The Reading Matrix
Vol. 8, No. 2, September 2008

ON THE RELATIONSHIP BETWEEN MULTIPLE INTELLIGENCES AND LANGUAGE PROFICIENCY

Seyyed Ayatollah Razmjoo
Shiraz University, Iran
arazmjoo@rose.shirazu.ac.ir

Abstract

The intent of the present study was to examine the strength of the relationship between language proficiency in English and the 9 types of intelligences. As such, the objectives of this study were three-folded. The primary objective of the study was to investigate the relationship between multiple intelligences and language proficiency among the Iranian Ph.D candidates who participated in Shiraz University Ph.D Entrance Exam. The second objective of the study was to explore whether one of the intelligence types or a combination of intelligences are predictors of language proficiency. Finally, the study aims at investigating the effect of sex on language proficiency and types of intelligences. To fulfill this objective, a 100-item language proficiency test and a 90-item multiple intelligences questionnaire were distributed among 278 male and female Iranians taking part in the Ph.D Entrance exam to Shiraz University. The data gathered were analyzed descriptively utilizing central tendency measures (mean and standard deviation). Moreover, the collected data were analyzed inferentially using correlation, regression analysis and independent t-test. The results indicated that there is not a significant relationship between language proficiency and the combination of intelligences in general and the types of intelligences in particular. Similarly, the results revealed no significant difference between male and female participants regarding language proficiency and types of intelligences. Moreover, none of the intelligence types was diagnosed as the predictor for language proficiency. The results of this investigation point to no significant relationship between multiple intelligences and English language proficiency in the Iranian context. Clearly, the results are local not universal.

Introduction

Despite the fact that the notion of general intelligence had long been broadly accepted by psychologists, it was replaced by multiple intelligences theory proposed by Gardner (1983). Gardner (1983, p.81) defines "intelligence as the ability to solve problems or to create fashion products that are valued within one or more cultural settings". This definition challenged the traditional psychological view of intelligence as a single capacity that drives logical and mathematical thought. In the same direction, Gardner (1993) described intelligence as a bio-psychological potential that could be influenced by experience, culture, and motivational factors. He defined intelligence as the ability to solve problems and to fashion products that are culturally valued.

Gardner's theory (1993) proposes different and autonomous intelligence capacities that result in many different ways of knowing, understanding, and learning about the world to have a

better understanding of it. There is a constant flow of new information on how the human brain operates, how it differs in function between genders, how emotions impact on intellectual acuity, even on how genetics and environment each impact our children's cognitive abilities. While each area of study has its merits, Gardner (1993) initially identified seven different kinds of intelligence we possess. This has particularly strong ramifications in the classroom, because if we can identify learners' different strengths concerning these intelligences, it is possible accommodate different learners' capabilities more successfully based on their orientation to learning.

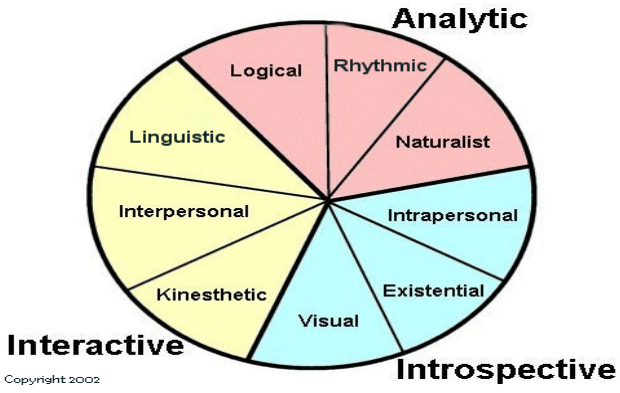
Gardner (1993) initially proposed there were seven intelligences that in combinations enable people to understand and to perceive the world and to express themselves: Linguistic, Spatial (Visual), Logical/Mathematical, Interpersonal, Intrapersonal, Bodily-Kinesthetic, and Musical. He has more recently added Naturalistic intelligence and has suggested that an Existential intelligence might exist, but that a hypothesized Spiritual intelligence does not (Gardner, 1999).

According to Gardner (1999), all human beings possess all different intelligences in varying degrees and each individual manifests varying levels of these different intelligences and thus each person has a unique "cognitive profile"; that is, a) all human possess all different intelligences in varying amounts; b) Each individual has a different composition; c) Different intelligences are located in different areas of the brain and can either work independently or together; d) By applying Multiple Intelligences we can improve education; and e) These intelligences may define human species.

Multiple Intelligences Domain

Multiple intelligences consist of three domains: the analytical, introspective and interactive domains. These three domains serve as an organizer for understanding the fluid relationship of the intelligences and how the intelligences work with one another. Teachers can plan lessons and units which effectively address all of the intelligences in the classroom (McKenzie, 2002). Figure 1.1 presents the three domains.

