

On the Relationship Between Multiple Intelligences and Grammatical and Writing Accuracy of Iranian Learners of English

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The present study was conducted to investigate the relationship between four types of intelligence (logical, interpersonal, verbal, and intrapersonal) and grammatical and writing accuracy of foreign language learners. The participants were 190 male and female Iranian students at Takestan Azad University, Karaj Azad University, and Imam Khomeini International University in Qazvin. To accomplish the aim of the study, a 40-item MIs (multiple intelligences) questionnaire, a 35-item Michigan grammar test, and a writing test were administered to the participants. Data were analyzed through multiple regression analyses. Results indicated that both intrapersonal and interpersonal intelligences were predictors of grammar accuracy and intrapersonal intelligence made a statistically significant contribution to predicting learners' writing accuracy.

Keywords: MIs (multiple intelligences), grammatical accuracy, writing accuracy

Introduction

The theory of MIs (multiple intelligences) has always been a controversial issue in language learning, and there have been many different views about the relationship between MIs and language learning. Gardner (1983), the father of MIs theory, defined intelligence as “the ability to solve problems or create products that are valued within one or more cultural setting” (p. 81). In another book, *Intelligence Reframed* (1999), Gardner refined his original definition of intelligence as a biopsychological potential that provides a learner with an opportunity to process information which can be activated in a cultural setting and helps the learner to solve problems and create products that are culturally valuable.

Gardner (1983) stated that each person possesses at least seven basic intelligences including linguistic, logical/mathematical, spatial, musical, bodily-kinaesthetic, interpersonal, and intrapersonal intelligences. Armstrong (2009, p. 6) described these intelligences as follows:

Linguistic/verbal intelligence: The ability to use language and communicate with words.

Logical/mathematical intelligence: The ability to think and use numbers effectively.

Spatial/visual intelligence: The ability to think and be sensitive to colour, line, shape, space, and the world around us.

Bodily-kinaesthetic intelligence: The ability to use body to solve problems and make ideas and emotions.

Musical intelligence: The ability to compose or perceive music well.

Interpersonal intelligence: The ability to communicate and work with others.

Intrapersonal intelligence: The ability to self-assess and self-analyze one's behaviour.

Gardner believes that intelligence is more than a single property of human mind and someone who is not strong in mathematical ability should not be considered as "not intelligent", because that same person may be intelligent in another area. In other words, while all students are not verbally or mathematically gifted, they may have an expertise in other areas, such as music, spatial relations, or interpersonal knowledge. This implies that different types of intelligence have differential relationships with the learning of various areas of knowledge. In an attempt to verify the above statement, the present study focuses on the relationship between four types of intelligence (logical, interpersonal, verbal, and intrapersonal) and grammatical and writing accuracy of foreign language learners. It attempts to answer the following questions: (1) Which of the MIs is a better predictor of the grammatical accuracy of Iranian learners of English?; and (2) Which of the MIs is a better predictor of the writing accuracy of Iranian learners of English?

Review of Literature

During the past couple of decades, the relevant literature in language teaching has witnessed heated debates as to the role of MIs in language learning. Gardner changed the general view of intelligence and proposed the idea of MIs in 1983. He believed that all people possess many different types of intelligence rather than a single innate intelligence. In 1999, Gardner suggested a practical guidance on the educational uses of the theory and introduced three new intelligences as existential, naturalist, and spiritual intelligences, thus expanding the concept of intelligence.

Borek (2003) suggested that having a MI-based classroom can be an appropriate way for students to do their best and develop their own ways of learning. To find empirical evidence for this claim, a number of studies were carried out. Kelly (2005) worked on the development of an original framework for using MIs to model learning characteristics. He tried to find a relationship between MIs and learning styles and strategies. He found that the concept of intelligences and styles as predictive of language performance was supported by evidence. Indeed, results showed the positive effectiveness of different MI-based styles in students' learning process. In another study conducted by Frost and Hoffman (2006), a significant relationship was found between social, emotional, and cognitive intelligences and learners' learning process. In addition, Temiz and Kiraz (2007) found a positive relationship between MI theory and Literacy Education. Beceren (2010) even found a relationship between children' intelligence types and their parents' educational level and socioeconomic status. He showed that parents' educational level and their socioeconomic status directly affected children's intelligences.

