

## The relationship between Iranian university EFL students' multiple intelligences and their use of language learning strategies: An exploratory study

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### ABSTRACT

**EN** The present research contributes to an increased understanding of the potential relationships between multiple intelligences and the choice and frequency of use of language learning strategies. Forty-one EFL students from Urmia University (Iran) completed Oxford's (1990a) *Strategy Inventory for Language Learning* and the McKenzie (1999) *Multiple Intelligences Inventory*. Data analyses revealed a moderately positive relationship between the participants' multiple intelligences and language learning strategy use ( $r = .58$ ). Pearson Product-Moment correlation also showed medium-to-large positive relationships within and among the categories of multiple intelligences and the types of language learning strategies. Implications of this study for EFL education are discussed, and suggestions to improve students' performance are provided.

**Key words:** LANGUAGE LEARNING STRATEGY, MULTIPLE INTELLIGENCES, STUDENTS OF ENGLISH AS A FOREIGN LANGUAGE.

**ES** La presente investigación aporta una mayor comprensión de las potenciales relaciones entre las inteligencias múltiples, tanto en la elección como en la frecuencia de uso de las estrategias de aprendizaje de lenguas. Un total de cuarenta y un estudiantes de inglés como lengua extranjera de la Universidad de Urmia (Irán) contestó a los cuestionarios del *Strategy Inventory for Language Learning* de Oxford (1990a) y del *Multiple Intelligences Inventory* de McKenzie (1999). El análisis de datos reveló una relación moderadamente positiva entre las inteligencias múltiples de los participantes y el uso de estrategias de aprendizaje de lenguas ( $r = 0,58$ ). La correlación producto-momento de Pearson también registró relaciones positivas de media a gran escala en (y entre) las categorías de las inteligencias múltiples y los tipos de estrategias de aprendizaje de lenguas. Se incluye una discusión de las implicaciones de este estudio en el ámbito del inglés como lengua extranjera, y se proporcionan distintas sugerencias para mejorar el rendimiento de los estudiantes.

**Palabras clave:** ESTRATEGIAS DE APRENDIZAJE DE LENGUAS, INTELIGENCIAS MÚLTIPLES, ESTUDIANTES DE INGLÉS COMO LENGUA EXTRANJERA.

**IT** Questa ricerca contribuisce a comprendere maggiormente le potenziali relazioni tra le intelligenze multiple e la scelta e la frequenza d'uso delle strategie di apprendimento linguistico. Quarantuno studenti di inglese come lingua straniera (EFL) dell'università di Urmia (Iran) hanno completato il *Strategy Inventory for Language Learning* di Oxford (1990a) e il *Multiple Intelligences Inventory* di McKenzie (1999). L'analisi dei dati ha rivelato una relazione moderatamente positiva tra le intelligenze multiple e l'uso della strategia di apprendimento linguistico dei partecipanti ( $r = .58$ ). La correlazione Prodotto-Momento di Pearson ha altresì dimostrato una sostanziale connessione positiva all'interno e tra le categorie delle intelligenze multiple e i tipi di strategie di apprendimento linguistico. Si include una discussione finale sulle implicazioni di questo studio per la formazione in inglese come lingua straniera (EFL) e suggerimenti per migliorare la performance degli studenti.

**Parole chiave:** STRATEGIE DI APPRENDIMENTO LINGUISTICO, INTELLIGENZE MULTIPLE, STUDENTI DI INGLESE COME LINGUA STRANIERA.

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## 1. Introduction

Over the past few decades, mainly in Western countries, a remarkable shift in focus from teaching to learning (Lessard-Clouston, 1997; Peng, 2002) has taken place within the field of Foreign Language (FL) or Second Language (SL) education. Individual differences among students, such as learning strategies, learning aptitude, culture, gender, etc., have acquired a prominent role in FL/SL learning (Ehrman, 1990; Galbraith & Gardner, 1988; Oxford & Ehrman, 1993; Skehan, 1989). The present research aims to shed light on the connection between two of these variables: multiple intelligences (MI) scores of learners and their use of language learning strategies (LLS). The results of this study may offer a deeper understanding of strategy use among EFL learners in general, and in an Iranian context in particular. In the next two sections, we provide a succinct account of language learning strategies and multiple intelligences.

