

## A Comparative Study on Bilingual and Monolingual Iranian EFL Learners' Linguistic Intelligence across Genders

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**Abstract:** The issue of the effects of bilingualism on cognitive development has attracted different viewpoints. Some believe that bilinguals are superior to their monolingual counterparts simply because they have access to two different language systems. On the other hand, there are scholars who believe that bilingualism can impose negative effects on the cognitive development and intelligence in general. This study aimed at comparing linguistic intelligence of Iranian bilinguals and monolinguals regarding their gender. The participants were chosen from the university students, between the ages of 20 up to 30 years old, male and female. There were 100 monolingual (Persian) and bilingual (Persian and Turkish) EFL learners participating in the study. They were administered MIDAS test, and the results were analyzed through SPSS computer program. The findings reveal that there is a significant difference between female bilinguals and monolinguals linguistic intelligence. However the male participants revealed no difference regarding their linguistic intelligence. The results are interpreted to have implications for language class methodologies and syllabus designers, and can be considered as a support to the idea of promoting bilingual education.

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### 1. Introduction

#### 1.1. Intelligence

Individuals differ from one another in their ability to understand complicated ideas, to adapt efficiently to new situations, to learn from experience, to deal in different forms of analyzing and reasoning, and to find solutions to overcome obstacles; Individuals are never consistent; in other words no single individual behave the same all the time, as mentioned by Neisser, Boodoo, Bouchard, Boykin, Brody, Ceci, Halpern, Loehlin, Perloff, Sternberg, and Urbina (1996). They believe that the attempt to define and clarify the notion of intelligence is actually the result of organizing these complex and amazing sets of phenomena. Neisser et al. (1996) further discuss that despite of considerable efforts which has been done to clarify and identify these notions, there are still so many questions left to be answered. They believe that the existence of a wide range of definitions for the notion of intelligence is not unusual and eventually will lead the scientist to an agreement. According to Gardner (1999), every society possess its own specific ways of considering an ideal human being, such as Greeks who valued "physical ability, rational judgment, and virtues behavior" (p.1), whereas the Romans valued courage. Lima Botelho (2003) asserts that the adjective of intelligence has a very challenging impact on people, and those who are considered as an "intelligent" person are expected to be able to

succeed not only in their academic achievements, but also in all aspects of their lives.

According to Chase (2005), Aristotle was the first one who described the delineation between excellence of intelligence and excellence of character. Chase (2005) claims that Aristotle presented a triarchic theory of intelligence, very similar to Sternberg's recent triarchic theory, and took into account theoretical, practical, and creative intelligences. Theoretical intelligence is an amalgam of the use of inductive and deductive processes to achieve an understanding of the running issue. Practical intelligence is defined as the intellectual ability to understand the best course of action for any running situation and execution of the best behavioral standards. His third component of intelligence is productive intelligence, which is defined as the ability to create new things.

Since the last century, other prevailing views have been put forwarded by different scholars of the time. In the early 1900s, Alfred Binet decided to measure the intellectual capacity of children who were supposed to enter school (Becker, 2003). According to Chase (2005), Binet has focused on the universalities of human intellect. Binet discusses the need to pass through developmental stages and a fundamental faculty. He believes that whatever intelligence is, it develops with age. To him, as cited in Chase (2005), mental behaviors such as intelligence are complicated co-occurring mental

processes that cannot be reduced into separate intelligences, or separate tests of intelligence. Faced with this, Binet has developed a multifaceted test of intelligence which called into attention the abilities such as problem solving, memory, judgment, and social comprehension. The IQ test was modified to best suit American society in 1920s and 1930s (Gardner, 1999) and it became known as the Stanford-Binet IQ test. According to Lima Botelho (2003), the IQ test is mostly administered in primary schools to determine and predict success in different academic situations. Lima Botelho (2003) claims that there are other tests which were created to measure human ability such as Scholastic Assessment Test (SAT), which is not unlikely to IQ tests.

