five-point Likert scale format from one corresponding to 'never' to five indicating 'always', the SILL structures the strategies into six categories: 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). Chronbach Alpha reliability indices for MLAT (No. of items = 50) and SILL (No. of items = 50) were estimated as r = .80 and r = .87, respectively, which according to Cohen's (1988) classification were good indicators of reliability. The validity of MLAT and SILL has

long been established as evidenced by their wide application and acceptance among EFL/ ESL researchers.

3.3. Procedure

The present research followed a survey-based design wherein MLAT and SILL were handed to the research sample. Students were provided with instructions on how to complete the two tools. They were instructed to give their best answers in the case of MLAT and to provide complete and honest responses to the SILL.

The participants reported that it was the first time they were involved in taking an aptitude test; therefore, after distributing the MLAT, they were required to read and follow the directions with great care. Although some clarifications were made in Persian (the formal language of the country), the students were allowed to ask for further explanations if they did not understand the instructions for each section. Regarding the first component that was Number Learning (NL), the students listened to a tape teaching them some numbers in Kurdish language together with their English counterparts. Then, they heard 10 numbers in Kurdish and wrote their English equivalents in an accompanying table. For the Phonetic Script (PS) part, the students were read aloud 10 nonsense words in English and were requested to mark their phonetic transcriptions from among four alternatives in their papers. For the third component of MLAT, Spelling Clues (SC), the students had the phonetic representations of only the consonants of 10 English words and consequently found the synonyms of those words from among the five options which were given in their papers. The next component that was Words in Sentences (WS) consisted of 10 items, each including two sentences. The students should have noticed the functions of the particular underlined words in the first sentences; they were then required to select from among five underlined words in the second sentences the best ones having the same functions as the ones in the first sentences. In the last component, i.e., Paired Associates (PA), a list of 10 Kurdish words along with their English translations (to memorize) was given to the students. Then the Kurdish words were presented to the students and they pointed to the correct English translation for each word from among five alternatives.

Regarding the SILL, in addition to the directions provided on the inventory itself (which the students were required to follow carefully), they were told in Persian that there are 50 statements with respect to strategies they believe they use when learning English as a Foreign Language. It was explained to them that they needed to indicate the frequency with which they use each of the strategies on a scale from ‘never’ to ‘always’ by putting a mark on the related boxes in the strategy table.

The two instruments were administered among two groups of students as part of their regular class session and they completed them in nearly 45 minutes (30 minutes was devoted to MLAT completion and 15 minutes was allocated for SILL).

3.4. Data analysis

Using the Statistical Package for Social Sciences (Version 17), three major analyses were performed: a) One-way analysis of variance: to find the differences between males and females in their use of specific LLSs, on the categories of LLS, and on the component parts of MLAT; b) Two-way analysis of variance: to investigate if gender and aptitude level played any significant roles in students' use of LLSs; and c) Pearson product-moment correlation: to check the relationship among the categories of LLSs and the components of MLAT.

4. Results

In this study, the use of language learning strategies and the language learning aptitude of male and female Iranian university EFL students were investigated. In this section, relevant descriptive and inferential statistics are presented. Preliminary checks of homogeneity and normality of distribution were carried out which revealed that the groups did not violate these assumptions (sig. = .19 and sig. = .78 for the two tests, respectively).

Table 2 shows the mean of frequencies of use of LLSs by two genders. The table also contains the results of one-way analysis of variance (ANOVA) for the differences between males and females in their use of LLSs. As it can be seen in the table, the only significant differences are for items 11, 17, 21, 28, 30, 37, 38, 40 and interestingly enough, all in favor of males. This means that males preferred to use the following strategies significantly more frequently than females: tying to talk like native speakers; writing notes, letters, and messages in English; finding the meaning of an English word by dividing it into parts that one understands; trying to guess what the other person will say next in English; trying to find out as many ways as one can to use one's English; having clear goals for improving one's English skills; thinking about one's progress in learning English; and encouraging oneself to speak English even when one is afraid of making a mistake. In this Table, items 1 to 9 indicate memory strategies; items 10 to 23 refer to cognitive strategies; items 24 to 29 define compensations strategies; the next nine items (30 to 38) deal with metacognitive strategies; items 39 through 44 are related to affective strategies; and finally items 45 up to 50 specify social strategies.

