

A Study of the Relationship Between Iranian EFL Learners' Multiple Intelligences and their Performance on Writing

Moussa Ahmadian

Associate Professor, Dept. of English Language and Literature, Faculty of Humanities,
Arak University, Arak, Iran Code post: 38156 PO. Box: 879, Iran (Corresponding Author)
Tel: +988613135111 E-mail: M-ahmadian@araku.ac.ir Moussa_ahmadian@yahoo.com.uk

Samaneh Hosseini

MA in TEFL, Department of English Language and Literature, Faculty of Humanities,
Arak University, Arak, Iran
E-mail: hosseinielnaz@yahoo.com

Doi: 10.5901/mjss.2012.03.01.111

Abstract The Multiple Intelligences Theory (MIT), proposed by Gardner (1983), claims that there are at least eight different human intelligences. This new view of intelligence with emphasis on learner variable has been used in language learning and teaching settings. The theory stresses that if individual differences are taken into account and classroom activities are diversified, language learners can better improve their language skills. The present study investigates possible relationship between L2 learners' multiple intelligence (MI) and their writing performance. Thirty three female homogeneous Persian speaking EFL learners participated in the study. The instruments used were the Multiple Intelligence Developmental Assessment Scales (MIDAS), an instrument designed by Shearer in 1996, and the participants' average scores on two writing tasks, as an index of writing products. The correlational analysis of the results revealed a statistically significant relationship between participants' MI and their performance on writing. Furthermore, the results of regression analysis showed that among all eight intelligences, linguistic intelligence is the best predictor of writing performance. The findings suggest English teachers to consider the role of MI in classes and provide more effective activities to help students improve second language writing ability. Possible implications of the findings for language teaching and teaching writing have been discussed.

Key words: Multiple Intelligence Theory (MIT), writing skills, Multiple Intelligence Developmental Assessment Scales (MIDAS), English as Foreign Language (EFL), Foreign Language Learners (EFL Learners)

1. Introduction

Since the introduction of the multiple intelligences theory (MIT) in Gardner's book (1983), interest has been growing internationally in examining the role of multiple intelligences (MI) in learning, achievement, and knowledge acquisition.

Gardner (1983) suggests the existence of eight relatively autonomous, but interdependent, intelligences rather than just a single construct of intelligence. He redefines the concept of intelligence as "the ability to solve problems or fashion products that are of consequence in a particular cultural setting or community" (Gardner 1993, p.15).

In Gardner's (1983) point of view, intelligence is a combination of different abilities; he divides human intelligence into linguistic, logical-mathematical, spatial, musical, bodily-kinesthetic, interpersonal, intrapersonal and naturalistic intelligences; recently, he has added Existential intelligence to his theory (Gardner, 1999). Gardner (1993) believes that it is important to identify each individual as a "collection of aptitudes" (p.27) rather than being identified by a single IQ measure.

Emotional Intelligence is a part of Gardner's (1993) interpersonal intelligence. Goleman (1995, in Brown, 2007) suggests that emotional intelligence (EQ) is an intelligence in its own right. Goleman also explains that emotional mind is pretty quicker than rational mind, without the hesitation of thinking what to do.

Gardner also claims that the list of intelligences may expand and include more intelligences; also, some intelligences may be rejected and excluded from the list (according to the 8 criteria that Gardner, 1983, mentions) if they do not meet these criteria (Smith, 2001). Armstrong (2002) suggests a list of proposed intelligences which includes spirituality, moral sensibility, sexuality, intuition, creativity, olfactory perception etc; however, these intelligences must meet Gardner's eight criteria to be accepted as different types of intelligence. However, Gardner (2003) mentions, "I am sticking to my 8 intelligences"(p. 10).

Since its emergence in 1983, Gardner's theory of MI has rapidly been incorporated into school curricula in educational systems across the United States and other countries (Christine, 2003). Many teachers accept the MI theory and attempt to teach students in the manner that will enhance their dominant intelligence(s).

A lot of writings in the area of second language learning and teaching focus on individual differences of learners, and the need to develop more student-centered learning programs (Smith 2001, p.48). This emphasis has been repeatedly confirmed by researchers who have focused on learner-based approaches and have made a significant contribution to language teaching by increasing our awareness of the need to take individual learner variations into consideration and to diversify classroom activities.

According to McClaskey (1995), it is possible to teach intelligences. He claims that one way to teach intelligence is to offer students opportunities to understand their own learning process. Syllabus designers offer using the MI theory as a paradigm to modify foreign language learning activities and engage all the intelligences in individuals in order to improve their learning (Price, 2001). Dobbs (2002) asserts that when children have an opportunity to learn through their strengths, they may become more successful in learning all subjects including the "basic skills"; one of these basic language skills is writing.

Based on Furneaux (1999), writing is essentially a social act; "you usually write to communicate with an audience, which has expectations about the text type (or genre) you produce" (p. 56). Harklau (2002) declares that "writing should play a more prominent role in classroom-based studies of second language acquisition" (p. 329). He also argues that not only should students learn to write but also they should write to learn. According to his idea, nowadays "reading and writing pass from being the object of instruction to a medium of instruction" (p. 336).

