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THE IMPACT OF LINGUISTIC AND EMOTIONAL INTELLIGENCE ON THE READING PERFORMANCE OF IRANIAN EFL LEARNERS

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Abstract

Following innovations in intelligence and its radical changes from a unitary concept (IQ) to a multi-dimensional conceptualization, i.e. multiple intelligences and the need to design classroom activities based on the L2 learners' cognitive styles, this study examined the impact of linguistic intelligence and emotional intelligence on the reading comprehension ability of the Iranian EFL learners. Data was gathered through two questionnaires and a reading test and analyzed through two-way ANOVA and Multiple Regression. The results revealed that the students with a high level of linguistic intelligence showed a higher reading ability than those with a lower level of linguistic intelligence. The results, however, showed no significant difference among the students with different degrees of emotional intelligence. Moreover, the results indicated that linguistic intelligence is a relatively strong predictor of reading performance, accounting for more

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than 40% of the variance observed in the students' performance on the reading comprehension test.

Keywords: multiple intelligences, linguistic intelligence, emotional intelligence, reading comprehension

1. Introduction

Traditionally, classroom and learning was a matter of one-way direction therein all learners were considered the same, and the same approach and method (e.g. lecturing) was utilized by instructors and educators in most educational settings. Although this approach to teaching still prevails in many educational institutions, in recent years, due to the progress in the realm of education and teaching, and the arrival of psychology in the academic society, learners have been regarded as individuals with all of their needs, challenges, pitfalls, and strengths, who are remarkably different from each other (Brown, 2001; Cook, 2001). This view to learners and the learning process has provoked teachers and educators to devise various approaches and methods to satisfy these needs and desires. Gardner (1983), one of the prominent psychologists who believe in individual differences, suggests that children are different from each other in many respects including skills, abilities, preferences and ways of doing things; even in the experience of learning, they process and represent knowledge differently and they have unique learning styles.

Moreover, intelligence and its related issues have been the concern of educators and those academically dealing with it. The concept of intelligence, *per se*, has had an evolutionary trend. It has developed from a one-dimensional concept, *g* factor (Spearman, cited in Simmons, 2001), to a multidimensional conceptualization with different facets, i.e. multiple intelligences (MI, hereafter) (Gardner, 1983; Simpson & Keegan, 2002; White, 2004).

Gardner (1999, p. 33), the pioneer of MI, redefines intelligence as "a biopsychological potential to process information that can be activated in a cultural setting to solve problems or create products that are of value in a culture". His theory deals with different domains of intelligence,

including linguistic intelligence (LI, hereafter), logical/mathematical intelligence, spatial intelligence, musical intelligence, naturalistic intelligence, bodily/kinesthetic intelligence, interpersonal intelligence, intrapersonal intelligence, and possibly existential intelligence.

Among the different domains of MI, LI is assumed to be the most relevant to language learning. LI, as defined by Armstrong (2009), refers to:

The capacity to use words effectively, whether orally...or in writing.... This intelligence includes the ability to manipulate the syntax or structure of language, the phonology or sounds of language, the semantics or meaning of language, and the pragmatic dimensions or practical uses of language. (p. 6)

As a result of the evolution of the trend of MI, a new domain, namely, emotional intelligence (EI, hereafter) has been added to this repertoire of intelligences. This intelligence, which partly stems from Gardner's (1983) interpersonal and intrapersonal intelligences, was first introduced by Mayer and Salovey (1990). They define EI as "a form of social intelligence that involves the ability to monitor one's own and other's feelings and emotions, to discriminate among them, and to use this information to guide one's thinking and action" (p. 189). Different models of EI have been suggested: ability-based model (Mayer and Salovey, 1990 and 1997; Mayer, Caruso and Salovey, 2000; Mayer, Salovey, and Caruso, 2000), mixed Bar-on model and Goleman model (Bar-On, 1997; Goleman, 1995), and trait model of EI (Petrides and Furnham, 2000; Petrides, Furnham and Fredrickson 2004a; 2004b). This intelligence, as claimed by Armstrong (2003), is the most neglected domain of MI.