Table 2. Descriptive statistics and ANOVA for the use of LLSs by two genders.

Strategy		Descriptive statistics				ANOVA		
		Gender	N	Mean	SD	df	F	Sig.
1	I think of the relationship between what I already know and new things when I learn English.	M	16	3.44	1.153	1	.057	.812
		F	32	3.38	.660	46		
2	I use new English words in a sentence so I can remember them.	M	16	3.56	.892	1	.790	.379
		F	32	3.31	.931	46		
3	I connect the sound of a new English word and an image or picture of the word to help me remember the word.	M	16	3.56	1.263	1	.665	.419
		F	32	3.28	1.054	46		
4	I remember a new English word by making a mental picture of a situation in which the word may be used.	M	16	3.50	1.366	1	.008	.930
		F	32	3.47	1.047	46		
5	I use rhymes to remember new English words.	M	16	2.69	1.352	1	.575	.452
		F	32	2.94	.914	46		
6	I use flashcards to remember new English words.	M	16	2.50	1.366	1	.292	.592

		F	32	2.28	1.301	46		
7	I physically act out new English words.	M	16	3.00	.632	1	2.706	.107
		F	32	2.62	.793	46		
8	I review English lessons often.	M	16	2.69	1.401	1	3.140	.083
		F	32	3.25	.803	46		
9	I remember new English words or phrases by remembering their location on the page, on the board, or on a street sign.	M	16	2.62	1.360	1	1.431	.238
		F	32	3.06	1.105	46		
10	I say or write new English words several times.	M	16	3.56	1.365	1	2.440	.125
		F	32	2.97	1.177	46		
11	I try to talk like native English speakers.	M	16	4.12	1.147	1	3.872	.055
		F	32	3.41	1.214	46		
12	I practice the sounds of English.	M	16	3.62	.806	1	2.596	.114
		F	32	3.12	1.100	46		
13	I use the English words I knew in different ways.	M	16	3.38	.885	1	1.064	.308
		F	32	3.09	.893	46		
14	I start conversation in English.	M	16	2.88	1.310	1	.008	.928
		F	32	2.91	1.027	46		
15	I watch English language TV shows or go to movies spoken in English.	M	16	4.06	1.389	1	2.632	.112
		F	32	3.44	1.190	46		
16	I read for pleasure in English.	M	16	3.75	1.000	1	3.538	.066
		F	32	3.19	.965	46		
17	I write notes, messages, letters, or reports in English.	M	16	3.62	1.147	1	5.385	.025
		F	32	2.88	1.008	46		
18	I first skim an English passage (read it quickly), then go back and read carefully.	M	16	3.62	1.310	1	.188	.667
		F	32	3.47	1.107	46		
19	I look for words in my language that are similar to new words in English.	M	16	3.38	1.310	1	.567	.455
		F	32	3.09	1.174	46		
20	I try to find patterns in English.	M	16	3.38	.806	1	.447	.507
		F	32	3.19	.965	46		
21	I find the meaning of an English word by dividing it into parts that I understand.	M	16	3.69	.873	1	4.691	.036
		F	32	3.00	1.107	46		
22	I try not to translate word-for-word.	M	16	3.69	1.014	1	.253	.618
		F	32	3.53	1.016	46		
23	I make summaries of information that I hear or read in English.	M	16	3.12	.885	1	.328	.570
		F	32	3.31	1.148	46		
24	To understand unfamiliar English words, I make guesses.	M	16	3.56	.964	1	.051	.822
		F	32	3.62	.871	46		
25	When I cannot think of a word during a conversation in English, I use gestures.	M	16	3.19	1.047	1	.009	.924
		F	32	3.16	1.081	46		
26	I make up new words if I do not know the right ones in English.	M	16	3.06	1.063	1	.223	.639
		F	32	2.91	1.088	46		
27	I read English words without looking up every new word.	M	16	3.25	.577	1	.236	.629
		F	32	3.38	.942	46		
28	I try to guess what the other person will say next in English.	M	16	3.56	.629	1	4.115	.048
		F	32	3.06	.878	46		
29	If I cannot think of an English word, I use a word or phrase that means the same thing.	M	16	3.94	1.124	1	.013	.909
		F	32	3.97	.740	46		
30	I try to find out as many ways as I can to use my English.	M	16	3.94	1.063	1	4.340	.043
		F	32	3.22	1.157	46		
31	I notice my English mistakes and use that information to help me do better.	M	16	3.75	.856	1	.000	1.000
		F	32	3.75	.803	46		
32	I pay attention when someone is speaking English.	M	16	4.38	.719	1	1.125	.294
		F	32	4.12	.793	46		
33	I try to find out how to be a better learner of English.	M	16	4.38	.619	1	1.274	.265
		F	32	4.09	.893	46		
34	I plan my schedule so I will have enough time to study English.	M	16	3.31	1.448	1	.274	.603
		F	32	3.12	1.008	46		
35	I look for people I can talk to in English.	M	16	3.25	1.238	1	.131	.719
		F	32	3.38	1.070	46		
36	I look for opportunities to read as much as possible to study English.	M	16	3.94	1.063	1	3.449	.070
		F	32	3.34	1.035	46		
37	I have clear goals for improving my English skills.	M	16	4.25	.775	1	7.054	.011
		F	32	3.56	.878	46		
38	I think about my progress in learning English.	M	16	4.44	.629	1	4.533	.039
		F	32	3.84	1.019	46		
39	I try to relax whenever I feel afraid of using English.	M	16	3.81	1.109	1	.880	.353
		F	32	3.50	1.078	46		