In spite of the growing number of studies investigating the relationship between MI and aspects of language learning, particularly learning language skills, less research has been reported in the literature to explore this relation between MI and L2 writing abilities. Thus, this paper aims to investigate possible relationship between MI and language learners' writing performance. The results may highlight the necessity of taking individual differences into consideration in language classrooms and show how such differences may lead to variation in learners' writing performance. If it turns out that multiple intelligences have positive relationship with students' writing ability, there can be a new trend in language teaching, especially teaching writing, to improve students' writing skill through taking individual differences into account. The study may thus increase interest in the applications of multiple intelligences to EFL writing courses with a goal toward self-directing, autonomous learners.

2. The Background

2.1. Historical Overview of Intelligence Studies

The idea of intelligence was first put forward by Sir Francis Galton in 1885, who used statistical tools and curves to show the relationship between heredity and being genius (Chaplin and Krawiec, 1974). However, he could not form a standardized intelligence test. It helped other researchers like Alfred Binet to create a method for distinguishing students with learning difficulties by the request of French Ministry of Education in 1904. After one year, by receiving assistance from Simon (another French psychologist), Binet formed the first intelligence test in 1905. Although the test had some shortcomings, it was welcomed by educationalist and gained publicity as the IQ test (See Gardner, 1985).

During 1920s, E.L.Thorndike proposed a view that the brain is like a muscle which can be more and more powerful by exercise. He assumed that studying challenging subjects like mathematics and Latin can empower students' learning ability. He designed a test to measure individual's linguistic and mathematical abilities that eventually became the foundation of modern intelligence tests.

Charles Spearman, a British educational psychologist, who was influenced by Thorndike's view of intelligence and inspired by the IQ test designed by Binet and Simon in 1923, formed a new idea about the general factor of intelligence which became known as the "g" factor. Thus, he designed some tests for measuring intelligence which were intended to be naturally scientific (Gardner, 1983).

In 1970s, Jean Piaget, with his cognitive model of stages, divided human intelligence into two parts: operative intelligence which explains how the world is understood, and figurative intelligence which is responsible for the representation of reality (See Gardner, 1985).

Regarding IQ tests, Sternberg (1982) declared that the validity of these tests varies across examinees. He states that intelligence is the ability for adapting one's behavior to the environment and situation. The same researcher, 1985, also proposed a triarchic theory of intelligence: componential ability, experiential ability, and contextual ability. By the first one he means analytical thinking, by the second one he means creative thinking, and by the last one he means the ability to manipulate context and situation (Sternberg, 1985).

In 1983, Gardner criticized the traditional IQ tests as incompatible with his multiple Intelligences (MI) theory. He proposed several intelligences to be at work simultaneously, and, thus, changed the perception that intelligence is a single construct. Gardner also believed that all of the intelligences could be enhanced through training and practice.

2.2. Basic Tenants of the MI Theory

Gardner (1983) introduced eight criteria for intelligences in his multiple intelligences (MI) theory; each intelligence has to satisfy a range of criteria, as follows:

- The potential for isolated breakdown of the skill through brain damage;
- The existence of savants, prodigies, and other exceptional individuals with this ability;
- Support from psychological training studies and from psychometric studies, including correlations across tests;
- Evolutionary plausibility;
- A distinct developmental history culminating in a definable set of end state performances;
- Having an identifiable core operation or set of operations;
- Ability to encode in a symbol system (e.g., language, mathematics, picturing, or musical notes);
- Being autonomous and independent. That is, the scores gained from a psychometric test of a particular intelligence do not correlate with scores obtained from other intelligences. This indicates that intelligences are independent (See Gardner, 1983).

An additional criterion, sometimes cited, is the existence of roles that foreground the intelligences in different cultures (Gardner, 1983). Gardner admitted that the criteria were somewhat flexible. Some intelligence "might have met all criteria, but were discarded because they were not highly valued within cultures" (cited in Visser et al. 2006, p.488).

According to these criteria, Gardner suggests and identifies eight intelligences in his MI theory; they are:

- Linguistic/Verbal Intelligence: Gardner (1983) refers to this ability as the intelligence of words since it is mainly concerned with written and spoken forms of language use.
- Logical/Mathematical Intelligence: This intelligence which is mainly concerned with numbers and science shapes a main part of the IQ test content. This intelligence involves skill in calculations as well as logical reasoning and problem-solving.
- Musical/ Rhythmic Intelligence: It includes sensitivity to pitch, rhythm, and the emotional aspects of sound

as related to the functional areas of musical appreciation, singing, and playing an instrument.

- Kinesthetic/ Bodily Intelligence: This intelligence highlights the ability to use one's body in different ways for both expressive (e.g., dance, acting) and goal-directed activities (e.g., athletics, working with one's hands).
- Spatial/ Visual Intelligence: It consists of the ability to perceive the visual world accurately and to perform transformations and modifications upon one's own initial perceptions through mental imagery.
- Naturalistic intelligence: According to Gardner (1983), this intelligence enables the person to identify the natural phenomena, categorize them, and to satisfy his curiosity about the natural phenomena by observing nature and to reach understanding of the relationships of natural phenomena.
- Interpersonal and Intrapersonal Intelligence: The Intrapersonal and Interpersonal intelligences are presented as separate but related functions of human brain. They are described as two sides of the same coin, where Intrapersonal intelligence emphasizes self-knowledge and Interpersonal intelligence involves understanding other people.