Previous studies have reported the effect of MI on learning, in general, and language learning, in particular (See for example, Zee, Thijs and Schakel, 2002; Barchard, 2003; McMahon, Rose and Parks, 2004; Bastian, Burns, and Nettelbeck, 2005; Shearer, 2006; Fahim and

Pishghadam, 2007; Ghaffari, 2008; Mahdavy, 2008). However, only a very small number of these studies have attempted to investigate the relationship between MI and language skills, particularly reading. Hence, the aim of the present study is examining the impact of two domains of MI, *i.e.* LI and EI, on the reading performance of Iranian EFL learners.

2. Literature Review

In recent years, there has been an increasing amount of literature on MI, a large number of which have focused on the relationship between intelligences and academic achievement, language learning, and language proficiency. Barchard (2003) carried out a research to show the extent to which EI, cognitive ability, and personality domain predicted academic achievement of undergraduate psychology students using one-academic-year scores as the criterion of assessment. The result of the study showed that cognitive ability and personality domain were strongly associated with academic achievement. The findings, moreover, revealed that although EI on the whole did not significantly correlate with the participants' academic achievement, six of its subscales including emotional understanding, social translation and positive expressivity significantly predicted it.

McMahon, *et al.* (2004) explored the effect of MI on reading achievement of 288 fourth grade students. The multiple intelligences scale they used was Teele Inventory of Multiple intelligences. This scale consisted of a number of subscales including linguistic, logical-mathematical, interpersonal, intrapersonal, musical, spatial, and bodily-kinesthetic intelligences. The results showed that only mathematical intelligences significantly and strongly affected reading performance of the participants; the other domains of intelligence, nonetheless, did not turn out to influence the students' reading comprehension.

Shearer (2006), investigated the MI of high school students with varying levels of reading skill, that is, high, mid, and low. The participants in the study were 215 ninth grade students from suburban U.S. high schools, who filled in Multiple Intelligences Developmental

Assessment Scales (MIDAS) and took a reading comprehension test. The students were divided into three groups of high, mid, and low with regard to their performance on the reading test. There were striking differences among the intelligences of these three groups of readers. The results indicated that the students at a high level of reading ability were "personal achievement oriented", which signifies an intrapersonal aspect of intelligence, while those with a moderate level of reading ability seemed to be more "socially focused", indicating an interpersonal aspect; and the participants at a low reading level were more "pragmatic, practical and action-oriented," denoting the mathematical aspect of intelligence.

Fahim and Pishghadam (2007) explored the role of LI, psychometric intelligence, and EI on the EFL learners' academic achievement. Students' academic achievement was determined based on their university GPAs. The Bar-on EQ Scale (Bar-on, 1997) was administered to measure the students' Emotional Quotient (EQ) and Wechsler Adult Intelligence Scale III (Wechsler, 1997) was administered to measure the students' Intelligence Quotient (IQ), and Verbal Intelligence (VI). The result of the study showed a strong link between the students' academic achievement and several dimensions of emotional intelligence. The results, on the other hand, revealed that academic achievement was not associated with IQ, but it showed a strong correlation with verbal intelligence, a subsection of IQ.

Ghaffari (2008) studied the relationship between EI and speaking ability of a group of Iranian EFL learners the results of which was indicative of a high correlation between the learners' EI and their speaking ability. On the other hand, Razmjoo (2008) studied the extent to which MI predicted the language proficiency level of 278 Ph.D candidates in Shiraz University, Iran. The results indicated no correlation between language proficiency and MI or any one of its subscales. The findings, in addition, suggested that MI and its components did not significantly predict language proficiency. Finally, no significant

difference between males and females with respect to the relationship between intelligence and proficiency was reported.

Mahdavy (2008) examined the relationship between MI and listening performance of 117 Iranian EFL learners on the listening subtest of IELTS and TOEFL tests. The findings of the study showed a significant correlation between LI and listening proficiency of the participants, but no relationship was found between the other domains of MI and the participants' listening proficiency.

In sum, the majority of the studies reported above show a meaningful relationship between MI and academic achievement. There are only two studies on the relationship between MI and reading, i.e. Shearer, 2006 and McMahon *et al.* 2004, which have been conducted in an L1 and an ESL context, respectively. To the best of the knowledge of the present researchers, no study has so far been conducted on the effect of MI on the reading performance of Iranian EFL learners.