40	I encourage myself to speak English even when I am afraid of making a mistake.	M	16	4.31	.946	1	4.194	.046
		F	32	3.53	1.367	46		
41	I give myself a reward or treat when I do well in English.	M	16	2.31	1.352	1	.007	.932
		F	32	2.28	1.114	46		
42	I notice if I am tense or nervous when I am studying or using English.	M	16	3.06	1.237	1	.293	.591
		F	32	3.25	1.078	46		
43	I write down my feelings in a language learning diary.	M	16	2.38	1.147	1	.007	.935
		F	32	2.41	1.292	46		
44	I talk to someone else about how I feel when I am learning English.	M	16	2.75	1.125	1	.385	.538
		F	32	2.53	1.164	46		
45	If I do not understand something in English I ask the other person to slow down or to say it again.	M	16	3.50	.894	1	.243	.624
		F	32	3.62	.793	46		
46	I ask English speakers to correct me when I talk.	M	16	3.31	1.352	1	.823	.369
		F	32	2.97	1.177	46		
47	I practice English with other students.	M	16	3.12	.885	1	.723	.400
		F	32	2.91	.818	46		
48	I ask for help from English speakers.	M	16	3.19	1.223	1	.009	.924
		F	32	3.22	.975	46		
49	I ask questions in English.	M	16	3.56	1.031	1	.865	.357
		F	32	3.34	.602	46		
50	I try to learn about the culture of English speakers.	M	16	3.88	1.360	1	.634	.430
		F	32	3.56	1.243	46		

Table 3 that follows indicates descriptive statistics for the use of all LLS categories by two genders.

Table 3. Descriptive statistics for the use of categories of LLSs by two genders.

Descriptives								
		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
mean of memory	male	16	3.0625	.52739	.13185	2.7815	3.3435	2.00	4.22
	female	32	3.0660	.39598	.07000	2.9232	3.2087	2.33	4.00
	Total	48	3.0648	.43839	.06328	2.9375	3.1921	2.00	4.22
mean of cognitive	male	16	3.5625	.62861	.15715	3.2275	3.8975	2.29	4.43
	female	32	3.1853	.53632	.09481	2.9919	3.3786	1.71	4.57
	Total	48	3.3110	.59003	.08516	3.1397	3.4823	1.71	4.57
mean of compensation	male	16	3.4271	.47519	.11880	3.1739	3.6803	2.50	4.17
	female	32	3.3490	.57791	.10216	3.1406	3.5573	2.00	4.50
	Total	48	3.3750	.54197	.07823	3.2176	3.5324	2.00	4.50
mean of metacognitive	male	16	3.9583	.44606	.11152	3.7206	4.1960	3.11	4.56
	female	32	3.6042	.63480	.11222	3.3753	3.8330	2.44	4.56
	Total	48	3.7222	.59813	.08633	3.5485	3.8959	2.44	4.56
mean of affective	male	16	3.1042	.69887	.17472	2.7318	3.4766	1.67	4.33
	female	32	2.9167	.60760	.10741	2.6976	3.1357	1.33	4.17
	Total	48	2.9792	.63825	.09212	2.7938	3.1645	1.33	4.33
mean of social	male	16	3.4271	.75270	.18817	3.0260	3.8282	2.17	5.00
	female	32	3.2708	.54006	.09547	3.0761	3.4655	2.17	4.17
	Total	48	3.3229	.61541	.08883	3.1442	3.5016	2.17	5.00
mean of total strategies	male	16	3.4563	.41262	.10315	3.2364	3.6761	2.68	4.18
	female	32	3.2369	.38505	.06807	3.0981	3.3757	2.56	4.24
	Total	48	3.3100	.40379	.05828	3.1928	3.4272	2.56	4.24