In fact, the last two intelligences do not easily give themselves to objective observations and in declaring them as intelligences. Gardner (1999) equals emotional intelligence with a combination of these two intelligences.

2.3. MI in Education and Curriculum Achievements

The Multiple Intelligences Theory and its applications to the educational settings are growing so rapidly. Many educators such as Armstrong (2002) began to use MI-Based Instructions as ways to overcome the difficulties which they encounter with their students as a result of their individual differences and their learning styles.

According to Gardner (1993), intelligences can be improved, modified, trained and even changed. In fact, human ability and intelligences are flexible and can be guided. Armstrong (2002, 2003) explains the application of MI to the classroom. He accepts the mentioned theory as the theory of education and learning trend that can support curriculum designers and educators with opportunity to apply it to educational settings. He also states that the theory can help both learners and teachers.

Gardner (1993) demonstrates that schools can try to prepare the situation in a way that students can discover their intelligence spectra and use their maximum potential to make a brilliant future. Based on Armstrong (2002), it is better to create an enjoyable classroom atmosphere in which students like what they learn and enjoy it. Using the MI Theory in the classroom can thus help teachers create such an encouraging atmosphere as well. The MI Theory is greatly required so as to deal with different students who have different minds. It will involve all the students with their different personalities to have more chance for learning and achieving success in spite of these differences that cannot be considered.

Many teachers and educational curriculum designers have used Gardner's theory in the teaching-learning processes and used its benefits. For example, McClaskey (1995) continued to use Howard Gardner's ideas on multiple intelligences as models for developing lessons. So, he concludes that it is not enough that teachers learn to recognize the types of intelligences in their students; rather, we must find ways to share that knowledge with the students themselves so that they would be able to use their skills in situations outside our classroom.

In another study by Rosenthal (1998, cited in Christine, 2003), the MI theory was concluded to be one successful instruction strategy for teachers who struggle to enhance student's self-esteem. Dobbs (2002), in his study of the relationship between multiple intelligence-based learning environment and academic achievements, found positive relationship between MI and students' performance level in subjects such as reading, writing, and mathematics.

To investigate the effects of Gardner's theory on writing, Fahim and Nejad Ansari (2006) investigated whether the type of feedback that EFL learners receive during the process of writing can have any significant effect on their short and/or long term writing achievement. The results proved the existence of the effect.

Marefat (2007) tried to see whether there is any relationship between students' MI Profile and their writing product. The instrument she used was McKenzie (1999)'s MI Inventory (p.154). The results turned out that kinesthetic, existential, and interpersonal intelligences are making the greatest contribution toward predicting writing scores.

As Swarlis (2008) reports, some researchers have found a statistically significant relationship between spatial intelligence and academic success in science and mathematics. Akbari and Hosseini (2008) investigated the possible relationship between learners' MI scores and language learning strategies. The result of the study showed that there is a relatively weak but statistically significant relationship between learners' MI and language learning strategies. According to their findings, there is a significantly positive correlation between MI and language proficiency as well.

Sharifi (2008) tried to figure out the relationship between MI scores and related school subjects. He used multi-sided intelligence questionnaire adapted from Douglas and Harms' questionnaires. According to his research, there is significant correlation among different kinds of intelligence and related school subject scores. Based on Mahdavi's (2008) research, the scores gained from learners' TOEFL and IELTS listening proficiency tests, positively correlate with all the eight intelligences. The researcher argues that only linguistic intelligence makes a statistically significant contribution to performance in both IELTS and TOEFL listening tests.

Jalilian (2009), pointed to the role of spatial ability in learners' performance in cloze tests. He concluded that a relationship exists between spatial ability and the scores obtained from the administration of two forms of close tests. Another research project conducted by Hashemi (2009) aimed to see if there is any relationship between Emotional Intelligence and writing performance at different proficiency levels. He reported that there is a positive relationship between emotional intelligence and writing performance at different levels of proficiency. He claims that "those participants whose emotional intelligence scores are higher, perform better in writing" (p. 84).

In order to use Gardner's theory in educational settings, some questionnaires and tools have been prepared for assessing various types of intelligence which are used in the education process. Among all these tools, we can refer to the "multiple intelligence tests for children by Nancy Fairs, multiple intelligence compiled by Mckenzie in 1999, as well as the multiple intelligence questionnaires by Harms and Douglas" (Sharifi 2008, p.17). Shearer, in 1996, produced a questionnaire to assess MI scores of students. Gardner (1999) himself also recommends using it in MI studies since it is reliable and valid. This instrument is called MIDAS (Multiple Intelligences Developmental Assessment Scales), which will be explained below.