3. Rationale

As it was mentioned above, no study has so far investigated the impact of MI on reading performance of EFL learners. As a matter of fact, MI is a relatively new concept in education, suffering from the lack of ample research delineating its link to L2 proficiency. The recent emphasis on learner and learning-centered approaches in EFL/ESL justifies research on the impact of this cognitive aspect of learners on their L2 proficiency.

Another justification for the present study is the importance of reading skill in an EFL context. According to Chastain (1988), reading skill provides readers with the right amount of comprehensible input necessary for both written and oral communication. Reading skill is particularly very important in input-poor EFL contexts such as Iran, where there is not much (if any) contact with the native speakers of English and, thus, books, internet, and the like remain the most available source of exposure to English. There is a large volume of published studies investigating the effect of different variables (strategies, reader, task, attitude, learning style, vocabulary knowledge) on reading

comprehension in Iran (See, for instance, Yazdani Gharehaghaj, 2000; Karami, 2000; Abbasi,1995; Nikpour,1994). Nonetheless, one of the under-researched aspects of reading comprehension is the extent to which reading ability can be predicted by the L2 learners' MI.

Concerning the domains of MI, as mentioned above, a large and growing body of research has investigated the relationship between MI and L2 learning, without focusing on any individual intelligence. Among the eight domains of MI, two intelligences-emotional and linguistic-are theoretically considered to be the most relevant ones to reading comprehension (Armstrong, 2003).

Theoretically speaking, LI has been assumed to be the most important domain of intelligence contributing to reading comprehension performance because it deals with the ability to manipulate different components of language including syntax, phonology, and the semantics or meaning of language (Armstrong, 2003). Thus, any research on the link between intelligence and reading must take LI into consideration. Nonetheless, Armstrong (2003) argues that there is more than LI to reading comprehension. He suggests, "...reading and writing are not simply linguistic acts: they involve all of the intelligences, and many more areas of the brain are involved in literacy acquisition than has previously been assumed by educators in the field" (p. 7). He criticizes the current academic settings as valuing LI more than it deserves. He finds it quite urgent to investigate the impact of the other domains of MI on reading and writing. He further argues that from among these domains, EI is the most neglected one in research in the field of reading and merits more research.

In addition, as Duraiswamy (1999) suggests, EI must be seriously attended to in teaching reading comprehension because emotional awareness helps bring language to consciousness and can enable readers to understand the ideas mentioned in a text much better. That is why EI can be regarded as important as LI in reading comprehension.

The present study, thus, aims at investigating the impact of these two domains of MI, *i.e.* LI and EI, on the reading ability of Iranian EFL learners.

4. Research Questions

The present study seeks answers to the following research questions:

1. Does EI affect EFL learners' reading comprehension performance?
2. Does LI affect EFL learners' reading comprehension performance?
3. Does the interaction of these two intelligences affect EFL learners' reading comprehension performance?
4. Which intelligence *i.e.* LI or EI, is a better predictor of Iranian EFL learners' reading performance?

5. Method

5.1 Participants

The initial sample consisted of 135 senior English majors (both male and female) participating in three intact classes in an Iranian university. However, in order to have a homogeneous sample in terms of proficiency level so that the results could be solely attributed to the students' level of LI and EI, an Oxford Placement Test was administered. The results showed that 90 students were at an intermediate level of proficiency. These students were considered as the participants of the present study. All the students in the three classes took the questionnaires and tests, but only the data gathered from these 90 students were analyzed for the present study. It is worth mentioning that all these students were female. In fact, there were a small number of males in the initial sample, but after screening, they were excluded from the study sample as none fell at an intermediate level. At the time of experiment, the students were taking an essay writing course, a language teaching methodology course, some translation courses and a course in reading the press texts. The

experiment was carried out in Reading the Press Texts class since it was a reading course and relevant to the purpose of the experiment.

5.2 Instruments

Students' level of EI was assessed through Schutte Self-Report Emotional Intelligence Scale (SSRES). This scale was developed by Schutte *et al.* (1998). It has been designed to map onto the Mayer and Salovey (1990) model of EI. The questionnaire includes 33 items with a five-point Likert scale, three of which are negatively stated. The reliability of the questionnaire was calculated through Cronbach's Alpha method, yielding an index of 0.87.