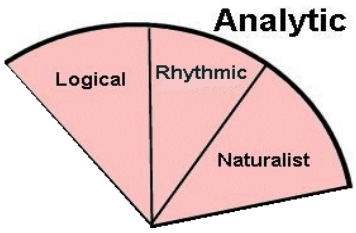
Figure 1.1. Multiple Intelligences Domains



What follows is a presentation of each domain and its sub-branches in details.

The Analytical Domain

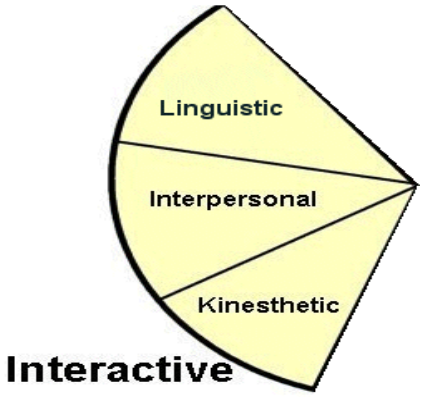
Figure 1.2. The Analytic Domain



According to McKenzie (2002), the analytic domain consists of the logical, musical and naturalist intelligences. These are the intelligences that promote analysis of knowledge that is presented to the learner. These three intelligences are considered analytic because they promote the processes of analyzing and incorporating data into existing schema, even though they may have other components. The analytical intelligences are by their nature heuristic processes.

The Interactive Domain

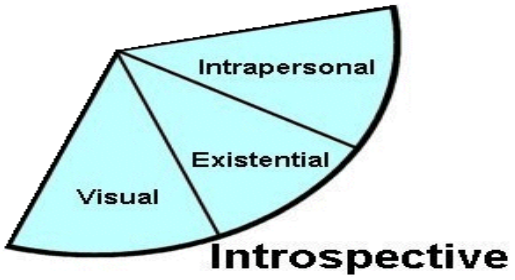
Figure 1.3. The Interactive Domain



McKenzie (2002) indicates that the interactive domain consists of the linguistic, interpersonal and kinesthetic intelligences. These are the intelligences that learners typically employ to express themselves and explore their environment. These three intelligences are regarded as interactive because they typically invite and encourage interaction to achieve understanding. Even if a student completes a task individually, s/he must consider others through the way s/he writes, creates, constructs and makes conclusion. The interactive intelligences are by their nature social processes (McKenzie, 2002).

The Introspective Domain

Figure 1.4. The Introspective Domain



The introspective domain consists of existential, intrapersonal, and visual intelligences. These are the intelligences that have a distinctly affective component to them. These intelligences are characterized as introspective because they require a looking inward by the learner, an emotive connection to their own experiences and beliefs in order to make sense of new learning. The introspective intelligences are by their nature affective processes (McKenzie, 2002).

The preceding section indicates that intelligence consists of different constructs supporting the idea of Gardner and his colleagues that there are different types of intelligences.

Gardner's Categories of Intelligence

Gardner (1983) suggested that all individuals have personal intelligence profiles that consist of combinations of seven different intelligence types. In 1999, Gardner added an eighth intelligence type to the list; that is, natural intelligence. Moreover, two years later a ninth type, namely existential intelligence, was added to the list (Gardner, 1999, pp. 41-43). Figure 4 presents the schematic presentation of the nine types of intelligences.

Figure 1.5. Categories of Intelligence Types

In the following sections, the nine "intelligences" as conceptualized by Gardner (1993 & 1999) are described in detail, with the aim of identifying the range of abilities subsumed by each domain and of examining the cognitive demands of tasks assessing these abilities.

Linguistic Intelligence

Gardner has described Linguistic intelligence as sensitivity to spoken and written language and the ability to use language to accomplish goals, as well as the ability to learn new languages. According to Gardner (1993), lawyers, public speakers, writers, and poets all possess high levels of linguistic intelligence.

The linguistic intelligence domain, as described by Gardner, seems to encompass a wide variety of more specific abilities. Thurstone (1938), for example, differentiated between verbal comprehension and word fluency, which represented two of his seven primary mental abilities, whereas Gardner would include both under the domain of linguistic intelligence.

Verbal comprehension involves the ability to understand the meanings both of individual words and of passages of written or spoken texts. Word fluency, in contrast, involves the ability to generate rapidly many examples of words that meet some specification (e.g., words beginning with a given letter, words rhyming with a target word, words naming objects that have some property, etc.).

Logical/Mathematical Intelligence

Gardner described logical/mathematical intelligence as the ability to study problems, to carry out mathematical operations logically and analytically, and to conduct scientific investigations. Gardner identified mathematicians, logicians, and scientists as persons who would possess high levels of this hypothesized intelligence.