2.4. The MIDAS

MIDAS is a self report instrument of intellectual disposition designed by Shearer (1996). This instrument contains 119 Likert-type (from a to f). The questions cover eight areas of abilities, interests, skills and activities. There is no right or wrong response, and respondents are asked to read each item and select what they perceive as the best answer at that point in time in their life. At the time of the present study, the instrument tapped eight of the nine multiple intelligences; existential intelligence, which is one of the recent additions to the list, is not a part of MIDAS. It should be mentioned that MIDAS scores are not absolute and it may change during the individuals' life as s/he grows up. Users are not forced to answer or guess at every question, as each item has an "I don't know" or "Does not apply" choice; they are to select this answer whenever it is the best. A number of studies on the reliability and validity of MIDAS (Shearer, 1996, 2006), have indicated that the MIDAS scales can provide a reasonable estimate of one's MI strengths and limitations that correspond with external rating and criteria. The MIDAS questionnaire has been completed by approximately 10,000 people world-wide. Alpha reliability of the profile scores based on the MIDAS turned out to be as follows: Musical: .70, Kinesthetic: .76, Logical-Mathematical: .73, Spatial: .67, Linguistic: .85, Interpersonal: .82, Intrapersonal: .78, and Naturalist: .82 (Shearer, 1996).

2.5. EFL Writing

Writing can be regarded as a fundamental skill in EFL, since it needs thinking, forces students to organize their ideas, and requires a good command of the knowledge to be written on. Writing has been viewed as a discovery process, provides opportunities for ongoing learning. It is clear that the act of writing is a way of structuring, formulating, and reacting to the inner and outside worlds (Marefat, 2007).

Lev Vygotsky in his "Thought and Language" (1962, cited in Eming, 1977) points out that writing and thinking are interwoven. Writing is a complex process that allows writers to explore thoughts and ideas, and make them visible and concrete. Chastin (1998) defined writing as an essential communication skill and a unique advantage in the process of learning a second language.

Richards and Rodgers (2001) contend that accounting for MI is in line with learner-based theories in education and language teaching and learning. Gardner's theory can have implications for language teaching and assessment in general, and teaching writing in particular.

Jacobs et al. (1981) developed a profile which is widely used in the literature. The guidelines provided by these authors clearly encourage the evaluation and assessment based on communicative writing. In Jacobs et al., there are five criteria to score writing: content, organization, language use, vocabulary, and mechanics. These five aspects have different scores: content has the highest score (20), and the lowest score goes with mechanics (10) and each of the other three have the same score (15) that totally make 75. In our study, the assessment is based on Jacobs et al.'s criteria. Based on the literature reviewed above, it becomes clear that although studies on the MI theory in language education have increasingly developed over the previous two decades, less has been done relating to the applications of the theory to L2 writing. Thus, this study aims to shed some light on this point.

3. The Study

3.1. Research Questions

This study seeks to find answers to the following questions:

1. Is there any relationship between EFL learners' writing performance and their performance on multiple intelligences?
2. Do all intelligences show equal relationship with L2 learners' writing ability?

3.2. Research Hypotheses

In order to answer the research questions in a systematic manner, two null hypotheses were made to be tested out. They are as follows:

Ho1: There is no significant relationship between EFL learners' writing performance and their multiple intelligences.

Ho2: There is no equal relationship between EFL learners' writing performance and each type of intelligence.

3.3. Participants and Instrumentations

A total of 33 female Iranian EFL learners, majoring English translation at Elmi Karbordi Institute (Ghotb Ravandi Branch, Tehran, Iran), were selected from a pool of 40 ones and asked to participate in the study. They aged 21-29 years (average, 24.5, SD=2.27); all were Persian L1 speakers.

To increase the possibility of selecting a more homogeneous group of learners and also for lowering the

relative time spent on identifying them, the early sample was limited to students of the sixth term. However, a 1997 version of Michigan Test of English Language Proficiency (MTELP) was additionally applied to help determine the homogeneous sample group needed for the project.

Two different sets of tests for measuring the involving variables and revealing the existing relationships between the related variables were selected: the Michigan Test and MIDAS (1996 version). The subjects were asked to mark their desired options on answer sheets. The answer sheets were later sent via the internet to Shearer for scoring (See appendix 1 for a sample of MIDAS).

The writing ability of the students was determined by taking the average of their scores of two writing tasks. Participants were supposed to produce two free writings on two topics chosen from IELTS practice tests. Scoring was based on the profile developed by Jacobs et al. (1981); the guidelines they provided clearly encourage communicative writing. Then the participants' performances were assessed by two different raters, who were EFL university teachers. Also, each rater scored each writing task twice with a three-four days interval without referring to the previous scores. The average scores of the two writings and the average scores of the two raters were used for final analysis.

3.4. Data Collection and Analysis

As mentioned above, the participants' homogeneity was measured through the Michigan test of language proficiency. Accordingly, participants with one standard deviation above and below the mean were grouped together as a more homogeneous group (See appendix 2 for detailed descriptive statistics related to this test). After a week interval, the MIDAS questionnaire was administered and MI answer sheets were sent to the author of MIDAS for scoring (See appendix 3 for detailed descriptive statistics related to this questionnaire). Then the participants' scores on MI were obtained in the form of numeric values ranging from 0 to 100 (as defined by Shearer himself) for each intelligence.

One week later, participants were asked to write the first composition (around 200 words). Then, after a two-week interval, the second topic was given to them to do. Since the raters were asked to score each writing, each student had four scores; the average score was calculated for each participant as the score showing her writing performance (See appendix 4 for descriptive statistics related to writing index).

For sure, Pearson correlation was computed to find the inter-rater reliability of the two raters. The r -value of .86 indicates a high correlation between the two raters' scores (See appendix 5). Also, to determine if the means of the two groups were significantly different, T-Test was used; the results (See appendix 6) showed that the difference between the scores given by two scorers were not significantly high. So, based on this and the significant inter-rater reliability of two raters' scorings, no need was felt for more raters.