## 2. Language learning strategies

Wenden (1986) pointed out that, in the context of language teaching and learning, if the answers are given to the students, the immediate problem is explained, but if the students are taught the strategies to find the answers for themselves, they are given the authority to be in charge of their own learning. Language learning strategies (LLS) are the conscious actions or steps taken by the learners to develop and control their language learning (Cohen & Macaro, 2007; Oxford, 1996, 2011). As defined by Cohen (1998), LLSs are "the conscious thoughts and behaviors used by learners with the explicit goal of improving their knowledge of a target language" (p.68). Oxford (1990a) also described LLSs as "specific actions taken by the learner to make learning easier, faster, more enjoyable, more self-directed, more effective, and more transferable to new situations" (p. 8).

The strategies themselves, however, have been classified differently by O'Malley and Chamot (1990) and by Oxford (1990a). O'Malley and Chamot (1990) divided them into three groups of *metacognitive*, *cognitive*, and *social and affective* LLSs. These authors defined cognitive LLSs as those that "operate directly on incoming information, manipulating it in ways to enhance learning" (p. 44). They referred to metacognitive LLSs as "higher order executive skills that may entail planning for, monitoring, or evaluating the success of a learning activity" (p. 44). Social and affective LLSs, according to O'Malley and Chamot, deal with the control of affect and interaction with others. Oxford (1990a) instead made a distinction between two broad classes of LLSs, *direct* and *indirect strategies*. The *direct* LLSs include memory strategies, used for storing and retrieving new information; compensation strategies, utilized for overcoming gaps in the learner's knowledge; and cognitive strategies, applied for comprehending and producing language. These direct LLSs are concerned with "language itself in a variety of specific tasks and situations" (p. 14), while indirect LLS deal with "the general management of learning" (Oxford 1990a, p. 15). The indirect strategies included metacognitive strategies, which carry out the management and coordination of the learning process; social strategies, which are related to learning through interaction with others; and affective strategies; which concern the emotional regulation of language learning. The distinction between these scholars' classifications of LLSs may simply be a matter of perspective, however. Oxford's categorization was more detailed as it contained multiple specific categories, even though the author gathered LLSs in two broad umbrella terms, while in O'Malley and Chamot's distinction fewer categories are identified, thus making it seem not as comprehensive as Oxford's. In this paper, we have followed Oxford's categorization to get an in-depth understanding of the strategies the participants used and have taken a quantitative approach to this purpose.

### 2.1 Language learning strategies in FL/SL teaching

The field of FL/SL teaching was introduced to the concept of LLS through the work of Rubin (1975). The conduct and behaviors of good language learners became the focus of studies hoping to make recommendations and generalizations about the ways to improve the efficiency of SL/FL learning/teaching programs (Naiman, Frohlich, & Todesco, 1978). LLSs are often contrasted with communication strategies that, unlike LLSs, deal with the production of second language output and not its acquisition and internalization. Due to their problem-oriented nature, LLSs are also contrasted with learning styles. Brown (1994) differentiates the two by proposing that strategies are applied when learners face specific learning difficulties, hence, their strategic approach may vary with respect to the nature of the particular learning problem while styles are more or less fixed and do not substantially change from one learning task to another.

A great number of studies have shown the important role LLSs play in increasing the efficiency of language learning and in bringing forth a positive impact on the language use of the learners (Cohen &

Weaver, 1998; Wenden & Rubin, 1987). Investigations in this area have established that not all language learners use LLSs in the same fashion. Use of LLSs is found to be influenced by a number of variables (Oxford, 1990a), and the frequency and choice of LLSs is specific to every individual (Chamot & Kupper, 1989). The individual differences that have been identified include previous experience, motivation, gender, learning style, different personality types, and intelligence (e.g., Cohen, 1990; Ehrman & Oxford, 1990; MacIntyre & Gardner, 1989; Reid, 1989).