Many psychologists support the notion that different IQ tests can be valid measures for predicting academic success of individuals; however, there are groups of scholars who believe that they cannot predict success out of school and in the real lives of individuals. Gardner (1999) asserts that:

So long as these tests continued to do what they were supposed to do; that is, yield reasonable predictions about people's success in school; it did not seem necessary or prudent to probe too deeply into their meanings or to explore alternative views of what intelligence is or how it might be assessed. (p. 13)

The Swiss psychologist, Jean Piaget can be considered among those who called into question the Binet-Simon IQ test. He began to notice that children at the same range of age tended to make similar types of mistakes while tackling items on an intelligent test. These observations led Piaget to think about the correctness of the question being asked by Binet and Simon. Piaget came to believe that what was important was not the accuracy of taping the right answer to a short IQ test, but rather how the answer was achieved (Piaget, 2001). Gardner (1993) discusses that Piaget himself never engaged in a critique of what Binet did for measuring intelligence and developing IQ test, but while looking in what he had done during his scientific movements, a feeling for some of the inadequacies of Binet-Simon program can be gained. Gardner (1993) asserts that the IQ movement is blindly empirical. The movement was based on some simplistic tests with heavy reliance on predictive ability for future success and school achievement, and there was no attention to the process of achieving a point, but rather the focus was on whether one was able to tap the correct answer or not. Furthermore, Gardner (1993) discusses that the test items of an IQ test were often relatively unrelated to each other and sometimes distinct from the everyday lives of the individuals. They relied heavily on language abilities and on individuals' skill in

identifying words, in knowing facts about the world, and finding relations among the verbal concepts.

Gardner (1993) mentions that the view developed by Piaget was radically different and gradually became an extremely powerful view of human cognition over several decades. In the view of Piaget, according to Gardner (1993), anything in the world begins with an individual who is attempting to make meaning of it through constructing and testing hypotheses about any running debate. Piaget believes that intelligence is a form of adaptation, in which knowledge is constructed by each individual through two complementary process of assimilation and accommodation.

Piaget, as cited in Williams and Burden (1997), also discusses predetermined stages in cognitive development. The first stage is the sensorimotor stage in which the child makes sense of the world only through his perceptions and physical actions upon the world. At the age of two the child enters the preoperational stage which lasts around the age of seven. At this stage, according to Williams and Burden (1997), the child acquires representational skills in mental imagery, and especially language learning. The child is egocentric in this period of development. After about the age of seven, the child enters the operational stage in which symbolization reach a high point and enables the child to reason systematically about the concrete world. But still everything is very dependent on concrete examples rather than abstract once. The final stage of cognitive development is formal operational stage when abstract reasoning becomes possible to a great deal. The adolescent now becomes able to think in a completely logical manner (Williams & Burden, 1997).

Spearman in 1904, put forth the notion of a "g" factor, based on some correlations between wide ranges of cognitive abilities. Chase (2005) mentions that "g" can be considered as the power of processing information. Individuals with higher g, which are distributed in the extremes of a bell-shaped curve, are capable of processing more information and more efficient than the others. Spearman (1946) argues that the distinction between the performances of two variant individuals on a cognitive task can be due to just two underlying factors: the g factor and "s"-skill, which is the unique skill needed to cover that specific task. Spearman discusses that developing ability in a specific area such as mathematic, will lead the individual to attain a higher level of vocabulary abilities, for example. But g is still the most demanding factor of his/her performance on mathematic test.

Eysenck (1982) asserts that strong arguments can be provided in support of the existence of one

general type of intelligence. The most persuasive evidence for the existence of a single general intelligence is the fact that there is a single general factor that controls the level of intelligence of an individual. He further mentions that the high correlation between IQ and very simple cognitive tasks can be considered as another support for the theory of one general intelligence.

Another important support for the existence of a general intelligence is the fact that there exists a high correlation between reaction time to some simple cognitive tasks and IQ (Eysenck, 1982). He argues that IQ correlates vary positively with so simple tasks, or even simple physiological tests. These tasks can be grouped among sensory and motor activities, which need quick responses from the side of the participants. When an individual responds quickly to a stimuli, the neural processes needed for covering that task happen more rapidly. Eysenck discusses that those individuals with faster neural processing speeds have higher IQ. As a result, neural processing speed determines the level of intellectual ability of the individuals; this intelligence is simply considered as general intelligence.

It can be concluded that various proponents of one intelligence all believe in the existence of a single factor that determine intellectual ability of individuals and is very dependent on genetics. On the other hand, there are proponents of multiple intelligences, who agree that there are several types of intelligence. However, the proponents of this school of thought do not agree on the number of the intelligences. Gardner (1993) asserts that there never can be a single universal accepted list of human intelligences.