The data for this study were analyzed through the Statistical Package for Social Sciences (SPSS V.16). First, using Pearson-Product Moment Correlation Formula, the correlation between the overall MI scores and writing scores were calculated so as to specify the extent to which they correlated. Similarly, the same procedure was applied to calculate the correlation between each intelligence scores and writing scores. Then the comparison was made between the ways the scores in MI test correlated with the scores in writing performance. In order to see which intelligence is a better predictor of the main (dependent) variable of our study, multiple regression analysis was used too.

4. Results and Discussion

Major statistical analyses centered on the investigation of correlation between the main variables of the study, that is, Multiple Intelligences and writing performances. The results presented in Table 1 demonstrate the existence of statistically significant correlation between the participants' two sets of scores on MI and writing. This can reject the first research hypothesis.

Table 1. Correlation between MI and writing

		writing	Overall MI
w	Pearson Correlation	1	.300
	Sig. (2-tailed)		.090
	N	33	33

This finding is what was expected to be observed due to the fact that many aspects of MI correspond to certain aspects of language use. For example, based on Akbari and Hosseini (2008), MI and language learning strategies positively correlate. The weakness of the correlation, however, means that these two variables are different. This result (table 1) also supports Fahim and Nejad Ansari (2006), Marefat (2007) and Dobbs (2002) in that, overall MI scores correlate positively with students' writing scores.

In order to answer the second research question, the correlation coefficient between the participants' scores on each intelligence and their writing scores were calculated using Pearson formula (Table 2). The results indicated that among all the intelligences, spatial intelligence negatively correlates with writing scores; also, it showed that mathematical intelligence does not show any correlation with writing scores. All the other intelligences have weak but positive correlation with writing scores; however, only linguistic intelligence and interpersonal intelligence make a statistically significant correlation with participants' performance on writing. Also, the correlation coefficient of linguistic intelligence and writing scores is 0.39 and the correlation between interpersonal intelligence and writing is 0.36 ($p < 0.01$) (See table 2). This finding can confirm the second research hypothesis.

Table 2. Correlation between each intelligence and writing score

		ling	math	spat	musi	inte	intr	kine	natu	w
ling	Pearson Correlation	1	.124	.336	.121	.713(**)	.498(**)	.093	.287	.392(*)
	Sig. (2-tailed)		.491	.056	.502	.000	.003	.607	.105	.024
	N	33	33	33	33	33	33	33	33	33
math	Pearson Correlation	.124	1	.489(**)	-.029	.346(*)	.611(**)	.261	.289	.003
	Sig. (2-tailed)	.491		.004	.873	.048	.000	.142	.103	.988
	N	33	33	33	33	33	33	33	33	33
spat	Pearson Correlation	.336	.489(**)	1	.165	.520(**)	.752(**)	.470(**)	.471(**)	-.022
	Sig. (2-tailed)	.056	.004		.357	.002	.000	.006	.006	.904
	N	33	33	33	33	33	33	33	33	33
musi	Pearson Correlation	.121	-.029	.165	1	-.026	.120	.393(*)	.356(*)	.103
	Sig. (2-tailed)	.502	.873	.357		.884	.506	.024	.042	.569
	N	33	33	33	33	33	33	33	33	33

inte	Pearson Correlation	.713(**)	.346(*)	.520(**)	-.026	1	.696(**)	.127	.180	.362(*)
	Sig. (2-tailed)	.000	.048	.002	.884		.000	.483	.317	.038
	N	33	33	33	33	33	33	33	33	33
intr	Pearson Correlation	.498(**)	.611(**)	.752(**)	.120	.696(**)	1	.354(*)	.303	.124
	Sig. (2-tailed)	.003	.000	.000	.506	.000		.043	.086	.490
	N	33	33	33	33	33	33	33	33	33
kine	Pearson Correlation	.093	.261	.470(**)	.393(*)	.127	.354(*)	1	.486(**)	.283
	Sig. (2-tailed)	.607	.142	.006	.024	.483	.043		.004	.111
	N	33	33	33	33	33	33	33	33	33
natu	Pearson Correlation	.287	.289	.471(**)	.356(*)	.180	.303	.486(**)	1	.286
	Sig. (2-tailed)	.105	.103	.006	.042	.317	.086	.004		.107
	N	33	33	33	33	33	33	33	33	33
w	Pearson Correlation	.392(*)	.003	-.022	.103	.362(*)	.124	.283	.286	1
	Sig. (2-tailed)	.024	.988	.904	.569	.038	.490	.111	.107	
	N	33	33	33	33	33	33	33	33	33

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

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

Ling= Linguistics, math=mathematical, spat=spatial, musi= musical, inte=interpersonal, intr=intrapersonal, kine=kinesthetic, natu=naturalistic, w=writing

Currie 2003 (cited in Marefat, 2007) reports, the students' mean score on interpersonal intelligence is higher than intrapersonal intelligence in reading classes; this seems to be true also for writing classes. Both linguistic and interpersonal intelligences positively correlate with writing performance; they both directly (linguistic) and indirectly (interpersonal) are language related. Thus, the findings indicate that interpersonal intelligence is one of the predictors of L2 learners' writing ability

Gardner (1983) mentions his so called different sections of multiple intelligences are not totally independent of one another and some of them are really close in nature. So, a careful examination of the obtained correlations revealed that these eight intelligences correlate with each other. As it is shown, linguistic intelligence highly correlates with interpersonal and intrapersonal intelligences. As showed and discussed in literature review, MIDAS divides linguistic knowledge into two parts: one is formal which goes under linguistic intelligence and the other is informal or communicative which goes under inter- and intrapersonal categories of intelligence. Interpersonal and intrapersonal intelligences also correlate highly with each other and it may be the result of relatively similar nature of these two intelligences.