Reasoning, the domain whose content is subsumed within the definition of Gardner's logical/mathematical intelligence, was identified as one of the primary mental abilities recovered by Thurstone (1938). According to Carroll (1993), reasoning subsumes six first-stratum factors: general reasoning, verbal reasoning, induction, quantitative reasoning, syllogistic reasoning, and classification ability. Quantitative reasoning, which combines numerical content with logical thinking, would seem to be a prototypical exemplar of Gardner's logical/mathematical intelligence domain. Carroll (1993) found that the first-stratum factor of quantitative reasoning was highly *g*-loaded, as were other reasoning abilities, such as induction.

The logical/mathematical domain of Gardner's framework would also subsume numerical facility, which is measured with tasks requiring participants to quickly perform simple arithmetic computations, such as addition, subtraction and multiplication. This numerical skill emerged as one of the primary mental abilities in Thurstone's (1938) research, defining a different factor from that which subsumed reasoning tasks, although quantitative reasoning also shows some association with this factor. In Carroll's (1993) review, a first-stratum factor of numerical facility was somewhat less *g*-loaded than was that of quantitative reasoning.

Spatial/Visual Intelligence

Gardner defined spatial intelligence as the ability to recognize both large and small visual patterns. He suggested that navigators and pilots would possess high levels of spatial intelligence, as would sculptors, surgeons, chess players, and architects.

Previous research in the domain of spatial abilities suggests that spatial visualization and spatial scanning are two important and distinct aspects of that domain (e.g., Ekstrom, French, Harman & Derman, 1976). Spatial visualization refers to the ability to imagine the movement of an object and is typically measured with mental rotation tasks. Carroll (1993) noted that visualization tasks generally form a first-stratum factor, and one that tends to be highly *g*-loaded. Spatial scanning is the ability to scan a field quickly, to follow paths visually, and to reject false leads (Ekstrom *et al*., 1976). Carroll (1993) tentatively identified this capacity as a first-order factor, but stated that further research was necessary before it could be considered independent and interpreted accordingly. Tasks assessing spatial visualization and spatial scanning tend to load on a second-stratum factor of broad visualization ability, which corresponds also to Thurstone's (1938) spatial ability factor.

Musical Intelligence

Gardner (1999) suggests that musical intelligence is parallel in structure to linguistic intelligence, and that it is reflected in the performance, composition, and appreciation of musical patterns. With regard to the underlying abilities involved in his musical intelligence, Gardner has claimed that the two most central constituent elements of music are rhythm and

pitch (or melody), followed in importance by timbre (which Gardner, 1983, p.105, describes as the characteristic qualities of a tone). The eight music-relevant factors included the following: discrimination of tones and sequences of tones with respect to basic attributes such as pitch, intensity, duration, and rhythm; auditory cognitive relations (judgments of complex relations among tonal patterns); tonal imagery; discrimination and judgment of tonal patterns in musicality; temporal tracking; ability to recognize and maintain mentally an equal-time beat; ability to retain, on a short-term basis, images of tones, tonal patterns, and voices; and absolute pitch ability. Thus, given that rhythm and tone would appear to be core aspects of these narrow factors of musical ability, measures of the abilities to discriminate between rhythms and between tones would be important elements in the assessment of Gardner's musical intelligence.

Bodily-Kinesthetic Intelligence

Gardner (1999) described this intelligence as the potential of using the whole body or parts of the body in problem-solving or the creation of products. Gardner identified not only dancers, actors, and athletes as those who excel in bodily-kinesthetic intelligence, but also craftspeople, surgeons, mechanics, and other technicians. Thus, Gardner does not appear to differentiate between gross motor skills (i.e., involving the whole body or the larger muscle groups) and fine motor skills (i.e., involving smaller muscle groups, especially those controlling the hands and fingers) in describing bodily-kinesthetic intelligence. Gardner has not explained why these abilities would be expected to be strongly associated with each other. Given that the bodily-kinesthetic domain subsumes both gross and fine motor skills, the assessment of this domain would require measurements of both of these intuitively rather distinct areas of ability.

Interpersonal Intelligence

According to Gardner (1983), an individual who is high in interpersonal intelligence understands the intentions, motivations, needs, and desires of others, and is capable of working effectively with them. Gardner stated that teachers, clinicians, salespeople, politicians, and religious leaders all use interpersonal intelligence.

Gardner's interpersonal intelligence would seem to be related to the construct of emotional intelligence, which can be associated with intelligence or with personality depending on how it is measured. For example, O'Conner and Little (2003) reported that an ability-based measure of emotional intelligence was correlated more strongly with cognitive ability than with personality. A self-report inventory of emotional intelligence, on the other hand, was correlated more strongly with personality than with cognitive ability.

The interpersonal domain would seem to include both an understanding of verbal and nonverbal social cues. The individual with a high level of interpersonal ability would likely possess both an awareness of the social consequences of events and also an understanding of the motivations and intentions underlying people's behavior. Thus, this domain could be assessed by asking an individual to anticipate the development of a social situation, or to infer the state of mind of a person based on his or her words or actions.