### **1.2. Multiple Intelligences**

Some of the scholars who were dissatisfied with the heavy reliance on tests measuring intelligence and the subsequent decisions made on the basis of the results of these tests have introduced several alternative views toward intelligence, which consider it as having several components. The proponents of this school of thought such as Neisser, Boodoo, Bouchard, Boykin, Brody, Ceci, Halpern, Loehlin, Perloff, Sternberg, and Urbina (1996) believe that the theory of general intelligence does not encompass all people's capabilities. Consequently, with its' heavy reliance on psychometric evaluation, it cannot take into consideration the vast majority of different talents and potentials that individuals possess. Neisser et al. (1996) assert that there are various levels of intelligence. They also discuss that the levels of intelligence in each individual may vary in different situation. One of the most important distinctions between the theory of general intelligence and multiple intelligences is that most of

the proponents of general intelligence view it as an innate capacity with little chance to change or develop, while the other camp believe that intelligence is a combination of a range of potentials and aptitudes that can be acquired and strengthen with the help of the appropriate situations and new experience (Gardner, 1983).

Thurstone (1938) defines intelligence as the ability to make impulses focal at their earlier, unfinished stage of formation. Intelligence is, therefore, the capability of abstraction, which is an inhibitory process. Neisser et al. (1996) believe that Thurstone has made a significant contribution in so many areas of psychology and the studies on human intelligence. His influential theory of Primary Mental Abilities challenged Spearman's theory of unitary intelligence, g factor. During his studies, Thurstone (1938) found out that human intelligence is not the result of a g factor. But rather, it emerges from seven independent factors that he called primary mental abilities which consist of word fluency, verbal comprehension, spatial visualization, number facility, associative memory, reasoning and perceptual speed (Thurstone, 1938).

According to Neisser et al. (1996), another influential theory of this camp is Multiple Intelligences was put forward in Frames of mind (1983) by Howard Gardner. According to Gardner (1983), the question which led him to this theory was whether intelligence is a single entity or something compromised of various independent faculties. Gardner (1999) believes that intelligence is much more than simply an IQ score obtained from an IQ test, while attaining a high IQ score in the absence of productivity is not equal with intelligence. In his definition of intelligence in 1999, he defines it as "a biopsychological potential to process information that can be activated in a cultural setting to solve problems or create problems that are of value in a culture" (p.34). In his broad view, Gardner sees intelligence as having many components, instead of intelligence being a single entity. He believes that the psychometrics tests of intelligence only measure a very narrow scope of intelligence which is limited to verbal and logical-mathematical intelligences. He further suggests that each individual has at least eight intelligences and the intelligences are combined in different manners:

**Verbal/Linguistic Intelligence:** Is referred to the ability to use language effectively and to be able to communicate sufficiently both in written and spoken forms. Those individuals with strong linguistic intelligence usually have a vast access to vocabularies, which can be used to encourage and persuade others to do what they want. Adams and Hamm (2008) mentions that those with a strong

linguistic intelligence may choose careers such as language teachers, interpreters, editors, radio and television announcers, and linguists. Armstrong (2003) discusses that those who want to develop their linguistic intelligence can read great amount of books for pleasure, keep a diary,

Memorize different songs and poems, get together with friends and take turns in reading aloud different parts of a favorite play, and brows the libraries or bookstores regularly. He further discusses that the intellectual competence must contain a set of skills for solving problems and creating products and the potential ability for creating or finding new problems. According to Botelho (2003), this type of intelligence is traditionally tested by different standardized tests such as Test of English as a Foreign Language (TOFEL), Graduate Record Examination (GRE), as well as Stanford- Binet IQ test.

**Logical/ Mathematical Intelligence:** The ability to use rational, abstract thought to come to logical deductions. Ross and Seagal (2002) also define logical/mathematical intelligence as the ability to count, compare, and classify to realize the world around the individuals. They also believe that this type of intelligence needs creativity to produce new inventions. Engineers and mathematicians can be grouped among those with high logical/mathematical intelligence. Armstrong (2003) asserts that those who want to develop their logical/mathematical intelligence with a focus on language learning should watch television programs about science, play logical/mathematical games with others, and sequence events into story line. Gardner (1999) asserts that:

Having a blend of linguistic and logical-mathematical intelligence is no doubt a blessing for students and for anyone else who must take tests regularly. Indeed, the fact that most psychologists and most other academics exhibit a reasonable amalgam of linguistic and logical intelligence made it almost inevitable that those faculties would dominate tests of intelligence. (p.42)

**Musical/Rhythmic Intelligence:** Musical intelligence as Harmon and Jones (2005, p.94) defines, refers “to the ability to appreciate, create, and comprehend a variety of musical forms used as a means of expression” (p.94). Bowman and Jaeger (2004) suggest the individuals to attend in the concerts, to listen to different music, and try to learn different songs and rhymes in order to develop their musical intelligence.