Another study conducted by Yi-an (2010) examined the role of MIs theory in foreign language behaviour and performance. Participants of the study were 2,545 Taiwanese college students who were given an English Proficiency Test of Listening and Reading, and filled out a questionnaire related to MIs. Results of analyses showed that MIs play a significant role in foreign language learning including students' learning behaviour and English performance. Yi-an also concluded that musical, interpersonal, and intrapersonal intelligences make significant contribution to predicting students' learning behaviour and musical, verbal, and visual intelligences are predictors of English performance.

Naoe (2010) investigated MIs of a group of 5th grade students as a basis for the design and development of curriculum and instructional activities. Participants were 15 5th grade students, their parents (15), and four teachers who taught the class. A MIs questionnaire, a pretest, and a posttest were administered to determine the MI level of the participants. Findings indicated the existence of the eight MIs in the learners in varying degrees. In addition, results revealed that implementing creative strategies, appropriate instructional materials, and a stimulating environment improved participants' intelligences.

Denig (2004), comparing MIs theory and learning styles, suggested ways of providing students with conditions to improve their learning over the range of intelligences. The researcher investigated the extent to which these two theories worked together to contribute to learning. Findings suggested a positive relationship between the two theories and showed that they both contributed to better learning. To further clarify the issues of MIs and various learning styles in language teaching, Torresan (2007) suggested that intelligences can be activated by various stimuli; so many different learning styles may be used as beneficial stimuli to nurture the different intelligences.

Another aspect of MI theory is the relationship between MIs and language learning strategies. In this regard, Akbari and Hosseini (2008) investigated the relationship between foreign language learners' MIs scores and their use of different language learning strategies. Findings indicated positive relationships between the use of language learning strategies and Intelligence Quotient scores of the learners, but no relationship was found between strategy use and musical intelligence.

Previous research has also focused on the relationship between MI-based instructional methods. In one such study, the effect of MI-based methods was investigated on young children with disabilities. It was revealed that by organizing toys and lesson plans around MIs, we may help children to learn new skills much better and more effectively. In another study, Kayiran and Iflazoglu (2007) focused on the effects of a cooperative learning method supported by MIs theory on attitudes toward a Turkish language course. Results indicated a significant difference in favour of the experimental group in terms of achievements, but there was no difference between the control groups. Regarding the results obtained from Turkish Language Course Attitude, no significant difference was found among the groups.

Another study in the area of MIs and cooperative learning was conducted by Isik and Tarim (2009), who studied the impact of a traditional method on cooperative learning supported by MI theory. One hundred and fifty fourth grade students in mathematics participated in the study; they were divided into two groups: an experimental group (using MI-based method) and a control group (using traditional method). Findings showed that students in the experimental group got better scores than the students in the control group.

Gender has always been controversial in studies pertaining to MIs.

Buchanan and Furnham (2005) conducted a study to examine this role and concluded that women tend to provide lower estimates of general, mathematical, and spatial ability, but higher estimates of interpersonal and intrapersonal intelligence than men. Another study by Nasser, Singhal, and Abouchdid (2008) compared the effect of gender on Indian and Lebanese learners. Students estimated their MIs based on Gardner's theory. Male's scores in bodily-kinaesthetic intelligence were higher than females; instead, females got better scores in verbal-linguistic and intrapersonal intelligences.

Nokelainen and Tirri (2008) examined the latest version of MIPQ (Multiple Intelligences Profiling

Questionnaire), considering different ages and genders. The results of correlational analysis showed that males rated their logical intelligence higher than females. A statistically significant difference was also found in the spiritual sensitivity of the males and females. Surprisingly enough, males turned out to be more spiritual and religious. Kaur and Chhikara (2008) conducted another study with the aim of identifying the relationship between MI types and sex differences. They found that intelligences like linguistic, logical, musical, and bodily-kinaesthetic intelligences are influenced by sex differences, but the others are not. However, Saricaoglu and Arikan (2009) found no relationship between students' gender and their intelligence types, except for the relationship between gender and linguistic intelligence that was positive.