It was mentioned earlier that linguistic and interpersonal intelligences have meaningful correlation with writing ability; however, there is a high correlation between interpersonal and linguistic intelligence as well. So, the researchers went beyond correlation analysis and used multiple regressions to see which intelligence is a better predictor of learners' writing abilities. The results shown in Tables 3 and 4 indicate that from among all eight intelligences, only linguistic intelligence remains as the best predictor of writing performance,

since its significance is .024 which is less than .05 (so it makes significant contribution). It can be concluded that 12% ($F=5.6$, $p<0.05$) of variance of writing scores can be explained by linguistic intelligence score, and $(1-0.15=0.85)$ 85 percent of writing variance can be explained and is due to the other factors.

Table 3. Model summary of stepwise multiple Regression

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.392(a)	.154	.127	8.15674

a Predictors: (Constant), linguistic

Table 4. Summary of coefficients for the stepwise multiple regression

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	40.922	7.905		5.177	.000
	linguistic	.330	.139	.392	2.375	.024

Linguistic intelligence has been expected to positively predict writing, since it is directly language related. This finding is hardly surprising since among different types of intelligences measured by MI, the linguistic one seems to be the most appropriate for acting as the predictor of language production, especially writing. Gardner (1983) refers to linguistic intelligence as a kind of ability to use words, both written and spoken, as it follows the rules of grammar (p.77). Mahdavi (2008) also came to a similar conclusion that among all eight intelligences linguistic intelligence is a predictor of TOEFL and IELTS listening scores and English language proficiency as well.

To explain the relationship between linguistic intelligence and second language learning, in general, and second language writing in particular, one can say that as soon as one accepts the existence of such a construct as linguistic intelligence, it will be a natural assumption that such intelligence has a direct relationship with verbal and linguistic abilities. Based on Richards and Rodgers, (2001: 117) "language learning and use are obviously closely linked to what MI theorists label 'Linguistic Intelligence'". Other researchers also found positive correlation between students' writing performance and some intelligences. For example, in Hashemi (2009), emotional intelligence proved positive and significant correlation with writing performance, and Saricaoglu et al. (2009) observed a kind of relationship between musical intelligence and writing.

5. Conclusions, Implications and Suggestion

The present study intended to investigate whether there is any relationship between foreign language learners' writing performance and the construct of MI. The findings indicate that such a relationship does exist, and MI and L2 writing are related, but from among the eight intelligences only linguistic and interpersonal intelligences have more statistically significant relationships with the writing performance. The results of stepwise regression analysis also revealed that linguistic intelligence can influence writing performance.

The results also provide quantitative evidence in support of the idea that students with a high level of

linguistic intelligence have high-developed writing skill. Teachers can provide English language learners of lower levels of linguistic intelligence with further assistance and support and motivate them to perform more linguistic tasks so that they can better improve their writing skills. In fact, on the one hand, the findings of this study can contribute to the existing body of literature on the MI theory and writing, and on the other, can emphasize the necessity of taking MI, as a psychological construct, into account in educational programs, particularly in EFL domain.

Identifying learners' level of MI can provide educators with the opportunity for predicting activities appropriate for both learners with higher level of some intelligences and those who are weaker. For this to happen, teachers need to realize that different learners with different levels and combinations of the eight intelligences are different in learning. Also, students' awareness of the MI profile may help both themselves and teachers.

Moreover, the positive relationship between writing in English as a foreign language and linguistic intelligence provides support for the remarks made earlier by Richards and Rodgers (2001). Armstrong (2002, p.51) suggests some teaching strategies for the applications of each of the eight intelligences to the classroom. He mentions that linguistic intelligence is the easiest intelligence to develop strategies for. Then the author mentions five strategies to be used in the classroom to improve learners' linguistic intelligence: storytelling, tape recording, brainstorming, journal writing, and publishing.

Competencies related to linguistic intelligence are likely to contribute to writing and aspects of language learning while language teaching seems to be advantageous. So, there might be the possibility for the existence of a degree of overlap between abilities related to linguistic intelligence and writing performance of English language learners. The MI theory provides a mechanism for developing multiple intelligences through new pedagogical approaches. This theory also reinforces current movements in higher education such as university students' learning process, academic affairs collaboration and the relationship between affective and cognitive learning outcomes (Kezar, 2001). However, more studies will provide more evidence for generalization.