**Bodily/Kinesthetic Intelligence:** Bowman and Jaeger (2004) provide a comprehensive definition of bodily/kinesthetic intelligence by defining it as the capability to learn and express oneself through

different parts of body. Children with strong bodily/kinesthetic intelligence learn by processing knowledge through bodily sensations and use body language to communicate with others.

**Interpersonal Intelligence:** It is the potential for working with others, as used in understanding people, leading and organizing others, communicating, resolving conflicts, and selling (Denig, 2004). According to Denig (2004), it involves understanding how to communicate with others and understand their feelings. Ross and Seagal (2002) also assert that the individuals with high interpersonal intelligence are able to see things from others’ point of view. They can sense feelings, intentions and they are capable of establishing positive relationship with others.

**Intrapersonal Intelligence:** Adams and Hamm (2008) interpret this intelligence as the ability to realize one’s own feelings and ideas. Gardner (1993) views it as an effective working model for individuals’ lives, and to be able to use that information in everyday lives. According to Lima Botelho (2003) this intelligence has been valued more in job requirements since it is really demanding to jobs that need leaders who are able to motivate other people in a successful manner. Adams and Hamm (2008) mention that people with high intrapersonal intelligence may become writers, counselors, politicians, salesperson, team leader, and religious leaders.

**Naturalistic Intelligence:** According to Denig (2004), this area of intelligence has to do with nurturing and relating information to one’s natural surroundings. Gardner states that this intelligence is valued in many different cultures, both in cultures with scientific orientation and without it. The ability to make a distinction between the species that is harmful or beneficial to human beings is one of the skills that a person with high naturalistic intelligence may possess. Gardner (1983) discusses that the studies done in the field of intelligence should be focused on normal children and adults as well as gifted individuals and those who suffer selective forms of brain damage and believes that the traditional ideas about intelligence which were used in educational and psychological issues for almost a century requires significant reforms. In the studies of intelligence and cognition, he suggests the existence of a number of various facilities and intellectual potentials, with their own developmental history. Armstrong (2003) discusses that each intelligence introduced by Gardner represents a set of potentials that are focused on two major principles: solving problems, and the fashioning of culture products. Armstrong discusses that one predominant importance of MI theory is Gardner’s use of eight criteria that need to be covered in order for each

intelligence to be qualified to be used in the list of intelligences.

### 1.3. Bilingualism

The debate of globalization or modernization has faced a great amount of reaction, both positive and negative as Fornuskova (2011) asserts. One important consequence of globalization that is interesting for linguists is the fact of migration, which leads to developing bilingualism. Cummins (2001) mentions that migration leads to greater cultural, religious, and linguistic varieties over the generations. Scotton (2006) claims that the contact between those people who do not share the same L1 can lead individuals to bilingualism. Immigration, business travels, and education can be grouped as other major forces for people to become bilingual individuals. Scotton (2006) believes that there are two intrinsic values in studying bilingualism. The first one is the human potential ability to speak two or more languages and studying bilingualism can highlight some new information about the genetic potential of human beings. The information obtained from the bilingualism studies gives information about how language is processed in the brain. Furthermore, studying the children who acquire two languages simultaneously provides important insights into how human beings acquire language in general. Scotton believes that studying bilingualism may expand the understanding of human language faculty. Secondly, living in a situation where two or more languages are used is a part of human experience, while most of the human societies seem to be bilinguals. In the developing condition of the world, maximizing an awareness of the many aspects of human life and their interactions seems to be very demanding. Different scholars have various viewpoints toward the definition of bilingualism. Scotton (2006) asserts that speaking a single language, which is usually the mother tongue of the individual, is called "monolingualism", while bilingualism is the term used for speaking more than one language. Harding and Riley (2006) define a bilingual person as anyone who is able to speak two languages perfectly. According to Foster (1998), bilingualism implies a degree of communicative competence sufficient for effective communication in more than one language. Effectiveness in Foster view is the ability to correctly understand the meaning of messages and at the same time the ability to produce meaningful utterances which can be understood by others. On the other hand, Romaine (1995) believes that bilingualism is the minimal ability to produce and understand a foreign language. Scotton (2006) agrees with Romaine by mentioning that the bilinguals are not needed to have complete mastery and equal frequency in the languages they use. He mentions