Applications of MI Theory

MI theory seems to have different applications. Osciak and Milheim (2001) focused on MIs strategies implemented within the field of web-based instruction. They introduced different tools of web-based instruction including e-mail as the most common communication tool of the Internet, Listserv, which functions as an electronic mailing list, chat room as real-time and text-based communication between individuals and groups, and class websites which can be utilized to simulate the activities of a traditional classroom. Evaluating these tools indicated that MIs can be applied as a useful instrument to assist educators to make better decisions in planning different instructions.

Kezar (2001) investigated MI theory's application in higher education and concluded that using MIs in higher education is crucial and plays a significant role in our understanding of teaching and learning. In much the same way, Botelho (2003) investigated the application of MI theory in English language teaching and suggested that most teachers know MI theory and apply it in educational contexts, and many of them show their interest in knowing more about the theory to improve their teaching.

Fonseca and Arnold's (2004) research is a study in favour of the application of MI theory in foreign language classrooms. Based on this study, MI-based activities may be considered as significant stimulus. Indeed, it is suggested that through implementing the tasks associated with MIs, motivating learners in second language classrooms may be more feasible. Furthermore, attention should be paid to applying a combination of MIs in educational contexts to meet all learners' needs.

Eisner (2004) compared the application of MI-based instructions with traditional ones. He suggested that MI-based instructions provide us with a significant view of what we try to do. Indeed, despite the findings obtained from traditional instructions which are predictable, MI-based instructions can provide new findings and encourage us to be more creative in designing instructions regarding individuals' needs.

Smith (2006) investigated the usability of Gardner's cognitive theory for understanding cross-cultural variation and its impact on digital library. Findings showed that MIs might be a descriptive model for interpreting the underlying cultural factors, but not an appropriate solution to the issues related to digital libraries.

In another study, Alghazo, Obeidat, Al-trawneh, and Alshraideh (2009) discovered the most common types of intelligence considering social studies, and Arabic and English language books for the first three grades in elementary stage. The sample consisted of social studies, Arabic and English language books, and the instrument included 30 questions each representing different types of intelligence. It turned out that the most common type of intelligence was visual intelligence and the least common one was physical intelligence in all grades.

Okebukola and Owolabi (2009) explored the effects of MIs on students' reading ability and concluded that MIs methods improve students' reading skill. In another study, Eng and Mustapha (2010) investigated the extent to which MI-based strategies and instructions improve students' writing ability. Findings revealed a significant improvement in students' overall writing ability in experimental group after two months of training.

Bas and Bayhan (2010) tried to discover whether there is a relationship between MIs and students' achievement level and attitude toward English learning. Fifty students in two different classes in the 5th grade of an elementary school participated in the study. Students were categorized into experimental and control groups. Findings revealed that students educated through MI theory were not only more successful but also much more motivated than the students educated through traditional instructional methods.

Despite what was said above, MI theory has not been without criticism. Smith (2001) claimed that MI theory does not prescribe a particular educational methodology. Similarly, Waterhouse (2006) criticized MI theory and maintained that despite its inadequate empirical bases, this theory continues to be applied in education, because it tells "goodness" stories. He also believed that due to the absence of adequate validating empirical support and neuroscience findings, MI theory is not validated. In another study conducted by Nikolova and Shopova (2007), the researchers held that there was no difference between ability and intelligence in reality and only the name was changed.

To resolve part of the existing controversy, present study aims to investigate the relationship between MIs and grammatical and writing accuracy of Iranian learners of English.

Method

Participants

This study was conducted with 190 male and female Iranian B.A. students majoring in English translation at Islamic Azad University of Takestan, Islamic Azad University of Karaj, and Imam Khomeini International University in Qazvin.

Instruments

In the present study, the following instruments were utilized to collect data: A MTELP (Michigan Test of English Language Proficiency) was administered to the participants to specify their level of proficiency and to homogenize them. The MTELP used in the present study is a 100-item multiple choice test consisting of three parts. It includes 40 grammar items, 40 vocabulary items requiring the completion of a sentence or the selection of synonyms or antonyms, and four reading passages each followed by five reading comprehension questions. In order to determine the participants' level of grammar knowledge, a Michigan grammar subtest including 35 multiple choice items was used. To determine the participants' level of accuracy in writing, a writing test was utilized. It consisted of two different topics and participants were supposed to select one of them and wrote an essay approximately 200 words long.