The next table represents the results of ANOVA to indicate whether there is any significant difference between the two genders regarding the frequency of use of categories of LLSs. As it is evident, the only significant difference between them is in their use of cognitive and metacognitive LLSs in favor of males.

Table 4. ANOVA results for the use of LLSs by two genders.

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
mean of memory	Between Groups	.000	1	.000	.001	.980
	Within Groups	9.033	46	.196		
	Total	9.033	47			
mean of cognitive	Between Groups	1.518	1	1.518	4.704	.035
	Within Groups	14.844	46	.323		
	Total	16.362	47			
mean of compensation	Between Groups	.065	1	.065	.218	.643
	Within Groups	13.740	46	.299		
	Total	13.806	47			
mean of metacognitive	Between Groups	1.338	1	1.338	3.977	.052
	Within Groups	15.477	46	.336		
	Total	16.815	47			
mean of affective	Between Groups	.375	1	.375	.919	.343
	Within Groups	18.771	46	.408		
	Total	19.146	47			
mean of social	Between Groups	.260	1	.260	.683	.413
	Within Groups	17.540	46	.381		
	Total	17.800	47			
mean of total strategies	Between Groups	.513	1	.513	3.303	.076
	Within Groups	7.150	46	.155		
	Total	7.663	47			

The following table reveals the performances of males and females on the aptitude test.

Table 5. Descriptive statistics for the performances of the two genders on the components of MLAT.

Descriptives									
		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
number	male	16	19.2500	2.48998	.62249	17.9232	20.5768	10.00	20.00
learning1	female	32	19.2812	1.46429	.25885	18.7533	19.8092	13.00	20.00
	Total	48	19.2708	1.84206	.26588	18.7360	19.8057	10.00	20.00
phonetic script2	male	16	17.0625	1.23659	.30915	16.4036	17.7214	15.00	19.00
	female	32	16.5312	1.64580	.29094	15.9379	17.1246	13.00	20.00
	Total	48	16.7083	1.52927	.22073	16.2643	17.1524	13.00	20.00
spelling clues3	male	16	13.8750	1.85742	.46435	12.8853	14.8647	11.00	18.00
	female	32	12.3750	3.28977	.58155	11.1889	13.5611	4.00	20.00
	Total	48	12.8750	2.95804	.42696	12.0161	13.7339	4.00	20.00
words in	male	16	16.0625	2.74393	.68598	14.6004	17.5246	10.00	19.00
sentences4	female	32	15.8750	3.75671	.66410	14.5206	17.2294	.00	20.00
	Total	48	15.9375	3.42336	.49412	14.9435	16.9315	.00	20.00
paired	male	16	19.4375	.96393	.24098	18.9239	19.9511	17.00	20.00
associates5	female	32	18.6875	1.82169	.32203	18.0307	19.3443	14.00	20.00
	Total	48	18.9375	1.61649	.23332	18.4681	19.4069	14.00	20.00
total aptitude	male	16	17.1375	1.17466	.29367	16.5116	17.7634	13.60	18.40
scores mean	female	32	16.5500	1.36972	.24213	16.0562	17.0438	11.60	18.80
	Total	48	16.7458	1.32520	.19128	16.3610	17.1306	11.60	18.80

Regarding the performance of the two genders on the components of MLAT, one-way ANOVA showed that there was no significant differences between them on their aptitude test scores.

Table 6. ANOVA results for the performances of the two genders on the components of MLAT.