that the speakers become bilinguals when having acquired or learned to speak and comprehend some phrases that show internal structural relations of the second language. He believes that producing some formulaic phrases such as greetings cannot be enough for an individual to be considered as a bilingual. However, he claims that the question of "how much speaking in L2 is needed for an individual to be called bilingual" has not yet been answered clearly. There are few bilinguals who are as proficient in their second language as their first language and furthermore, they do not use the two languages with the same frequency. Scotton (2006) suggests two major reasons for this. First of all, the amount of the exposure is very various in the languages used by bilinguals and second the bilinguals tend to use their languages with different frequency and in various situations.

Fornuskova (2011) mentions that although there is a great inconsistency in the perception of bilingualism, on the other hand this inconsistency confers that almost everybody connects the notion of bilingualism to the fact that people are capable of learning several languages during their life-time. Butler and Hakuta (2006) believe that the notion of bilingualism is a very complex psychological and socio-cultural linguistic behavior and has multi-dimensional aspects. Romaine (1995) asserts that there has been also disagreement even among linguists about the definition of bilingualism. Harding and Riley (2006) and Romaine (1995) agree that it is hardly possible to adopt a satisfactory definition for the notion of bilingualism. Romaine (1995) concludes that bilingualism is a very complex venture that cannot be described through a unified definition. The study of bilingualism is a complex multidimensional notion which needs to be studied simultaneously in order to get a complete picture as Fornuskova (2011) believe. Harding and Riley (2006) mentions that these definitions of bilingualism may ignore two important factors: first, they fail to define what is exactly meant by native-like control or by minimal competence. Second, they focus on the level of the proficiency of the bilinguals, without defining the proficiency. In other words, they ignore the non-linguistic dimensions. For most of the scholars of this camp the degree of bilingualism is of utmost important. Scotton (2006) maintains that the degree of bilingualism should not be understood as a one-level phenomenon, but rather it should be considered as having ability in all four skills and all linguistic levels in the both languages that the bilingual individual knows.

### 1.4. Bilingualism and Cognitive Development

Scotton (2006) claims that early studies comparing monolinguals and bilinguals revealed that

bilinguals performed weaker than monolinguals on most of the language achievement tests, measuring various aspects of language abilities. He mentions the study done by McNamara in 1966, which compared vocabulary, reading, and grammatical complexity of bilinguals and monolinguals. On the basis of this survey, as cited in Scotton (2006), McNamara (1996) claims that bilinguals have a weaker ability of language in the tested domains. Bialystok (2001) points out that the results obtained through the study done by McNamara is not surprising. She believes that in such studies the linguistic background of the participants is ignored and in assessing children's linguistic skills understanding the children's linguistic skills is of utmost importance. She reports other studies with other mixed results. The first one, as cited in Bialystok (2001), is the study done by Pearson, Fernandez, and Oller in 1993 which compared receptive and productive vocabulary acquisition of bilingual and monolingual children. The findings revealed that total production of vocabulary for bilingual participants was not significantly different from monolinguals. The second survey discussed by Bialystok (2001) is done in 1994 by Pearson and Fernandez, evaluating the patterns of productive vocabulary growth in bilinguals and monolinguals. This study found out a good deal of individual variability and opposed the findings of the first study. Monolinguals lagged behind bilinguals in the production of vocabularies (Bialystok, 2001). In a study conducted by Gathercole and Montes (1997, as cited in Scotton, 2006), the development of well-formedness condition of sentence formation was compared. The results obtained, revealed that monolingual children outperformed bilinguals in all the structures tested. But the older the bilinguals were performing better. In other words, the older and stronger bilinguals resembled monolinguals in their syntactic sensitivity. The structures were learned at the same order with children who were exposed to two languages (Scotton, 2006). The matter of exposure seems to be very important, Scotton (2006) has claimed. In other words, children with more exposure did better in recognizing structures in the language being tested. Lee (1996) has agreed with Scotton (2006) claiming that the early studies which were conducted during the first half of the century showed that bilinguals had lower IQ score and suffer from academic retardation. He had reported various studies in the earlier days which bilinguals seems to be lower than their monolingual peers in different aspects being tested. The first one can be regarded as the survey done by Brake and Williams (1938) with bilinguals showing poorer vocabularies (as cited in Lee, 1996). Bilinguals lagged behind the tests of pronunciation in

the work done by Carrow in 1957, and they had lower abilities on written composition as shown by Harris (1948).