Many researchers have shown that language-course level is also related to learners' use of LLSs. A study by Chamot, O'Malley, Kupper, and Impink-Hernandez (1987) revealed that metacognitive strategies were more frequently used among higher-level foreign language learners than was the case with less advanced students. In Politzer's (1983) study, higher-level foreign language learners utilized more positive, communicative or functional, and student-directed strategies. In other research, Oxford (1990b) reported that students of different ages and stages of learning second language used quite different strategies. He found that special strategies were more frequently used among older or more advanced students than among younger or less advanced students. Similarly, Green and Oxford (1995) discovered that higher-level students took advantage of all types of LLSs more frequently than lower level students. While this study did not specifically aim to compare higher- versus lower-proficiency students in terms of their LLS use, it implicitly tried to convey the importance of delving into the patterns of LLS use. In other work, Bialstock (1981) and Huang and van Naerssen (1987) found that strategies associated with functional practice were related to proficiency; however, some years later, Ehrman and Oxford's (1995) study revealed that successful students used more of the cognitive strategies like looking for patterns or reading for pleasure. In a similar vein, Griffiths (2003) discovered that in private schools in Auckland, there was a significant relationship between LLS use and course level, and additional significant differences were found between these two variables according to students' nationality. These mixed findings suggest that factors such as context, situation, and sample as well as other individual differences such as intelligence may be important moderating variables in LLS use. Yet, they also suggest that planning, course work, and teaching practices on LLSs may contribute to the effectiveness of language teaching programs.

### 3. Multiple intelligences

The second source of difference among individuals with which we are concerned in this study is their intelligence, defined as the innate ability of human beings to think, identify, analyze, and work out problems for specific purposes, under their own management and direction, in particular social-historical and physical contexts (Chongde & Tsingan, 2003).

The *theory of multiple intelligences* (MI) was elaborated by Gardner (1993, 1999), who proposed to view intelligence as a synthesis of various elements, which are somehow independent from each other. Armour-Thomas and Gopaul-McNicol (1998) claim that in this approach, "the human mind is quite modular in design and [...] separate and independent cognitive processes seem to underlie the performance on intellectual tasks" (p. 38). According to this model, different types of intelligences are identified. These include musical, linguistic, bodily-kinesthetic, logical-mathematical, spatial, intrapersonal, existential, interpersonal, and natural intelligence. Each one of these intelligences has an independent function from the others, and individuals may differ in their weaknesses and strengths in each one of them.

Gardner (1993) refers to his theory of MI as egalitarian, since no single intelligence type is claimed to be predominant to the others. His MI theory values different manifestations of intelligence in every individual, and tries to provide an inspiring family and learning context which will lead to the growth of these abilities in both children and adults. Gardner defines the intelligences as follows:

- a. Verbal/linguistic intelligence, which involves effective use of language or good knowledge of words;
- b. Musical intelligence, or sensitivity to melody and rhythm;
- c. Logical/mathematical intelligence, including effective use of numbers and the ability to deduce conclusions and to see cause and effect;
- d. Spatial/visual intelligence, or sensitivity to color and design and to graphic forms;
- e. Bodily/kinesthetic intelligence, which deals with physical/bodily coordination;
- f. Interpersonal intelligence, or the ability to understand others, their intentions, and moods;
- g. Intrapersonal intelligence, which utilizes the knowledge of the self;
- h. Natural intelligence, which is to know and care about nature;
- i. Existential intelligence, or the ability to meditate on the meaning of life.

The constructs of MI and LLS both deal with issues of problems and problem solving. They both tap into learners' reactions and strategies to what they face when involved in a learning task, and they can both lead to enhanced performance in their related areas. Thus, taking into account Gardner's recent theory regarding the implementation of MI theory to educational settings, the findings of the present research on these concepts may prove to be of benefit in varied teaching contexts.

### **3.1 Multiple intelligences in FL/SL teaching**

In 1983, the introduction of the Multiple Intelligences (MI) theory created much excitement in the educational community, since it shaped a clear contrast to the traditional view that individuals have only one, general intelligence (Baum, Viens, & Slatin, 2005). Additionally, rather than emphasizing the needs of society, the MI theory proposed by Gardner is focused on the needs of the individual learners. Therefore, in Gardner's view, schools should be person-centered and education carried out based on every child's particular intelligences or aptitudes, not only by looking for courses compatible with each student, but also seeking teaching methods matched to those courses. Gardner's program would therefore allow the capabilities of every individual to flourish. Gardner (1993) argued that through receiving this type of education, students would become more competitive and thus in a more constructive way would be able to work for society.