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
number learning1	Between Groups	.010	1	.010	.003	.957
	Within Groups	159.469	46	3.467		
	Total	159.479	47			
phonetic script2	Between Groups	3.010	1	3.010	1.295	.261
	Within Groups	106.906	46	2.324		
	Total	109.917	47			
spelling clues3	Between Groups	24.000	1	24.000	2.851	.098
	Within Groups	387.250	46	8.418		
	Total	411.250	47			
words in sentences4	Between Groups	.375	1	.375	.031	.860
	Within Groups	550.438	46	11.966		
	Total	550.812	47			
paired associates5	Between Groups	6.000	1	6.000	2.363	.131
	Within Groups	116.812	46	2.539		
	Total	122.812	47			
total aptitude scores mean	Between Groups	3.682	1	3.682	2.148	.150
	Within Groups	78.857	46	1.714		
	Total	82.539	47			

The roles of gender and aptitude level was also checked on the use of LLSs. High and low aptitude students were determined based on their LLA test scores, i.e., first the total LLA test scores were ordered from the highest to the lowest and then they were divided into two groups of equal number. As can be seen in Table 9 (tests of between-subjects effect), two-way ANOVA showed that aptitude level does have a positive medium effect on strategy use in favor of high aptitude students (Partial eta squared = .40). However, gender had no relationship with the use of LLSs. Tables 7 and 8 present inferential statistics and Leven's test of equality for the two groups, respectively.

Table 7. Inferential statistics for total LLS use based on gender and aptitude level.

Descriptive Statistics						
Dependent Variable: mean of total strategies						
genders		aptitude levels		Mean	Std. Deviation	N
dimension1	male	dimension2	low	3.0500	.20543	6
			high	3.7000	.29029	10
			Total	3.4563	.41262	16
	female	dimension2	low	2.9567	.15282	18
			high	3.5971	.27297	14
			Total	3.2369	.38505	32
	Total	dimension2	low	2.9800	.16775	24
			high	3.6400	.27888	24
			Total	3.3100	.40379	48

Table 8. Leven's test of equality for total LLS use based on gender and aptitude level.

Levene's Test of Equality of Error Variances [a]			
Dependent Variable: mean of total strategies			
F	df1	df2	Sig.
2.041	3	44	.122
Tests the null hypothesis that the error variance of the dependent variable is equal across groups.			
a. Design: Intercept + Gender + levels + Gender * levels			

Table 9. Two-way ANOVA for total LLS based on gender and aptitude level.

Tests of Between-Subjects Effects						
Dependent Variable: mean of total strategies						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	5.328a	3	1.776	33.466	.000	.695
Intercept	449.615	1	449.615	8472.094	.000	.995
Gender	.098	1	.098	1.842	.182	.040
levels	4.230	1	4.230	79.715	.000	.644
Gender * levels	.000	1	.000	.004	.948	.000
Error	2.335	44	.053			
Total	533.556	48				
Corrected Total	7.663	47				
a. R Squared = .695 (Adjusted R Squared = .675)						

Finally, a Pearson Product-moment correlation was run to investigate if any possible relationship would exists between the components of MLAT and the categories of LLSs. As Table 10 below reveals, the pattern of the significant relationships found was as: a) between the use of metacognitive strategies and the scores on SC, WS, and PA parts of MLAT, b) between the use of cognitive strategies and all components of MLAT, c) between social strategy use and performances on SC, WS, and NL sections of MLAT, d) between the use of compensation strategies and the scores on SC, WS, and NL components, e) between affective strategy use and SC, WS, and PA parts, and finally f) between the use of memory strategies and performances on SC part. To depict a clearer picture of the performances of students (both male and female, and high and low aptitude levels), students' mean scores on the components of MLAT and the mean of frequency of use of each category of LLSs are also provided in the table. Furthermore, as the means of high versus low aptitude students provided in the following table shows (based on Oxford's classification), low aptitude students were medium users of all LLSs but high aptitude students were high users of LLS categories except for affective and memory strategies in which cases they were medium users. Based on aptitude levels, another interesting finding which the table shows is the ranking of LLS from the most frequently used ones (metacognitive strategies) to the least frequently used ones (memory strategies) as well as the ordering of the MLAT components from the most difficult (SC) to the least difficult (NL).