This research was conducted by female participants; hence, replication of the research is suggested with male participants or a comparison between male and female MI indices. Other studies can examine the relationship between MI and other language skills, learning strategies, needs analysis, etc. In addition, we hope that the present study is to be continued with a larger number of samples and other learners from different first language backgrounds to find out if similar results can be obtained. In this study, participants were intermediate level of English language learners and therefore the results might not be generalizable to the learners who belong to other levels of language proficiency. So, similar studies can be carried out with students of different levels of language proficiency like, beginners or advanced.

References

- Akbari, R., & Hosseini, K. (2008). Multiple intelligences and language learning strategies: investigating possible relations. *System*, 36, 141-155.
- Armstrong, T. (2002). *Multiple intelligences in the classroom*. (3rd edition). Alexandria, VA: Association for Supervision and Curriculum Development. Alexandria, Virginia USA.
- Armstrong, T. (2003). *The multiple intelligences of reading and writing: making the words alive*. Alexandria, VA: Association for Supervision and Curriculum Development. Alexandria, Virginia USA.
- Brown, H. D. (2007). *Principles of language learning and teaching*. (5th edit). United States of America: Longman.
- Chaplin, J. P., & Krawiec, T. S. (1974). *Systems and theories of psychology*. NY: Holt Rinehart & Winston.
- Chastin, K. (1998). *Developing second-language skills theory and practice*. (3rd edit). USA: Harcourt Brace Jovanovich.
- Christine, C. L. (2003). *The effects of student multiple intelligence performance on integration of earth science concepts and knowledge within a middle grades science classroom*. (MA Thesis, ED: 479329). Department of Teacher Education of Johnson Bible College.
- Dobbs, V. (2002). *The relationship between implementation of multiple intelligences theory in the curriculum and student academic achievement at a seventh-grade at-risk alternative school*. Dissertation Abstract International, 62(9). UMI Number: 3027334.

- Eming, J. (1977). Writing as a mode of learning. *College Composition and Communication*, 28(2), 122-128. <http://www.jstor.org/stable/356095>.
- Fahim, M., & Nejad Ansari, D. (2006). A multiple intelligence-based investigation into the effects of feedback conditions on EFL writing achievement. *IJAL*, 9(2), 51-78.
- Furneaux, C. (1999). Recent materials on teaching writing. *ELT Journal*, 35(1), 56-61.
- Gardner, H. (1983). *Frames of mind: the theory of multiple intelligences*. New York: Basic Books.
- Gardner, H. (1985). *The mind's new science: a history of the cognitive revolution*. New York: Basic Books.
- Gardner, H. (1993). *Multiple intelligences: the theory in practice*. New York: Basic Books.
- Gardner, H. (1995). "Multiple intelligences" as a catalyst. *The English Journal*, 84(8), 16-18.
- Gardner, H. (1999). *Intelligence reframed: multiple intelligences for the first century* New York: Basic Books.
- Gardner, H. (2003). Multiple intelligences after twenty years. *American Educational Research Association*, MA:02138.
- Harklau, L. (2002). The role of writing in classroom second language acquisition. *Journal of second language writing*, 11,329-350.
- Hashemi, J. (2009). *The Relationship between emotional intelligence, language proficiency, and L2 learners' writing performance in Iranian EFL learners*. (Unpublished M.A Thesis). Arak University, Arak, Iran.
- Jacobs, H. L., & Zinkgraf, S. A., & Wormuth, D. R., & Hartfield, V. F., & HUGhey, J. B. (1981). *Testing ESL composition: A practical approach (Electronic Version)*. Rowley, Massachusetts: Newbury House. 91-104.
- Jalilian, V. (2009). *An investigation of the relationship between Iranian EFL learners' level of spatial intelligence and their performance on the cloze tests*. (Unpublished M.A Thesis). Arak University, Arak, Iran.
- Kezar, A. (2001). Theory of MI: Implications for higher education. *Innovative Education*, 26(2), 141-154.
- Mahdavi, B. (2008). The role of Multiple Intelligences (MI) in listening proficiency: a comparison of TOEFL and IELTS listening tests from an MI perspective. *Asian EFL Journal*, 10(3),1-14.
- Marefat, F. (2007). Multiple intelligences: voices from an EFL writing class. *Pazhuhesh-e Zabanha-ye Khareji*, 32, 145-162.
- McClaskey, J. (1995). Assessing student learning through multiple intelligences. *The English Journal*, 84(8), 56-59.
- Price, S. D. (2001). Multiple intelligences theory and foreign language teaching. AAT:9999346.
- Richards, J. C., & Rodgers, T. S. (2nd edition) (2001). *Approaches and methods in language teaching*. UK: Cambridge University Press.
- Saricaoglu, A., & Arikan, A. (2009). A study of multiple intelligence, foreign language success, and some selected variables. *Journal of Theory and Practice in Education*, ISSN: 1304-9496, 5(2), 110-122.
- Sharifi, H. P. (2008). The introductory study of Gardner's multiple intelligences theory, in the field of lesson subjects and the students' compatibility. *Quarterly Journal of Educational Innovations*, 24, 11-20.
- Shearer, C. B. (1996). *Multiple intelligences developmental assessment scales (MIDAS)*. United States of America: Author.
- Shearer, C. B. (2006). Criterion related validity of the MIDAS assessments. *Kent, Ohio: MI Research and Consulting, Inc. www.MIResearch.org*.
- Smith, E. (2001). Implication of Multiple Intelligences theory for second language learning. *Post-script*, 2(1).
- Sternberg, R. J. (1982). Lies we live by: misapplication of tests in identifying the gifted. *Gifted Child Quarterly*, 26(4), 157-161.
- Sternberg, R. J. (1985). *Beyond IQ: a triarchic theory of human intelligence*. New York: Cambridge University Press.
- Sternberg, R. J. (2002). Raising the achievement of all students: teaching for successful intelligence. *Educational Psychology Review*, 14(4).
- Swarlis, L. L. (2008). *Enhancement of spatial ability in girls in a single-sex environment through spatial experience and the impact on information seeking*. (Doctoral dissertation, University of North Texas). UMI Number: 3376054.
- Visser, A. B., & Ashton, M. C., & Vernon, P. A. (2006). Beyond g: putting multiple intelligences theory to the test. *Intelligence*, 34, 487-502.