In a pilot study, Haley (2001) identified, documented, and promoted effective utilizations of the MI theory in second language classrooms. The teachers participating in the study collected the data about their students' MI profiles and then modified their courses in some classes to stimulate and activate all the intelligences. The results showed that the treatment group expressed keen curiosity in MI concepts and improved diversity of the instructional strategies in their classrooms. However, the experimental and control groups' classroom performance was not drastically different. Some years later, Chen (2005) carried out a study on the effect of paying attention to the principles of cooperative language learning and the pedagogical applications of the MI theory on the language proficiency of second language learners. The results showed that on the four language skills of writing, reading, listening, and speaking, the treatment group that was taught based on the principles of the MI theory and cooperative learning out-performed both the group being instructed only based on cooperative learning principles as well as the control group.

In a study by Razmjoo, Sahragard, and Sadri (2009) a relationship was found between MI and vocabulary-learning knowledge among English language teacher trainers. Their study also revealed that naturalist and verbal-linguistic intelligences made a statistically significant contribution in predicting vocabulary-learning knowledge. Saricaoğlu and Arikan (2009) investigated the relationship between second language learners' MI profiles and their performance on writing, listening, and grammar. They found significant correlations between bodily-kinesthetic, intrapersonal, and spatial intelligences and these learners' grammar performance and between musical intelligence and writing performance. However, none of the intelligences were reported to be significantly correlated with listening performance. Saadatmanesh (2014) found a significant relationship between EFL students' combination of multiple intelligences and their final English test scores and also between linguistic intelligence and the English test scores. Tekiner (2005) and Zare-ee and Shahi (2010) carried out studies on the relationship between language learners' MI and their learning styles where significant relationships were found between different intelligence types and learners' learning styles.

All of the above studies emphasize the importance of multiple intelligences and language learning strategies in a variety of educational programs. Therefore, to enhance understanding and make more discoveries in learners' LLSs use profiles, the individual's multiple intelligences must be recognized and attended to. The aim of this study is to examine how one important psychological factor, multiple intelligences (MI), might be related to English-as-a-Foreign-Language (EFL) learners' use of language strategies. In other words, the present research attempts to answer the following questions:

- 1) Is there any significant relationship between students' reported multiple intelligences and their language learning strategy use?
- 2) What is the prevalent MI among this sample of Iranian EFL students?
- 3) What is the pattern of LLS use among this sample of Iranian EFL students?
- 4) How does the pattern of LLS use among this sample of Iranian EFL students correlate with the selection of a certain LLS?

## 4. Methods

### 4.1 Participants

The participants were forty-one male and female undergraduate EFL students at Urmia University, West Azerbaijan, Iran. They ranged in age from 20 to 23, and were from similar linguistic, academic, and cultural backgrounds. Students were in two different classes, although they were in the same semester of their studies and some differences in their proficiency levels would be expected. They were semi-randomly selected following an intact-group design, and were not rewarded for their participation.

### 4.2 Instruments

The instruments used were Oxford's (1990a) Strategy Inventory for Language Learning (SILL) and McKenzie's (1999) Multiple Intelligence Inventory. The first tool had a five-point Likert scale format which measured how often participants used a given strategy, from a score of one, corresponding to "never", to a score of five, indicating "always." SILL structures learning strategies into six categories: memory strategies (items 1-9), cognitive strategies (items 10-23), compensation strategies (items 24-29), metacognitive strategies (items 30-38), affective strategies (items 39-44), and social strategies (items 45-50). Here is an example for each category of LLS:

- Memory strategy: "I think of the relationship between what I already know and new things when I learn English."
- Cognitive strategy: "I try to talk like native English speakers."
- Compensation strategy: "I make up new words if I do not know the right ones in English."
- Metacognitive strategy: "I try to find out how to be a better learner of English."
- Affective strategy: "I write down my feelings in a language learning diary."
- Social strategy: "I try to learn about the culture of English speakers."

The second tool, the Multiple Intelligence Inventory, covered nine types of intelligences: natural, musical, logical-mathematical, existential, interpersonal, bodily-kinesthetic, verbal-linguistic, intrapersonal, and visual-spatial intelligences. Each type of intelligence was assessed through ten items. One example item is given here for each category of MI:

- Natural intelligence: "I enjoy categorizing things by common traits."
- Musical intelligence: "I easily pick up on patterns."
- Logical-mathematical intelligence: "Step-by-step directions are a big help."
- Existential intelligence: "Religion is important to me."
- Inter-personal intelligence: "I enjoy chat rooms."
- Bodily-kinesthetic intelligence: "A fit body is important for a fit mind."
- Verbal-linguistic intelligence: "Word puzzles like crosswords and jumbles are fun."
- Intra-personal intelligence: "I need to know why I should do something before I agree to do it."
- Visual-spatial intelligence: "Music videos are very stimulating."