Intrapersonal Intelligence

Gardner (1999) described intrapersonal intelligence as the ability to understand and to have an effective working model of oneself. Intrapersonal intelligence, as conceptualized by Gardner, includes the awareness of one's own desires, fears, and abilities, and also using this information to make sound life decisions.

From Gardner's description, it appears that having a clear concept of oneself is a key component of his intrapersonal domain. In previous research, self-concept clarity was

operationalized in an investigation of the nature of self-esteem (Campbell, 1990) in which participants made “me/not me” decisions for a 56-item list of adjectives, within which were 25 pairs of opposite poles of various personality traits. Campbell was then able to examine the inconsistency of participants' self-descriptions by determining to what extent they endorsed opposites to describe themselves. Results indicated that this measure effectively distinguished high self-esteem and low self-esteem groups, which were hypothesized to differ in self-concept clarity. Therefore, assessments of self-concept clarity might serve as an indicator of intrapersonal ability.

Intrapersonal intelligence, as described by Gardner, is also somewhat related to metacognition in general and to the ability to self-monitor in particular. That is, the individuals with high intrapersonal ability should be aware of what they know as well as what they do not know. However, Stankov (2000) reported that his research has found very little correlation between self-monitoring ability, as measured by the difference between a confidence score and the actual percentage of correctly solved items, and intelligence. These findings could be interpreted as support for Gardner's contention that intrapersonal ability is an independent area of intelligence. Thus, measures of the extent to which individuals can accurately judge their relative strengths and weaknesses might serve as an index of intrapersonal ability.

Naturalistic Intelligence

Gardner (1999) described a naturalist as one who is able to recognize and classify objects. According to Gardner, hunters, farmers, and gardeners would have high levels of naturalistic intelligence, as would artists, poets, and social scientists, who are also adept at pattern-recognition. He stated that a marketing professional who promotes the small differences between competing products is applying naturalistic intelligence, as is the individual who can recognize cars from the sounds of their engines.

As described above, a central element of Gardner's naturalistic intelligence is the capacity to categorize objects according to salient similarities and differences among them. This ability is critically involved in the generation of meaningful taxonomies of both living and non-living objects. Therefore, categorization tasks of this kind would appear to be ideal measures of the naturalistic domain. It is worth noting that these tasks also appear to demand a high level of logical reasoning, which suggests that cognitive demands for this domain might in fact be similar to those for Gardner's logical/mathematical intelligence, despite being applied to the realm of semantically meaningful stimuli rather than to the domain of symbolic, quantitative concepts.

Existential Intelligence

Gardner (1999) considered existential intelligence as the intelligence of understanding in a large context or big picture.

It is the capacity to tackle deep questions about human existence, such as the meaning of life, why we die, what my role is in the world. This intelligence seeks connections to real world and allows learners to see their place in the big picture and to observe their roles in the classroom, society and the world or the universe. Existential intelligence includes aesthetic, philosophy, and religion and emphasizes the classical values of beauty, truth and goodness. Those with a strong existential intelligence have the ability to summarize and synthesize ideas from across a broad unit of study. Table 1 summarizes eight types of intelligences.

Table 1. Summary of the Eight Intelligences

Intelligence Area	Strengths	Preferences	Learns best through:	Needs:
Verbal / Linguistic	Writing, reading, memorizing dates, thinking in words, telling stories	Write, read, tell stories, talk, memorize, work at solving puzzles	Hearing and seeing words, speaking, reading, writing, discussing and debating	Books, tapes, paper diaries, writing tools, dialogue, discussion, debated, stories, etc.
Mathematical/ Logical	Math, logic, problem-solving, reasoning, patterns	Question, work with numbers, experiment, solve problems	Working with relationships and patterns, classifying, categorizing, working with the abstract	Things to think about and explore, science materials, manipulative, trips to the planetarium and science museum, etc.
Visual / Spatial	Maps, reading charts, drawing, mazes, puzzles, imagining things, visualization	Draw, build, design, create, daydream, look at pictures	Working with pictures and colors, visualizing, using the mind's eye, drawing	Video, movies, slides, art, imagination games, mazes, puzzles, illustrated book, trips to art museums, etc.
Bodily / Kinesthetic	Athletics, dancing, crafts, using tools, acting	Move around, touch and talk, body language	Touching, moving, knowledge through bodily sensations, processing	Role-play, drama, things to build, movement, sports and physical games, tactile experience4s, hands-on learning, etc.
Musical	Picking up sounds, remembering melodies, rhythms, singing	Sing, play an instrument, listen to music, hum	Rhythm, singing, melody, listening to music and melodies	Sing-along time, trips to concerts, music playing at home and school, musical instruments, etc.
Interpersonal	Leading, organizing, understanding people, communicating, resolving conflicts, selling	Talk to people, have friends, join groups	Comparing, relating, sharing, interviewing, cooperating	Friends, group games, social gatherings, community events, clubs, mentors/ apprenticeships, etc.
Intrapersonal	Recognizing strengths and weaknesses, setting goals, understanding self	Work alone, reflect pursue interests	Working alone, having space, reflecting, doing self-paced projects	Secret places, time alone, self-paced projects, choices, etc.
Naturalistic	Understanding nature, making distinctions, identifying flora and fauna	Be involved with nature, make distinctions	Working in nature, exploring living things, learning about plants and natural events	Order, same/different, connections to real life and science issues, patterns

Background of the Study

In this section, some of the major studies conducted with respect to MI theory and applications are reviewed. This can help us scrutinize the applicability of the theory more accurately.