Items of SSRES relate to Mayer and Salovey's (1990) six-factor items. Table 1 represents the six factors measured by this questionnaire.

Table 1: Items corresponding to the dimensions of the SSREI, based on Mayer and Salovey's (1990) six-factor model of EI

Dimensions	Item number
(1) ERS: Emotional Regulation of the Self	2, 3, 10,12, 14, 23, 28, 31
(2) EE: Emotional Expression; items like	1, 11
(3) ERO: Emotional Regulation of Others	4, 13,16, 24, 30
(4) AEO: Appraisal of Emotions in Others	5, 15, 18, 25, 29, 32, 33
(5) AES: Appraisal of Emotion in Self	9, 22
(6)UEPS: Utilization of Emotions for Problem Solving	7, 17, 20, 27

Item reliability indices of these components, as calculated by Cronbach's Alpha method, for the present study have been indicated in Table 2.

Table 2: Item reliability of six-factor dimensions in Mayer and Salovey's EI components

Components	Number of items	Reliability
ERS	8	0.76
EE	2	0.51
ERO	5	0.70
AEO	7	0.76
AES	2	0.59
UEPS	4	0.68

The second instrument of the study was the LI section of the MI questionnaire used by Sadri (2007). This questionnaire is a combination of Nail's (2002) MI tests of Ned production and McKenzie's (1999) MI inventory. It is a 90-item MI questionnaire on a five-point Likert scale. The construct validity of this test was calculated through factor analysis by Sadri (2007). The factor analysis for LI indicates that 88% of information can be assessed by 10 factors. The reliability of this test was calculated using Cronbach's Alpha ($\alpha = 0.90$) by Sadri (2007). The reliability of the questionnaire was calculated for the present study, again through Cronbach's Alpha, yielding an index of 0.55, which is an acceptable index here, due to the small number of items.

The EI and LI scales were translated into Persian in order to ensure that the participants would clearly comprehend the items. In order to secure the validity of the translated versions of the scales, the English versions were translated into Persian and were then back translated into English by five graduate students majoring in translation. Their translations and the original copy of the scales were compared and any problematic sentences, phrases, or words were modified.

In order to assess the students' knowledge of reading comprehension, the reading comprehension section of a TOEFL practice test, ETS (1995), was used. The test consisted of 55 items. The reliability of the test computed for the present study using Cronbach's Alpha was 0.88. The reliability of the test was calculated through KR-21 method, too; the index obtained through this method was 0.82.

5.3 Procedure

The reading comprehension test was administered in one class session. In the next session, the same students answered SSRES and the LI questionnaire. While answering the questionnaires, the students were allowed to ask for clarification if they faced any problems.

5.4 Data analysis

In order to answer the first three questions, that is, the impact of EI, LI, and their interaction on the reading ability of the participants, a two-way test of ANOVA was run. Then, a test of bivariate correlation was conducted to see if EI and LI are correlated. Finally, in order to answer research question four, that is, the extent to which each of the two intelligences predict the students' reading ability, a test of multiple regression was run.

6. Results and Discussion

The impact of LI and EI on reading comprehension

In order to see if EI and LI influence the participants' performance on the reading comprehension, a two-way ANOVA was run, as shown in Table 3 below.

Table 3: Results of two-way ANOVA for the effect of LI & EI on reading comprehension

Source	TypeIII SQ	Df	MS	F	Sig.	Partial Eta Square
LI	1108.20	2	554.09	21.66	0.00	0.34
EI	65.09	2	32.54	1.27	0.28	0.03
LI*EI	62.02	4	15.50	0.60	0.65	0.02

The results presented in Table 3 show a main effect for LI ($F=21.66$, $p<0.001$) but no effect for the EI ($F=1.27$, $p >0.05$) and the interaction of EI and LI ($F=0.60$, $p >0.05$). As mentioned above, LI is involved in the ability to manipulate linguistic components of a text such as syntax, phonology, and the semantics or meaning of language (Armstrong,