Table 10. Pearson Product-moment correlations among the LLS categories and the components of MLAT (along with the means based on aptitude levels)

LLS \ MLAT					**SC/** Inductive language learning ability		**PS/** Phonemic coding ability		**WS/** Grammatical sensitivity		**PA/** Rote-learning ability		**NL/** Phonemic coding ability	
Mean scores					**H**	**L**	**H**	**L**	**H**	**L**	**H**	**L**	**H**	**L**
					14.45	11.29	16.95	16.45	17.54	14.33	19.45	18.41	19.87	18.66
					M	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**
					13.87	12.37	17.06	16.53	16.06	15.87	19.43	18.68	19.25	19.28
Met	**H**	4.11/ H	**M**	3.95/ H	.55**		.16		.42**		.38**		.28	
	L	3.32/ M	**F**	3.60/ H										
Cog	**H**	3.73/ H	**M**	3.56/ H	.47**		.38**		.63**		.39**		.42**	
	L	2.88/ M	**F**	3.18/ M										
Soc	**H**	3.68/ H	**M**	3.42/ M	.43**		.08		.32*		.27		.28*	
	L	2.95/ M	**F**	3.27/ M										
Com	**H**	3.65/ H	**M**	3.42/ M	.42**		.04		.51**		.25		.40**	
	L	3.09/ M	**F**	3.34/ M										
Aff	**H**	3.27/ M	**M**	3.10/ M	.32*		.25		.50**		.32*		.19	
	L	2.68/ M	**F**	2.91/ M										
Mem	**H**	3.22/ M	**M**	3.06/ M	.30*		.09		.05		.18		.02	
	L	2.90/ M	**F**	3.06/ M										

*. Correlation is significant at the 0.05 level (2-tailed). / **. Correlation is significant at the 0.01 level (2-tailed).

NL (Number Learning), PS (Phonetic Script), SC (Spelling Clues), WS (Words in Sentences), and PA (Paired Associates)
H (High aptitude group), L (Low aptitude group), M (Male), F (Female), H (High user of LLSs), and M (Medium user of LLSs)

Based on the above findings, the answers to the research questions are in order.

5. There is a significant difference between male and female Iranian EFL students in their use of LLSs.
6. There is no significant difference between male and female Iranian EFL students in their LLA.
7. Aptitude level but not gender plays a significant role in Iranian university EFL students' LLS use.
8. There is a significant relationship between male and female Iranian EFL students' LLA and LLS use.

5. Discussion

This study sought to discover the patterns of LLA (based on MLAT) and LLS use (based on SILL) among a group of male and female Iranian university EFL students. The researchers found that males significantly outperformed females in strategies mostly related to cognition and metacognition; namely, three cognitive strategies (trying to talk like native speakers, writing notes, letters, and messages in English, and finding the meaning of English words by dividing it into its parts); one compensation strategy (trying to predict what the interlocutor will say next in a

conversation): three metacognitive strategies (seeking to use English in as many ways as possible, having clear goals for improving English knowledge, and thinking about progress); and finally one affective strategy (encouraging themselves to speak in English in spite of the fear of making a mistake). So compared to their female counterparts, male students in this study used LLSs that involve planning, organizing and evaluating, in addition to LLSs most related to identifying, grouping, retention of material, and the LLSs of retrieval, rehearsal and production of elements of language more frequently than other types of LLSs.

However, no significant difference was found for the participants' performances on the aptitude test components. Furthermore, unlike gender, aptitude level was found to play a significant role in the choice and frequency of use of LLS among EFL students. Significant relationships were also found between the components of MLAT and the categories of LLS as follows: there was large positive relationships between the use of cognitive strategies and performances on all five components of MLAT; the same was found between compensation strategies and scores on NL, SC, and WS components, between metacognitive strategy use and performances on SC, WS, and PA parts, between affective strategy use and the scores on SC, WS, and PA components, between the use of social strategies and scores on NL, SC, WS sections, and eventually, between memory strategy use and SC scores. It was also found that high aptitude students used LLSs significantly more frequently than did low aptitude students.

Based on Ellis (2008), SC component focuses on inductive language learning ability, PS part on phonemic coding ability, WS on grammatical sensitivity, PA on rote-learning and possibly NL again on phonemic coding ability. In addition, the first three parts were found to be difficult even for high aptitude students. Furthermore, these students used metacognitive, cognitive, social, and compensation strategies more than other strategy types; meanwhile, SC component correlated with all six categories of strategies; WS with all except memory strategies; NL with cognitive, social, and compensation strategies; PS with metacognitive and cognitive strategies; and PA part with just cognitive and affective strategies. It was also found that there were two common strategies of metacognitive and cognitive strategies that correlated with performance on SC, PS, and WS; however, for completing WS, PA, and NL, the only common strategy used was cognitive strategy.