Mettetal, Jordan, and Harper (1997) investigated the impact of a MI curriculum in an elementary school. They used observation and survey for data collection. On the basis of their analyses of the data, three themes emerged "(a) students, teachers, and parents were very positive about the concept of multiple intelligences; (b) they were positive about school-wide implementation, including flow time, activity room, and enrichment clusters; and (c) classroom implementation of MI concepts was uneven across classrooms" (p. 115). The researchers highlighted the importance of MI in changing the attitudes of both teachers and students.

Kornhaber (1999) investigated three alternative assessments for identifying students who are different in terms of their gift. Each of these assessments was based on the MI theory. Qualitative data were collected and it was found that "no assessment met all eight criteria; each met a different subset of the eight" (p. 143). Kornhaber concluded that enhancing equity for under-served students is a very important goal.

Supon (1999) explained the use of the MI theory and rubric design to evaluate student learning. The utilization of 'how' various assessment procedures can be used in the K-12 classroom as well as means to access quality results by preparing teacher-created rubrics is discussed. It is argued that weaving the MI into a rubric design provides the teachers with challenging and rewarding tools for assessing learners' performance.

Snyder (2000) sought to determine the relationship between learning styles and academic achievement of high school students. The results of the study suggested that the majority of high school students were Tactile/Kinesthetic and Global learners. The researcher concluded that an awareness of how students learn is in fact indispensable to successful classroom.

Chan (2001) conducted a study to "assess the variability of the use of a self-report checklist identifying aspects of giftedness in a sample of 192 Chinese secondary students from a multiple intelligences perspective" (p. 215). In order to compare the students, their IQs, creativity, and leadership characteristics were also assessed. It was found that participants perceived the seven intelligences almost as distinct abilities. However, "the self-estimates of the various intelligences did not generally predict the conventional measures, suggesting that the seven intelligences and the conventional measures provided independent and possibly complementary information on aspects of giftedness" (p. 251). Chan also discussed the significance of developing profiles of strengths and weaknesses from an MI perspective for programming and identification purposes.

Osciak and Milheim (2001) focused on MI strategies which could be implemented with web-based instruction. They stated that "utilizing the principles of Multiple Intelligences theory and the dynamics of the Internet allow instructional designers to develop learning experiences that are diversified, exploratory, guided, and soundly constructed" (p. 358). They also mentioned that using Web designs allows the educators to "create instruction that meets and exceeds expectations" (p. 358). Then, opportunities are geared to various intelligence types and appeal to a diversity of language learners. They also argued that Web-based instruction is a much flexible type of instruction on the basis of which all intelligences could be represented and "cultivated regardless of the physical location of the student" (p. 359).

Gaines and Lehmann (2002) described an MI-based project aimed at improving learners' reading comprehension ability. They conducted a study and investigated fourth grade students in a major metropolitan city. They also took the socioeconomic status of the students into account. The motive for conducting the research was recognition of the students' deficiency in reading comprehension. The use of MI strategies was found to improve the students' reading comprehension ability and it enhanced their academic performance as well.

Kallenbach and Viens (2002) conducted a study across different adult literacy contexts. Through on-site observations, qualitative interviews, and teacher journals, they gathered the data. The major findings of the study were as follows: "(1) MI efforts can result in high levels of adult learner engagement; (2) choice-based activities increased students' confidence about learning; and (3) connecting MI reflections activities to broader learning goals is important" (Abstract section).

Chan (2003) assessed MI in a group of Chinese secondary school teachers in Hong Kong. The consistency between the teachers' areas of responsibilities and their multiple intelligences was explored. As for teachers relative strengths in interpersonal and

intrapersonal intelligences and weaknesses in visual-spatial and bodily-kinesthetic intelligences were generally reported. When age was held constant, arts/music/sports teachers reported to have greater strengths in musical intelligence compared with language and social studies teachers, and guidance teachers also were found to have greater strengths in intrapersonal and interpersonal intelligence. Utilizing the eight intelligences as predictors, interpersonal intelligence was found to be a significant predictor of the teachers' self-efficacy in helping other individuals. Chan discussed the implications of the findings in light of the current Hong Kong education reform movement and the inadequacy of teacher education programs in Hong Kong" (p. 521).