The reliability indices using Cronbach Alpha, a measure of internal consistency or reliability, were as follows: language learning strategy questionnaire: 50 items;  $\alpha = .86$ ; multiple intelligences questionnaire: 90 items;  $\alpha = .91$ .

### 4.3 Procedure

The participants were administered the questionnaires and were asked to complete them. They were also required to carefully read the directions along with example items presented in the introduction section of the questionnaires, and they were also provided instructions on how to indicate their responses. Following the directions, they indicated their responses to the statements on a scale from one corresponding to "never" to five meaning "always".

#### 4.4 Data analysis

Using Statistical Package for Social Sciences (SPSS, version 19, rf. Pallant, 2007), Pearson Product-Moment correlation analyses were carried out between total multiple intelligences and total language learning strategy use. They were also used to investigate the possible relationships among and within the six strategy types and the nine categories of multiple intelligences. Preliminary checks were conducted to show there is no violation of the assumptions behind Pearson correlation, namely, the existence of a linear relationship between LLS and MI, along with no significant outliers, and the approximately normal distribution of the two variables.

#### 5. Results

The results of data analyses are presented in this section. Table 1 below shows descriptive statistics for total language learning strategy use and total multiple intelligences.

Table 1

*Descriptive statistics for total language learning strategy use and total multiple intelligences*

Descriptive Statistics			
	Mean	Std. Deviation	N
Total Language Learning Strategies	169.81	18.351	41
Total Multiple Intelligences	305.68	38.957	41

Table 2 below presents the result of correlation analysis between total language learning strategy and multiple intelligences.

Table 2

*Pearson Product-Moment correlation between total language learning strategy and multiple intelligences*

Correlations			
		Total Language Learning Strategies	Total Multiple Intelligences
Total Language Learning Strategies	Pearson Correlation	1	.585**
	Sig. (2-tailed)	–	.001
	N	41	41
Total Multiple Intelligences	Pearson Correlation	.585**	1
	Sig. (2-tailed)	.001	–
	N	41	41

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

Based on Pallant (2007), a moderately positive relationship is found between these two variables ( $r(40) = .58, p = .001$ ). This result means that these two variables are positively correlated, i.e., an increase in MI profiles is associated with an increase in LLS use.

Table 3 shows descriptive statistics for each type of language learning strategies and the component parts of multiple intelligences, in decreasing order from the most-frequently-used to the least-frequently-used strategies and most common to least common intelligences.

Table 3  
*Descriptive statistics for language learning strategy types and the categories of multiple intelligences*

<b>Descriptive Statistics</b>			
	Mean	Std. Deviation	N
<b>Language Learning Strategy</b>			
Total Cognitive	48.58	5.932	41
Total Metacognitive	34.45	3.906	41
Total Memory	29.03	6.047	41
Total Compensation	20.94	3.140	41
Total Social	19.42	4.395	41
Total Affective	17.39	2.952	41
<b>Multiple Intelligences</b>			
Total Intrapersonal	38.74	5.621	41
Total Bodily Kinesthetic	36.81	5.449	41
Total Existential	34.26	8.828	41
Total Musical	33.97	6.785	41
Total Visual Spatial	33.84	5.580	41
Total Verbal Linguistic	33.10	4.346	41
Total Logical	32.23	7.740	41
Total Natural	31.97	6.580	41
Total Interpersonal	30.77	7.890	41

Table 4 below summarizes the result of correlation analysis among the types of language learning strategies and the components of multiple intelligences. All the significant relationships found are positive and medium to large. For the ease of reference, we report the significance of the relationships and the  $p$  values in each case in the text.