A multiple intelligence questionnaire was administered to the participants to specify their intelligence profile. Although the original questionnaire consists of 90 statements related to each of the nine intelligences, due to the research questions of the present study, the participants responded to just four parts relating to logical, interpersonal, verbal, and intrapersonal intelligences. This questionnaire is available online at <http://Surfaquarium.com/MIIinvent.htm>.

Procedures

Initially, to homogenize the participants, a multiple choice of MTELP was administered. The initial number of participants was 247. Having scored the papers and computed the mean and standard deviation, in order to select a homogeneous group of participants, those whose score was less than one standard deviation away (above or below), the mean was selected as the sample of the present study. Fifty-seven of the participants were excluded due to either a high or a low proficiency level; therefore, 190 of the participants remained as the final sample of the study.

An MI McKenzie’s questionnaire was also administered in the first session to specify the participants’ profiles. The participants were required to place 1 next to each statement corresponding to them and place 0 for the statements which did not. The time allocated for the first session was 60 minutes.

During the following session, the participants were provided with two topics and were asked to write an essay approximately 200 words long; they were also asked to answer a 35-item multiple choice Michigan grammar subtest. The purpose of these tests was to measure their grammar knowledge and writing accuracy. Having collected the data, two separate multiple regression analyses were run to investigate the relationships between four types of intelligence (logical, interpersonal, verbal, and intrapersonal) as independent variables and grammatical and writing accuracy of foreign language learners as dependent variables.

Results and Discussion

Results

Investigation of the first research question. The first research question sought to investigate which of the MIs was a better predictor of the grammatical accuracy of Iranian learners of English. To answer this question, a multiple regression analysis was run. Table 1 contains the summary of descriptive statistics for the participants’ grammar scores and their intelligence types.

Table 1

Descriptive Statistics for Grammar Scores and Four Types of Intelligence

	Mean	Std. Deviation	N
Grammar	17.4158	4.72982	190
Logical	4.8684	1.86830	190
Interpersonal	4.2579	2.46495	190
Verbal	5.2789	2.12844	190
Intrapersonal	6.2316	2.51326	190

As it can be seen in Table 1, the intrapersonal intelligence group has the highest mean (mean = 6.23) and the interpersonal intelligence group has the lowest mean (mean = 4.25). To investigate the degree of relationship between grammar and the four types of intelligence, a correlation coefficient was run. Table 2 presents the results.

Based on Table 2, it can be argued that the highest correlation is between grammar and intrapersonal intelligence, while interpersonal intelligence has the lowest correlation with grammar. In order to see the extent to which the four types of intelligence collectively account for the variance in grammar, the multiple regression analysis is used. Results of the model summary are shown in Table 3.

Table 2

Correlations Among Grammar Scores and Four Types of Intelligence

	Grammar	Logical	Interpersonal	Verbal	Intrapersonal
Grammar	1.000	0.184	-0.042	0.120	0.347
Logical		1.000	0.362	0.528	0.542
Interpersonal			1.000	0.401	0.360
Verbal				1.000	0.550
Intrapersonal					1.000

Table 3

Model Summary

Model	R	R-square	Adjusted R-square	Std. error of the estimate
1	0.395 ^a	0.156	0.138	4.39118

Note. ^a Predictors: (Constant), intrapersonal, interpersonal, logical, and verbal.

Based on the results in Table 3, the four types of intelligence collectively account for 13.8% of the variance in the grammar test. To test the first null hypothesis of the present study that there are no differences among MIs as predictors of the grammatical accuracy, and to see whether the model is significant or not, the ANOVA (Analysis of Variance) procedure is run. Table 4 indicates a significant result.

Table 4

ANOVA^b on Grammar Test

Model		Sum of squares	df	Mean square	F	Sig.
1	Regression	660.904	4	165.226	8.569	0.001 ^a
	Residual	3,567.249	185	19.282		
	Total	4,228.153	189			

Notes. ^a Predictors: (Constant), intrapersonal, interpersonal, logical, and verbal. ^b Dependent variable: grammar.

Table 5 indicates the extent to which each type of intelligence accounts for the variance in grammar; it shows the standardized coefficients and the significance of the observed *t*-value for each type of intelligence separately.