Mbuva (2003) focused on the implementation of the MI theory in 21st century teaching and learning environment. He suggested that MI theory is an effective teaching and learning tool at all levels. Mbuva examined various types of intelligences, offered a definition of MI and discussed the historical developments of MI. He further argued about the application of the MI into the classroom social environment. The researcher concluded that "traditional ways of understanding pedagogy, and static methods of teaching, are giving way to the new classroom examination and application of the MI" (p. 1). He also noted that teachers should take account of the cognition, language, and culture of each of their students.

Rule and Lord (2003) edited an activity book containing 13 curriculum units which are designed to help learners who need special help including gifted students with enhanced instruction. To this end, Bloom's level of cognitive understanding and Gardner's MI theory were utilized to provide a framework for individualized instruction. Bloom's taxonomic levels and Gardner's eight multiple intelligences are the basis of the activities.

McMahon *et al*. (2004) conducted a study to evaluate the reliability of an instrument designed to assess MI, namely, the Teele Inventory of Multiple Intelligences (TIMI). They also sought to determine the relationship between intellectual preferences and reading achievement. Results of their study indicated that the TIMI subscales were found to be poor to moderate in terms of reliability. Those students who scored higher on logical-mathematical intelligence were found to be more likely to "demonstrate at or above grade-level reading comprehension scores compared with students who scored lower on logical-mathematical intelligence, but none on the other MI scales was predictive of student achievement" (p. 41).

Loori (2005) conducted a study in which the differences in intelligences preferences of ESL male and female students are investigated. Ninety international students at three American universities took part in this study. The results showed that "there were significant differences between males' and females' preferences of intelligences. Males preferred learning activities involving logical and mathematical intelligences, whereas females preferred learning activities involving intrapersonal intelligence." (p. 77).

Significance of the Study

Because English language teaching plays an important role in educational curriculum in Iran and special attention is given to it in the society, the findings of the present study can be both theoretically and practically significant. Such a study provides information to be taken into consideration by policy makers, language-planners, curriculum designers, textbook developers, language instructors, teachers as well as learners and their parents. Hopefully, the results of the study will be useful for both EFL and ESL learners and teachers. Finding the type of relationship between MI and language proficiency will provide us with opportunities to look differently at the curriculum, instruction and assessment.

Objectives of the Study

The objectives of this study are three-folded. The primary objective of this study is to investigate the relationship between multiple intelligences and language proficiency among the Iranian Ph.D candidates who enrolled in Shiraz University Ph.D Entrance Exam. The second objective of this study is to explore whether one of intelligences or combination of intelligences are predictors of language proficiency. Finally, the study aims at investigating the effect of sex on languages proficiency and types of intelligences.

Research Questions

Based on the objectives of the study, the following research questions were proposed:

1. Is there any relationship between language proficiency and any of the multiple intelligence type?
2. Is there any relationship between language proficiency and the multiple intelligences as a whole factor
3. Which type of intelligence or combination of intelligences act as the predictor of language proficiency?
4. Is there any significant difference between males and females in terms of language proficiency?
5. Is there any significant difference between males and females in terms of types of intelligences or combination of intelligences?

Method:

In this section, participants, instruments and the data collection procedure are presented.

Participants

The participants of this study are item constructors and test-takers defined in details in the followings sections.

Item Constructors

The item constructors were 8 assistant professors (including the Head of the Department as one of the coordinators) majored in TEFL who has had more than 8 years of experiences in teaching English and constructing language proficiency items for Iranians of various ages and levels. They were at the time of the study teaching content courses to undergraduate English majors in English Literature and graduate English majors at Shiraz University. Moreover, they were teaching ESP and General English courses to undergraduates and graduates of diverse disciplines.

Test-Takers

The test-takers were initially 500 Iranians taking part in the Ph.D Entrance Exam to Shiraz University in various majors. The native language and cultural background were equal across all participants. The test-takers ranged in age from 25 to 49 and of both sexes, 299 males and 201 females. After the scores of proficiency exam were obtained, those students whose scores were within two Standard Deviations (SDs) minus and two SDs plus the mean were selected (N=400) and the rest were excluded. Moreover, out of remaining 400 test-takers, 122 were excluded due to the fact that they did not cooperate answering the multiple intelligences questionnaire (maybe the questionnaire was not feasible). The final test-takers were 278 participants, 179 males and 99 females.

Instruments

Multiple Intelligences Questionnaire

A 90-item questionnaire in the form of Likert scale checking and measuring the nine types of intelligences served as the first instrument of the study. The validity of the questionnaire was approved by the item-constructors committee, 8 experienced assistant professors in the Department of Foreign Languages and Linguistics at Shiraz University. The overall internal consistency of the questionnaire was determined by the researcher using Cronbach alpha (CA) and it turned out to be 0.89 which is an acceptable and high index of reliability.