2003). Moreover, LI has more to do with cognition (which is a very essential process in comprehension) than EI, which is a matter of personality trait (Dawa & Hart, 2000; Costa and McCrae, 1992; Matthews, Roberts, & Zeidner, 2001). In addition, research has shown that the two intelligences are not correlated and, thus, they do not possess the same properties (Ciarrochi, Chan, & Caputi, 2000; Barchard, 2003). In order to further test this hypothesis, a test of bivariate correlation was run for the relationship between the students' EI and LI in the present study. The results confirmed the above speculation. That is, the acquired correlation coefficient was 0.34 ($p > 0.05$), which indicates a low correlation between the two, accounting for only about 12% of the common variance between them. That is why the interaction between the two intelligences was not significant. The lack of correlation between EI and LI can in part be explained by the fact that each individual intelligence has its own distinctive set of features, which are in essence different from those of the other intelligences (Gardner, 1999). In fact, as Hoer (2000) contends, LI is a "scholastic intelligence," which is fundamentally different from EI, a "non-scholastic intelligence." (p.12) That is why no significant difference was found between these two intelligences.

Another reason why EI did not turn out to influence the students' performance on the reading test may be the fact that the reading test was a test of TOEFL, which usually includes scientific texts or those dealing with general knowledge. Such texts, unlike literary ones, which are sometimes somewhat emotionally loaded, do not challenge the general EI of the reader. Matthews, Zeidner, and Roberts (2002) state that readers "can learn much about various feelings when reading literary works that depict characters with the tendency to experience specific emotions (e.g., sadness, fear, distrust, surprise)"(p. 443).

The results, with respect to the effect of LI, are in line with those of Shearer (2006) in that he found significant differences among the reading performances of the students with different levels of four intelligence domains, including LI (p. 23). On the other hand, the results of the

present study contradict those of McMahon, *et al.* (2004) in terms of MI and reading achievement therein almost none of the intelligences (except mathematical intelligence) including LI correlated with reading achievement positively. The reasons for these conflicting results can be attributed to different instruments used to assess EI, LI, and the reading performance in these studies. That is, the participants of McMahon *et al.*'s study (2004) were school children, while those of Shearer (2006) and the present study were university students. Consequently, different instruments had to be used for measuring their participants' level of intelligence and reading performance. Normally, the instruments used to measure multiple intelligences of adults are self-report questionnaires, which are not suitable for children due to the cognitive demands they exert on them. As McMahon *et al.* (2004) report, the only available instrument for measuring kids' MI is TIMI (Teele, 1992), which consists of a number of pairs of drawings that must be selected by children. This instrument, according to McMahon *et al.* (2004), has a very low reliability for MI and, thus, "strong conclusions about relationships between MI and [reading] achievement are not warranted based on these data" (p. 51).

Moreover, the reading task can strongly affect the results of such studies. As McMahon *et al.* (2004) contend, a likely explanation for the association of reading comprehension performance, particularly when tested through the conventional methods (multiple-choice here), with LI is that such intelligences as LI and mathematical intelligence represent "traditional" intelligences and are quite analogous to academic-oriented tasks. That can explain to a degree the effect of LI on the reading performance of the students in the present study because the reading task was a multiple-choice test of reading and, hence, conventional in McMahon *et al.*'s term; nonetheless, in McMahon *et al.*'s (2004) study, the reading test was a group task that had to be done by the students, so there is no surprise the results did not show a link between the performance of the students on this task and their EI.

The results of post hoc Scheffe test for the effect of LI on the reading performance, illustrated in Table 4, show that there are significant differences among the three groups of LI (high, mid, and low) with respect to their performance on the reading comprehension.

Table 4: Results of post hoc (Scheffe) test for LI

	Mid	Low
High (M= 39.91)	*	*
Mid (M= 28.17)	-	-
Low (M= 26.24)	-	-

$P < 0.001$

As the data presented in Table 4 reveal, the students with a high level of LI performed significantly better on the reading comprehension test (M=39.91) than those at the mid (M=28.17) and low (M=26.24) levels. There is, nonetheless, no difference between the reading comprehension ability of those at the mid and the low levels. This implies that LI must be at a high level only to show its effect on the reading performance. That is why, the effect size (partial eta square) is small (0.14).