Table 4

Pearson Product-Moment correlations among categories of language learning strategies (in black) and the components of multiple intelligences (in blue)

		Correlations															
		TMem	TCog	TCom	TMet	TAff	TSoc	TNat	TMus	TLM	TExi	TInter	TBK	TVL	TIntra	TVS	
TMem	Pears	1	.534**	.385*	.342	.423*	.274	.586**	.314	.348	.439*	.240	.511**	.167	.186	-.022	
	Sig.		.002	.033	.059	.018	.136	.001	.085	.055	.014	.194	.003	.368	.318	.908	
	N		41	41	41	41	41	41	41	41	41	41	41	41	41	41	
TCog	Pears		1	.491**	.315	.442*	.435*	.238	.488**	.327	.315	.211	.534**	.245	.581**	.340	
	Sig.			.005	.084	.013	.014	.197	.005	.072	.085	.255	.002	.185	.001	.061	
	N			41	41	41	41	41	41	41	41	41	41	41	41	41	
TCom	Pears			1	.021	.398*	.181	-.019	.438*	.367*	.351	.204	.399*	.181	.312	.395*	
	Sig.				.909	.026	.331	.917	.014	.042	.053	.271	.026	.329	.087	.028	
	N				41	41	41	41	41	41	41	41	41	41	41	41	
TMet	Pears				1	.219	.404*	.104	.102	.164	.155	.032	.220	.180	.315	-.042	
	Sig.					.238	.024	.576	.583	.378	.405	.866	.234	.333	.084	.821	
	N					41	41	41	41	41	41	41	41	41	41	41	
TAff	Pears					1	.396*	.078	.260	.186	.234	.180	.204	.148	.271	.071	
	Sig.						.028	.677	.157	.317	.205	.333	.272	.428	.140	.705	
	N						41	41	41	41	41	41	41	41	41	41	
TSoc	Pears						1	-.047	.482**	.352	.326	.253	.226	.031	.322	.080	
	Sig.							.803	.006	.052	.073	.170	.221	.869	.078	.668	
	N							41	41	41	41	41	41	41	41	41	
TNat	Pears							1	.124	-.056	.221	.098	.339	.215	.175	.076	
	Sig.								.507	.764	.232	.600	.062	.246	.345	.684	
	N								41	41	41	41	41	41	41	41	
TMus	Pears								1	.545**	.474**	.467**	.436*	-.133	.376*	.472**	
	Sig.									.002	.007	.008	.014	.475	.037	.007	
	N									41	41	41	41	41	41	41	
TLM	Pears									1	.823**	.673**	.524**	.087	.366*	.261	
	Sig.										.000	.000	.002	.644	.043	.156	
	N										41	41	41	41	41	41	
TExi	Pears										1	.792**	.594**	.210	.355*	.289	
	Sig.											.000	.000	.258	.050	.115	
	N											41	41	41	41	41	
TInter	Pears											1	.584**	.241	.141	.244	
	Sig.												.001	.192	.450	.186	
	N												41	41	41	41	
TBK	Pears												1	.389*	.353	.443*	
	Sig.													.030	.051	.013	
	N													41	41	41	
TVL	Pears													1	.255	.300	
	Sig.														.167	.101	
	N														41	41	
TIntra	Pears														1	.426*	
	Sig.															.017	
	N															41	
TVS	Pears															1	
	Sig.																
	N																

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

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

Note. Abbreviations used in the table: TMem (Total memory strategy), TCog (Total Cognitive strategy), TCom (Total Compensation strategy), TMet (Total Metacognitive strategy), TAff (Total Affective strategy), TSoc (Total Social strategy), TNat (Total Natural intelligence), TMus (Total Musical intelligence), TLM (Total Logico-mathematical intelligence), TExi (Total Existential intelligence), TInter (Total Inter-personal intelligence), TBK (Total Bodily-kinesthetic intelligence), TVL (Total Verbal-linguistic intelligence), TIntra (Total Intra-personal intelligence), TVS (Total Visual-spatial intelligence).

From the results summarized in Table 4, we found that the relationships among components of language learning strategy were as follows. There was a significant relationship between the frequency of use of memory strategy and the use of cognitive strategy,  $r(40) = .53, p < .01$ . Moreover, there was a medium effect for the relationship between the frequency of use of memory strategy and compensation strategy,  $r(40) = .38, p = .03$ , and a medium effect was also found between the frequency of use of memory strategy and affective strategies,  $r(40) = .42, p = .01$ . Cognitive strategy use was also found to be related to the frequency of use of compensation strategy,  $r(40) = .49, p < .01$ ; affective strategy,  $r(40) = .44, p = .01$ ; and social strategies,  $r(40) = .43, p = .01$ . The use of compensation strategies was related to the use of affective strategies,  $r(40) = .39, p = .026$ . Finally, the metacognitive strategy was related to the use of social strategies,  $r(40) = .40, p = .02$ ; and the same was true for affective strategies,  $r(40) = .39, p = .02$ .