Proficiency Test

The language proficiency test materials for the study consisted of 30 structure items, 40 vocabulary items and 5 passages followed by 30 reading comprehension items. The passages were general enough to ensure that discipline specific knowledge was not the primary factor affecting performance. It is important to know that the final 100 items were selected among the 120 items submitted by the item-constructors. Once the items were submitted, the coordinators (3 assistant professors) commented on each item to improve the quality of the items. So, the possible and needed alterations were made by the coordinators. The content validity of the test was approved by the 8 experienced assistant professors in the Department of Foreign Languages and Linguistics at Shiraz University. Moreover, to determine reliability, test-retest was run and the index was .91.

Data collection and Analysis

All participants were given an oral description of objectives and procedures of the test and the questionnaire via the saloon microphone prior to providing the instruments. After familiarizing the candidates with the objectives of the study, the multiple intelligences questionnaire was distributed among them. They had ample time to go over the questionnaire items and answer them. In the same session, the language proficiency test was given to the participants with the necessary instructions on the cover letter. The data gathered were analyzed descriptively utilizing central tendency measures (mean and standard deviation). Moreover, the collected data were analyzed inferentially using correlation, regression analyses and independent t-test.

Results and Discussion

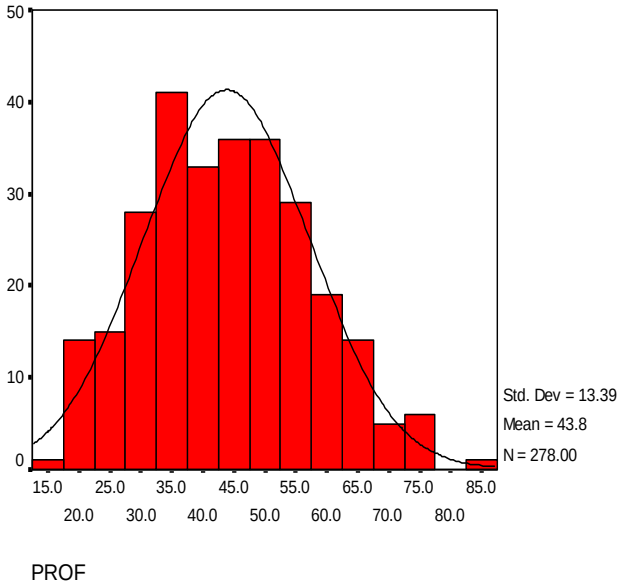
In this section, the results of the study are presented and discussed. The descriptive analysis of the participants' language proficiency scores are presented in Table 4.1.

Table 4.1. Basic Descriptive Statistics for the Particiapnts' Lanaguge Proficiency

Factor	N	Minimum	Maximum	Mean	Std. Deviation
Proficiency	278	15	83	43.81	13.39

As the table indicates, the participants were 278 Ph.D candidates. The minimum and the maximum scores are 15 and 83 respectively. The overall mean and SD of the participants in language proficiency test are 43.81 and 13.39 respectively (Figure 4.1).

Figure 4.1. Presentation of Language Proficiency Scores



As the figure shows, the scores are in the form of a pseudo-normal curve. Table 4.2. presents the male and female particinapts' score.

Table 4.2. Basic Descriptive Statistics for the Male and Female's Proficiency

Gender	N	Mean	Std. Deviation
Male	179	44.79	12.73
Female	99	42.04	14.40

Table 4.2 shows that despite the fact that the males' mean score is more than the females' mean score, the dispersion of the males' scores is smaller than the females'. Based on Table 4.3, we can understand the differences between male and female participates in terms of the two major variables of the study; that is, language proficiency and multiple intelligences.

Table 4.3. Independent Samples T-Tests for the Multiple Intelligences & Language Proficiency

Variables	Gender	N	Mean	Std. Deviation	t	Sig.
Proficiency	**Male**	179	44.79	12.73	1.64	.238
	Female	99	42.04	14.40		
Ling Int.	**Male**	179	33.88	4.84	.560	.768
	Female	99	33.54	4.96		
Log Int.	**Male**	179	37.32	5.80	-.56	.72
	Female	99	37.73	5.82		
Sp Int.	**Male**	179	34.82	6.35	.267	.71
	Female	99	34.61	6.17		
Mus Int.	**Male**	179	31.52	8.68	-.13	.69
	Female	99	31.66	8.27		
Bod Int.	**Male**	179	32.63	6.85	1.01	.71
	Female	99	31.81	5.60		
Inter Int	**Male**	179	35.32	6.11	-1.16	.95
	Female	99	36.29	7.57		
Intra Int.	**Male**	179	33.24	6.76	1.12	.91
	Female	99	32.34	5.71		
Nat Int.	**Male**	179	33.55	6.87	.91	.74
	Female	99	32.75	7.1700		
Exis Int.	**Male**	179	39.28	7.43	.46	.76
	Female	99	38.86	6.82		
Total Int.	**Male**	179	311.60	37.16	.43	.48
	Female	99	309.64	34.45		