Table 5

Coefficients^a of Four Types of Intelligence

Model		Unstandardized coefficients		Standardized coefficients		Sig.
		B	Std. error	Beta	<i>t</i>	
1	(Constant)	14.079	1.028		13.689	0.000
	Logical	0.154	0.217	0.061	0.707	0.480
	Interpersonal	-0.360	0.145	-0.188	-2.480	0.014
	Verbal	-0.149	0.194	-0.067	-0.768	0.443
	Intrapersonal	0.788	0.164	0.419	4.805	0.001

Note. ^a Dependent variable: grammar.

Based on Table 5, of the four types of intelligence (logical, interpersonal, verbal, and intrapersonal), intrapersonal intelligence is the best predictor of grammar accuracy. It shows that for every one standard

deviation change in one’s intrapersonal intelligence, there will be about 0.41 of a standard deviation change in one’s grammar accuracy. In addition to intrapersonal intelligence, interpersonal intelligence is the second best predictor of the variance in the dependent variable (grammar). For every one standard deviation change in one’s interpersonal intelligence, there will be -0.18 of a standard deviation change in one’s grammar knowledge. In other words, for every one standard deviation increase in one’s interpersonal intelligence, there will be 0.18 of standard deviation decrease in one’s grammar knowledge.

Investigation of the second research question. The second research question attempted to see which of the MIs was a better predictor of the writing accuracy of Iranian learners of English. To this end, another multiple regression analysis was run. Table 6 contains the descriptive statistics for the participants’ writing scores and their four types of intelligence.

Table 6

Descriptive Statistics for Writing Scores and Four Types of Intelligence

	Mean	Std. Deviation	N
Writing	17.1711	2.03451	190
Logical	4.8684	1.86830	190
Interpersonal	4.2579	2.46495	190
Verbal	5.2789	2.12844	190
Intrapersonal	6.2316	2.51326	190

Based on Table 6, the intrapersonal intelligence group has the highest mean (mean = 6.23) and the interpersonal intelligence group has the lowest mean (mean = 4.25). To see the extent to which the four types of intelligence have relation to writing knowledge of foreign language learners, a correlation analysis is run. Results are given in Table 7.

Table 7

Correlations Among Writing Scores and Four Types of Intelligence

	Writing	Logical	Interpersonal	Verbal	Intrapersonal
Writing	1.000	0.191	0.044	0.107	0.314
Logical		1.000	0.362	0.528	0.542
Interpersonal			1.000	0.401	0.360
Verbal				1.000	0.550
Intrapersonal					1.000

Based on Table 7, writing knowledge has the highest correlation with intrapersonal intelligence and the lowest correlation is between writing knowledge and interpersonal intelligence. To see how much the combination of the four types of intelligence account for the variance in writing knowledge, the multiple regression analysis is used. Results of the model summary are shown in Table 8.

In order to test the second null hypothesis that there are no differences among MIs as predictors of the writing accuracy, and to see whether the model is significant or not, the ANOVA procedure is run. Table 9 indicates that the model is significant.

Table 8

Model Summary

Model	R	R-square	Adjusted R-square	Std. error of the estimate
1	0.334 ^a	0.112	0.092	1.938

Note. ^a Predictors: (Constant), intrapersonal, interpersonal, logical, and verbal.

Table 9

ANOVA^b on Writing Test

Model		Sum of squares	df	Mean square	F	Sig.
1	Regression	87.385	4	21.846	5.816	0.001 ^a
	Residual	694.932	185	3.756		
	Total	782.317	189			

Notes. ^a Predictors: (Constant), intrapersonal, interpersonal, logical, and verbal. ^b Dependent Variable: writing.

Table 10 shows the extent to which each type of intelligence accounts for the variance in writing; it shows the standardized coefficients and the significance of the observed *t*-value for each type of intelligence separately.

Table 10

Coefficients^a of Four Types of Intelligence

Model		Unstandardized coefficients		Standardized coefficients		Sig.
		B	Std. error	Beta	<i>t</i>	
1	(Constant)	15.730	0.454		34.653	0.000
	Logical	0.085	0.096	0.078	0.885	0.377
	Interpersonal	-0.059	0.064	-0.071	-0.914	0.362
	Verbal	-0.094	0.086	-0.099	-1.100	0.273
	Intrapersonal	0.285	0.072	0.352	3.936	0.001

Note. ^a Dependent variable: writing.