Regarding the relationships between the types of strategies and the types of intelligences, we found that memory strategy use was related to natural intelligence,  $r(40) = .58, p < .01$ ; existential intelligence,  $r(40) = .43, p = .01$ ; and bodily-kinesthetic intelligence,  $r(40) = .51, p < .01$ . On the other hand, the frequency of use of cognitive strategies was related to musical intelligence,  $r(40) = .48, p < .01$ ; bodily-kinesthetic intelligence,  $r(40) = .53, p < .01$ ; and intrapersonal intelligence,  $r(40) = .58, p < .01$ . Finally, the use of compensation strategy was found to be related to musical intelligence,  $r(40) = .43, p = .01$ ; logical-mathematical intelligence,  $r(40) = .36, p = .04$ ; bodily-kinesthetic intelligence,  $r(40) = .39, p = .02$ ; and visual-spatial intelligence,  $r(40) = .39, p = .02$ . Social strategy use was only found to correlate with musical intelligence,  $r(40) = .48, p < .01$ .

Regarding the relationships among multiple intelligences, results shows that there was a large effect between musical and logical-mathematical intelligence,  $r(40) = .54, p < .01$ ; logical-mathematical and existential,  $r(40) = .82, p < .001$ ; logical-mathematical and interpersonal,  $r(40) = .67, p < .01$ ; logical mathematical and bodily-kinesthetic,  $r(40) = .52, p < .01$ ; existential and interpersonal,  $r(40) = .79, p < .01$ ; existential and bodily-kinesthetic,  $r(40) = .59, p < .01$ ; and between interpersonal and bodily-kinesthetic intelligences,  $r(40) = .58, p < .001$ . Medium effects were found between musical and existential intelligences,  $r(40) = .47, p < .01$ ; musical and interpersonal,  $r(40) = .46, p < .001$ ; musical and bodily-kinesthetic,  $r(40) = .43, p = .01$ ; musical and intrapersonal,  $r(40) = .37, p = .03$ ; musical and visual-spatial intelligences,  $r(40) = .47, p < .01$ ; logical-mathematical and intrapersonal intelligences,  $r(40) = .36, p = .04$ ; existential and intrapersonal intelligences,  $r(40) = .35, p = .05$ ; bodily-kinesthetic and verbal-linguistic,  $r(40) = .38, p = .03$ ; bodily-kinesthetic and visual-spatial intelligences,  $r(40) = .44, p = .01$ ; and finally between intrapersonal and visual-spatial intelligence,  $r(40) = .42, p = .01$ .

Considering the findings in this section, we can now respond to the research questions as follows:

- 1) Is there any significant relationship between students' reported multiple intelligences and their language learning strategy use?  
There is a significant positive relationship between this sample of Iranian EFL students' multiple intelligences and their use of language learning strategies.
- 2) What is the prevalent MI among this sample of Iranian EFL students?  
The prevalent MI among the participants, in decreasing order, were intra-personal, bodily-kinesthetic, existential, musical, visual-spatial, verbal-linguistic, logical-mathematical, natural, and inter-personal intelligences.
- 3) What is the pattern of LLS use among this sample of Iranian EFL students?  
The pattern of use of LLSs were, in decreasing order, cognitive, metacognitive, memory, compensation, social, and affective strategies.
- 4) How does the pattern of LLS use among this sample of Iranian EFL students correlate with the selection of certain LLS?  
The correlation between MI profiles and LLS use was as follows: between memory strategies and natural, existential, and bodily-kinesthetic intelligences; between cognitive strategies and musical, bodily-kinesthetic, and intra-personal intelligences; between compensation strategies and musical, logical-mathematical, bodily-kinesthetic, and visual-spatial; and finally, between social strategies and musical intelligence.