Based on the results of Table 4.3, we can draw two major conclusions: 1) There is no significant difference among Iranian male and female Ph.D candidates in terms of their language proficiency; and 2) there are no significant differences among male and female participants' multiple intelligences in general and each type of intelligence in particular. To have a clearer and more dependable picture of the data, multiple regressions were run (Table 4.4)

Table 4.4. Multiple Regressions for Types of Intelligences and Proficiency

Variables	Beta	t	Sig.
Linguistic Intelligence	.064	.916	.361
Logical Intelligence	-.011	-.148	.883
Spatial Intelligence	-.003	-.044	.965
Musical Intelligence	.112	1.573	.117
Bodily Intelligence	-.167	-2.323	.021
Interpersonal Intelligence	.100	1.410	.160
Intrapersonal Intelligence	-.028	-.418	.676
Naturalistic Intelligence	.068	.927	.355
Existential Intelligence	-.080	-1.113	.267

The results of Table 4.4 show that none of the intelligence types can predict the language proficiency among the Iranian male and female participants. Finally, correlations were run in order to find the degree of relationship among the Iranian Ph.D candidates in terms of language proficiency and each type of multiple intelligences (Table 4.5).

Table 4.5. Spearman Product Moment Correlation for Types of Intelligences and Proficiency

Variables	Prof.	Ling Int	Log Int	Sp Int	Mus Int.	Bod Int	Inter Int.	Intra Int.	Nat Int.	Exis Int	Total Int.
Prof.	1	.069	.012	.010	.075	-.013	-.079	-.013	.026	-.01	.031
Ling Int.	.069	1	.413*	.300*	.319*	.247*	.289*	.185*	.238*	.29*	.563*
Log Int.	.012	.413*	1	.462*	.107	.272*	.408*	.179*	.303*	.31*	.598*
Sp Int.	.010	.300*	.462*	1	.352*	.386*	.325*	.189*	.349*	.29*	.654*
Mus Int.	.075	.319*	.107	.325*	1	.413*	.274*	.211*	.186*	.25*	.600*
Bod Int.	-.079	.247*	.272*	.386*	.413*	1	.303*	.236*	.347*	.21*	.628*
Inter Int.	.077	.289*	.408*	.325*	.274*	.303*	1	.175*	.299*	.39*	.630*
Intra Int.	-.013	.185*	.179*	.189*	.211*	.236*	.175*	1	.374*	.27*	.615*
Nat Int.	.026	.238*	.303*	.349*	.186*	.347*	.299*	.347*	1	.43*	.649*
Exis Int.	-.012	.292*	.311*	.296*	.252*	.217*	.391*	.276*	.439*	1	.644*
Total Int.	.031	.563*	.598*	.654*	.600*	.628*	.630*	.515*	.649*	.644*	1

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

As the Table presents, there is no significant relationship (positive or negative) among the Iranian EFL Ph.D candidates with respect to types of intelligences and language proficiency.

Conclusion

The present study intended to investigate the relationship between language proficiency and multiple intelligences among the Iranian PhD candidates at Shiraz University, Shiraz, Iran. As such, in the conclusion section of the study, the main research questions presented in the first section will be answered one by one.

1. Is there any relationship between language proficiency and the multiple intelligences as a whole factor/any of the multiple intelligence type?

   The results of the study showed that there is no significant relationship between language proficiency and multiple intelligences as a g-factor and language proficiency and each of nine-intelligence types.

2. Which type of intelligence or combination of intelligences act as the predictor of language proficiency?

   Based on the multiple regression analysis, none of the intelligence type could predict the Iranian's English language proficiency.

3. Is there any significant difference between males and females in terms of language proficiency performance?

   The independent sample t-test indicated that there is no significant difference among the Iranian male and female Ph.D candidates in terms of their proficiency.

4. Is there any significant difference between males and females in terms of types of intelligences or combination of intelligences?

Several independent t-tests were run and the results present the idea that there is no significant difference among the Iranian males and females with respect to the types of intelligences they use.

However, the conclusions are clearly suggestive due to three major reasons: a) maybe the students did not cooperate with the researcher because of cramming and anxiety for the proficiency exam; 2) the lack of feasibility with respect to the multiple intelligences questionnaire could be mentioned as the another reason hindering us getting the consistent and dependable results; and 3) two other variables, the age and fields of study, might affect the results of the study.

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Seyyed Ayatollah Razmjoo is an Assistant Professor in the Department of Foreign Languages and Linguistics at Shiraz University, Shiraz. He received his BA, MA and Ph.D from Shiraz University. His areas of interest are Testing, Research, Materials Development and Teaching Methodology. He has taught courses related to the same fields to English students. He has published more than 10 books and articles. His famous books are Fundamental Concepts in Linguistics, Fundamental Concepts in Research Methods and Fundamental Foundations in TEFL. Seyyed Ayatollah Razmjoo can be contacted at arazmjoo@rose.shirazu.ac.ir or arazmju@yahoo.com