A look at Table 10 makes it clear that of all four types of intelligence, intrapersonal intelligence makes a statistically significant contribution to predicting learners' writing accuracy. It means for every one standard deviation change in one's intrapersonal intelligence, there will be 0.35 of a standard deviation change in one's writing accuracy.

In short, of the four types of intelligence (logical, interpersonal, verbal, and intrapersonal), only intrapersonal intelligence made a statistically significant contribution to predicting learners' writing accuracy.

Discussion

Some of the findings of the present study are in partial accordance with a number of previous studies (Naoe, 2010; Nolen, 2003; Eng & Mustapha, 2010; Saricaoglu & Arikan, 2009), which support the present findings holding that different types of intelligence are predictors of grammatical and writing knowledge. At the same time, the results of the present study are different from some other studies (Smith, 2001; Waterhouse, 2006; Nikolova & Shopova, 2007; Razmjoo, 2008), which find no relationship between MI types and grammatical and writing knowledge.

Naoe (2010) investigated the effect of MIs and found that using MI-based activities remarkably improve students' performance in grammar and writing. This is supported by the findings of the present study, as MI types are predictors of grammar and writing knowledge. Naoe puts an emphasis on verbal intelligence and asserts that there is a significant relationship between verbal intelligence and writing ability. Although a relationship was found between MIs and writing ability, the present study does not lend support to this finding exactly. The findings of the present study do not show verbal intelligence as a predictor of writing accuracy, but show instead that intrapersonal intelligence makes a significant contribution to predicting learners' writing accuracy. In addition, Nolen (2003) found a significant relationship between learners' verbal intelligence and their grammatical knowledge. The present study does not show verbal intelligence as the predictor of grammatical knowledge.

Furthermore, the findings of a study conducted by Tanner and Green (2005) can be regarded as a support for the present study. They concluded that MI theory assists learners to improve their writing ability. In keeping with the findings of the present study, the findings of Eng and Mustapha's (2010) study indicated a significant improvement of students' overall writing ability in MI-based instruction. The present study is also compatible with the study of Saricaoglu and Arikan (2009), which reached the conclusion that intrapersonal intelligence was a significant predictor of grammatical and writing knowledge. Moreover, the findings of the present study partially corroborate those of Moenikia and Zahed-Babelan (2010). They reported MIs as predictors of language learning. In the same vein, the results of this study also lend support to those of Yi-an (2010) with Taiwanese college students. He observed that MIs made a significant contribution to predicting language learning.

On the other hand, the findings of the present study are different from a number of studies that were reviewed in earlier. The present study reveals that grammatical and writing accuracy are influenced by MIs (interpersonal and intrapersonal), but Smith (2001) claimed that language learning success both in children and in adults is little influenced by all kinds of intelligence. Similarly, in a study conducted by Nikolova and Shopova (2007), the researchers concluded that MIs theory does not play a significant role in improving the learners' language skills. Furthermore, Razmjoo (2008) investigated the effect of MI on language proficiency and found no significant relationship between MIs and English language proficiency.

The differences between the findings of this study and those of other studies may be due to learners' gender and their proficiency level. In the present study, the participants were B.A. students majoring in English translation and gender was not taken into consideration. A number of other factors, which were not controlled in the present study, including the social context of learning, learners' motivation and interest, etc., may have influenced these findings. These areas of conflict are probably indicative of the need for further research.

Conclusions

Based on the results of the present study, it can be concluded that no single method of teaching writing can suit all types of learners. Since writing is shown to be differentially related to different types of intelligence, and since human beings enjoy different levels of the various types of intelligence, the logical conclusion to be drawn is that learners will experience differential success no matter how they are taught writing. This may be construed as a call for some sort of eclecticism in our instructional method. However, even eclecticism has to be far from haphazard. The findings of the present study seem to imply that teachers need to take into account the type of intelligence characterizing individual learners in grouping them and in assigning each group of

learners to a different type of treatment. The findings can also have implications for materials developers and guide them to make more informed decisions in designing writing courses for people with particular types of intelligence.

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