Appendices

Appendix 1: Samples of the MIDAS Questionnaire (1996)

Adult - musical

1. As a child, did you have a strong liking for music or music classes?

A little	Sometimes	Usually
Often	All the time	I don't know

2. Did you ever learn to play an instrument?

No	A little	Fair
Good	Excellent	I don't know

3. Can you sing 'in tune'?

A little bit Fair Well
 Very well Excellent I don't know

4. Do you have a good voice for singing with other people in harmony?

A little bit Fair Good
 Very good Excellent I don't know

Appendix 2: The Michigan Test Scores and Analysis

Table 2.1. Reliability of the Michigan test

N of items	Cronbach's Alpha
100	.82

Table 2.2. Accepted participants' score on the Michigan test

	N	Minimum	Maximum	Mean	Std. Deviation
Michigan	33	44.00	60.00	51.3030	5.64848
Valid N (listwise)	33				

Table 2.3. Frequency of participants' scores on the Michigan test

		Frequency	Valid Percent
Valid	44.00	4	12.2
	45.00	4	12.2
	46.00	1	3.0
	47.00	2	6.1
	49.00	5	15.2
	50.00	1	3.0
	51.00	1	3.0
	52.00	2	6.1
	53.00	1	3.0
	54.00	1	3.0
	56.00	2	6.1
	57.00	3	9.0
	58.00	2	6.1
	59.00	1	3.0
	60.00	3	9.0
	Total	33	100.0

Table 2.4. Test of normality on the Michigan scores

	Kolmogorov-Smirnov(a)			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Michigan	.143	33	.084	.902	33	.006
a. Lilliefors Significance Correction						

Appendix 3: The MIDAS Questionnaire Scores and Analysis

Table 3.1. Descriptive statistics of participants' scores on MIDAS

Intelligences	N	Minimum	Maximum	Mean	Std. Deviation
linguistic	33	36.00	75.00	56.00	10.38
mathematical	33	30.00	76.00	51.30	10.29
spatial	33	20.00	78.00	47.78	15.17
musical	33	.00	65.00	36.12	13.55
interpersonal	33	34.00	89.00	59.45	12.78
intrapersonal	33	31.00	74.00	53.06	10.22
kinesthetic	33	.00	83.00	42.87	17.77
natural	33	9.00	77.00	43.48	17.36
Valid N (listwise)	33				

Table 3.2. Test of normality on the MIDAS scores

	Kolmogorov-Smirnov(a)			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
MIDAS	.104	33	.073	.972	33	.541
a. Lilliefors Significance Correction						

Appendix 4: The Writing Scores and Analysis

Table 4.1. Frequency of participants' scores on writing

Subjects' Score	Frequency	Valid Percent
Valid 38.00	2	6.06
43.00	1	3.03
49.00	1	3.03
50.00	1	3.03
51.00	1	3.03
53.00	2	6.06
54.00	1	3.03
55.00	1	3.03

	57.00	2	6.06
	59.00	1	3.03
	60.00	2	6.06
	61.00	1	3.03
	62.00	1	3.03
	63.00	1	3.03
	64.00	3	9.09
	65.00	4	12.12
	66.00	2	6.06
	67.00	1	3.03
	68.00	2	6.06
	69.00	1	3.03
	70.00	1	3.03
	71.00	1	3.03
	Total	33	100.0

Table 4.2. Descriptive statistics of participants' scores on the writing

	N	Minimum	Maximum	Mean	Std. Deviation
Writing	33	38.00	71.00	59.393	8.732
Valid N (listwise)	33				

Table 4. 3. Test of normality on writing scores

	Kolmogorov-Smirnov(a)			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Writing	.156	33	.071	.906	33	.008

a. Lilliefors Significance Correction

Appendix 5: The Inter-rater Reliability

Table 5. Inter-rater Reliability Coefficient

		Wa	Wb
w1	Pearson Correlation	1	.868(**)
	Sig. (2-tailed)		.000
	N	66	66
w2	Pearson Correlation	.868(**)	1
	Sig. (2-tailed)	.000	
	N	66	66

** Correlation is significant at the 0.01 level (2-tailed).
 w1= writing task 1; w2= writing task 2

Appendix 6: T-Test

Table 6. T-Test results of two raters' scores

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
wa	39.086	33	.001	60.31818	57.1747	63.4616
wb	38.111	33	.001	58.16667	55.0578	61.2755