6.1 The extent to which LI predicts reading performance

In order to determine the extent to which LI predicts the participants' reading performance, a test of multiple regression analysis was run. The results showed a significant effect ($p < 0.001$) with an R^2 index of 0.17. In order to determine how strongly the predictor variable (LI) influenced the criterion variable (reading performance), Beta value was calculated. Table 5 reveals the results.

Table 5: Partial regression coefficients for degree of relationship between reading performance and LI & EI

Model	B	Beta	t	Sig.
Constant	7.36		1.04	0.30
LI	0.65	0.42	3.95	0.00

Dependent: Reading performance

As the results presented in Table 5 show, LI significantly predicted the reading performance of the students. In fact, for every unit of increase in the LI level, reading scores of the participants increased by 0.42, which is a relatively high index.

Overall, the results of the present study indicate that LI is a relatively strong predictor of reading performance, while EI is not associated with this ability. Neither did the result showed a correlation between LI and EI. These findings can be explained by MI theory. Regarding MI theory, as Gardner (1999) suggests, human beings possess all intelligences in varying degrees; thus, someone who performs poorly in, say, music, or art, might be quite successful in math or physics. In other words, according to Visser, Ashton, and Vernon (2006, p. 488), "Everyone could be smart in some way." Consequently, although the students' good performance on the reading test can be related to a high level of LI, a high level of EI, though not associated with reading, might predict the students' performance on nonlinguistic tasks or the linguistic tasks other than reading.

Practically speaking, as it was discussed above, due to the content of the reading test, being academically oriented, EI did not turn out to influence reading performance of the participants. That is why only LI predicted the students' performance on the test. Reading tests containing texts of a more literary nature would be more suitable for the students with a high EI (Roohani, 2007). This implies that teachers must be more careful in selecting reading texts and tasks so that the students who are not linguistically intelligent can use their EI to do the reading tasks more successfully.

7. Conclusions and Implications

The results of the present study indicated that while LI influences the reading comprehension performance of Iranian EFL learners and is a relatively strong predictor of this skill, EI does not have any impact on the students' reading performance.

As the results showed, LI accounted for a good part of the variance observed in the reading comprehension ability of the learners. In effect, reading comprehension, as suggested by Smith (2010), is a multidimensional process consisting of linguistic, social, and cognitive processes. All these processes are involved in successful comprehension. Thus, intelligence, being a cognitive trait, accounts for some part of comprehension. That is why LI was found to influence the reading ability of the participants of the present study.

The results of the study enable us to argue for a number of pedagogical implications with respect to the relationship between MI and L2 reading ability. First, it seems that in spite of the theoretical, conceptual, and empirical criticisms of the idea of MI (Plucker, Callahan, and Tomchin, 1996), it can still serve as a deciding factor in planning classroom activities. As the results of the present study indicate, there are differences between the reading abilities of the students with different levels of intelligence (LI and 'utilization of emotion in problem solving'). This implies that teachers can design their classroom activities with the aim of promoting students' LI and EI and, thereby, helping them to improve their reading ability.

In addition, as the findings showed, the students' LI influenced their reading performance, while their EI did not; the results, moreover, showed a very low correlation between the two, implying that the same students with a high level of LI were not necessarily more emotionally intelligent. One implication of these findings for the teachers of reading comprehension can be that they must create enough variety in the classroom activities so that both linguistically and emotionally intelligent students can benefit from them. In other words, different components of multiple intelligences exist in different degrees in learners and, for instance, some are more linguistically intelligent and some more emotionally, so the classroom activities must be designed in such a way that the students with different degrees of these intelligences can take advantage of them. As Armstrong (2009) underlines:

The theory of MI offers teachers an opportunity to develop innovative teaching strategies that are relatively new to the educational scene. The multiple intelligences theory suggests that no one set of teaching strategies will work best for all students at all times. (p. 72)

8. Shortcomings and Suggestions for Further Research

The present study suffers from a few shortcomings. One of the shortcomings of the present study is that the impact of only two intelligences was measured. Further research can assess the influence of the other domains of MI on reading comprehension. Another drawback was that the reading test employed in this study included texts of only one genre-the scientific one. Further studies could investigate the effect of MI on different text genres, such as literary texts, journalistic texts, etc. Moreover, since test method can be a deciding factor, further research can examine the impact of MI on the students' performance on different item types and formats.

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