Supporting the findings of the present research, Nikoopour, et al. (2011) in a study on language learning preferences of Iranian EFL learners, found that metacognitive strategies were the most frequently used LLS, while memory strategies were the least used ones. Similarly, Hong-Name and Leavell (2006) as well as Vossoughi and Ebrahimi (2003) concluded that metacognitive LLSs are the most frequently used and memory and affective LLSs are the least frequently used ones among some ESL and bilingual and monolingual EFL students, respectively. In confirmation, Khabiri and Azaminejad (2009) in a study among both intermediate and advanced learners discovered that cognitive strategies were most frequently used while the least used ones were affective LLSs.

In line with our findings, Oxford and Ehrman (1995) finally revealed that compensation strategies were more preferred by learners in their study; however, Lan and Oxford (2003) found that Taiwanese elementary learners employed compensation and affective types of LLSs more than other types. These inconsistencies might be due to some extraneous variables like age, gender, proficiency levels, motivation, etc. Also in contrast to our findings, Winke's (2013) study showed that advanced language learners used fewer LLSs than intermediate learners and that they used their selected strategies in new and innovative ways related to the complexities of advanced level language learning (e.g., Leaver, 2005).

Regarding the correlation analysis between the components of LLA and LLS categories some researchers believe that LLA can be best realized in terms of the particular context of language learning (Robinson, 2007). But generally speaking, studies found that LLA is positively related to proficiency as far as proficient language learners were reported to use a variety of LLSs more frequently than low proficient students (e.g., Ehrnam and Oxford, 1995). Gardner and Lambert (1959) also found out that students' grammatical sensitivity correlates with their grades in all areas of academic performance and accomplishment, not just foreign language learning, and that other sorts of learning are somehow linked together.

Some limitations may inhibit the researchers to make solid generalizations, some of them can be: the limited number of participants and the somewhat disproportionate distribution of males and females. Future research might focus on the observed, interactive, reciprocal aspects of motivation and LLS use; the differential effects LLA, motivation, and LLS use have on the different skills of second/foreign language development, or even the relationships between rote memory and the other LLA factors can also be rich areas for carrying out more in-depth studies. More investigations would also undertake experiments on the effect of LLA-treatment and LLS instructions on different variables such as achievement, proficiency, self-efficacy, etc., since as Hwu and Sun's (2012) study concluded, equally explicit but different instructional approaches can have differential effects on the learning performance of learners at different aptitudinal levels.

6. Conclusion

McDonough (2005) states that via increasing self-confidence or self-esteem, language strategy training can have positive effects on learners' motivation. Wenden (1991) also suggested that strategic instruction fosters learners' autonomy, another factor that is highly determining in reaching the optimal motivation. Findings of this study also revealed that LLA and LLS use are highly positively correlated with each other. Teachers are, therefore, suggested to focus more on instructing LLSs, particularly, metacognitive and cognitive types of strategies that have great relationship with the components of LLA and are highly frequently used by high aptitude students. Kinoshita (2003) also believes through receiving instruction on LLS, learners adopt an active or even a more reactive role in their learning processes

and when their knowledge of LLSs turns into procedural knowledge, there will be a positive washback on learners' level of motivation, self-efficacy, autonomy, transfer skills, and language proficiency. Supporting this claim, based on Robinson's (2007) proposed Ability Differentiation Hypothesis, some second language learners are found to have truly differentiated cognitive skills and abilities, while others do not. It is then suggested that these different talent schemes that correspond with different LLA complexes should then be matched to the particular instructional conditions in order to maximize second language learning potential. Finally, highlighting the importance of instruction, Robinson (2007) points out that a reason for developing aptitude tests has been to diagnose relative strengths and weaknesses in the abilities that are thought to be contributing to language learning, so as to differentiate instruction and exposure to the second/foreign language for each learner in ways that optimally corresponds to their strengths, and that is compensatory for the areas of weakness. As a final remark, the researchers in this study strongly recommend teachers and professors to take into account the positive effects of LLS instruction which is contributing to LLA as well, and to try their best to enhance students' awareness of their learning potentials in the most beneficial and efficient ways.

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