## 6. Discussion

This exploratory study examined the relationship between multiple intelligences and language learning strategies. Results show that there is a moderately positive relationship between these two

variables, indicating that people with a certain MI profile are more likely to use a specific selection of LLSs. For example, people with a high score in natural intelligence are more likely to use memory strategies, while people with a high-score profile in intrapersonal intelligence are more likely to use cognitive learning strategies. Social learning strategies seem to be preferred only by people with a musical intelligence profile. The results also show that the most frequently used strategies among participants were cognitive and metacognitive strategies followed by memory, compensation, and social strategies. The least frequently used learning strategy was the affective strategy.

Regarding the types of multiple intelligences, the research shows that participants scored higher in intra-personal and bodily-kinesthetic intelligences, followed by existential, musical, visual-spatial, verbal-linguistic, logical-mathematical intelligences, and, finally, musical and interpersonal intelligences. Significant, positive, medium-to-large relationships were also found within and among the categories of multiple intelligences and the types of language learning strategies. Musical intelligence was found to have the most relationships with other intelligence types (logical-mathematical, existential, interpersonal, bodily-kinesthetic, intrapersonal, and visual-spatial). In second place, logical-mathematical intelligence was related to four other intelligence types (existential, interpersonal, bodily-kinesthetic, and intrapersonal). Then, existential intelligence was related to interpersonal, bodily-kinesthetic, and intrapersonal intelligences. Finally, bodily-kinesthetic intelligence was represented with the use of verbal-linguistic and visual-spatial intelligences. The types of intelligence least related with others were interpersonal and intrapersonal intelligences, with the first related only to bodily-kinesthetic intelligence, and the second related only to visual-spatial intelligence. These findings echo those of Alavinia and Mollahosseini (2012), who found a statistically significant relationship between EFL learners' MI types and LLS use. They also found that MI scales had predictive power in using metacognitive strategies. Our findings are also in line with Akbari and Hosseini (2008), whose results indicated that there is a relationship between MI and LLS use and second language proficiency, and Baleghizadeh and Shayeghi (2014), who found significant positive relationships between preferences of MI and perceptual/social learning styles. However, they also found negative correlations among the intrapersonal intelligence and group, kinesthetic, tactile, and auditory learning style preferences.

The relations among the MI types may be to some extent justifiable in connection with the kinds of activities with which each type of intelligence is expected to be associated, although, more studies with a specific focus on MI types and activities are required to arrive at robust explanations and claims. It is also believed that ethnicity or nationality can strongly affect the use of LLSs (Bedell, 1993). Therefore, further studies should be carried out investigating the relative effect of cultural and social values on the use of LLS. Further studies are also suggested to simultaneously investigate the different variables such as students' age, gender, aptitude, and language-learning styles, so that individual differences in a foreign or second language-learning context can be more comprehensively understood. The findings of the present study contribute to the ongoing debate about multiple intelligences and language learning strategies use in a FL/SL context, although they must be treated with caution due to the limited sample size. However, the study could be replicated using learners from different first language backgrounds to find out whether similar results are obtained.

The results of the present study clearly suggest, however, that MI and LLS use could be included in any language-learning program, both directly through explicit teaching to students and indirectly through the inclusion and consideration of MI and LLS in teaching methods and assessment procedures.

## 7. Conclusion

As Oxford and Shearin (1994) state, strategy use must be individualized in educational settings. In order to offer a productive instruction, teachers should learn to determine and take into account the individual differences among their students, which may in turn result in a shift from teacher-centered to learner-centered curriculums and instruction (Tudor, 1996). In this regard, Cook (2008) advises teachers in learner-based educational systems to make students aware of the range of the LLSs they can choose. Teachers might consider applying the findings of this and similar studies to build strategy awareness programs for the benefit of the students. At the same time, by employing the theory of MI in the classroom, educators may be able to modify their teaching and learning strategies to consider the individual differences of learners.

Stanford (2003) proposes that the MI theory would provide an outlet for fulfilling what good language educators were always doing, specifically providing varied opportunities for learners to learn and to exhibit proof of learning. In other words, professors have always known that learners have different

strengths and weaknesses. The MI theory now creates opportunities for professors to think of learning, teaching, and assessment from a variety of perspectives, by way of supplying the needs of multiple intelligences. This study shows that, MI and LLS are related to each other. We therefore, call on all educational authorities, teachers, and curriculum developers to implement these important elements into their programs, for the benefit of the teachers, the program itself, and the students.

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