Romaine (1995) claims that most of the studies which are in favor of monolinguals, had suffered from serious methodological problems, which are considered as a threat to their validity. Fornuskova (2011) believes that there are two major reasons that those studies fail to consider. First, the biographical data, such as gender, social and economic background, and educational status of the participants were ignored. The second problem, which may lead to invalid studies in the earlier days, is not taking into account the linguistic background of the participants. Hakuta and Diaz (1985) claim that the work done by Peal and Lambert in 1962, which is a turning point to the studies of bilingualism, was one of the most influential studies about bilingualism for at least two crucial reasons. It had stressed the importance of selecting sufficient sample, with taking into account the major features such as language history, age, and language proficiency. Second, the results obtained prove that having access to two languages can have positive impact on cognitive development of bilinguals. They assert that the psychological studies about the relationship between bilingualism and cognitive abilities began after the study done by Peal and Lambert in 1920 and during the heyday of the intelligence measurement by different psychometric intelligent tests. As obvious, the measurement of intelligence is very dependent on verbal abilities. As expected, the majority of the studies done before Peal and Lambert found that bilinguals suffered from a language handicap, because of being exposed to two languages. But Hakuta and Diaz (1985) believe that they actually ignored the serious problem of the validity of psychometric tests being used to assess the intelligence level of the bilingual participant. Lee (1996) claims the second significant study was conducted by Ben-Zeev (1977) which had investigated the metalinguistic awareness of bilinguals and monolinguals. According to Lee (1996) this researcher found that the bilingual children outperformed monolinguals on tasks such as symbol substitution, which were designed to investigate children's awareness of language features and the ability to control the automatic production of errorless utterances. He mentions another influential case study which showed the superiority of bilingual children. Leopold (1949), as cited in Lee (1996), claims that espousing his daughter to two languages strengthen her mental development. He asserts that bilingual children are capable of focusing on the content of the words rather than their form because they have learned previously to symbolize the words and are familiar with abstract nature of them (Lee,

1996). Leopold (1949), as cited in Hakuta and Diaz (1985), made a connection between the semantic and cognitive development of bilingual children. He believes the separation of sound and meaning results in an early awareness of the words. This awareness may enhance the abstract levels of thinking in children (Hakuta and Diaz, 1958). Vygotsky, according to Cummins (2001), is in the same line with Leopold by claiming that “bilingualism frees the mind from the prison of concrete language and phenomena”. According to Cummins (1979) cognitive and academic benefits of bilingualism can be achieved only on the basis of adequately developed L1 skills. Two hypotheses had been formulated to arrive at this point: developmental interdependence, and threshold hypotheses. There may be threshold levels of linguistic competence which a bilingual child must attain in order to avoid cognitive disadvantages and allow potentially beneficial aspects of bilingualism to influence his cognitive and academic functioning. These are integrated into a model of bilingual education in which educational outcomes are explained as a function of the interaction between background, child input, and educational treatment.

Many researchers have also found that bilingualism has a positive effect on third or foreign language acquisition (Eisenstein, 1980; Thomas, 1988; Cenoz and Valencia, 2008; Swain, Lapkin, Rowen, and Hart, 1990). Eisenstein (1980) found that childhood bilinguality had a positive effect on adult aptitude for learning a foreign language. That is to say, those individuals who had acquired a second language in their childhood were more successful in learning foreign languages as adults. Thomas (1988) also compared the acquisition of college French monolinguals and English-Spanish bilinguals. The results obtained from her study revealed that there was a significant difference between the two groups, with the bilinguals performing better than monolinguals. She asserts that:

Bilinguals learning a third language seem to have developed a sensitivity to language as a system which helps them perform better than those activities usually associated with formal language learning than monolinguals learning a foreign language for the first time (Thomas, 1988:240).

In another study done by Cenoz and Valencia (2008), the influence of bilingualism on third language learning in a bilingual community, the Basque country was studied. The results revealed that bilingualism and other variables such as intelligence were much related with English language achievement of the participants. Swain, Lapkin, Rowen, and Hart (1990) questioned the impact of third language learning of Heritage language use

which included literacy. Results obtained conferred that literacy in the Heritage language had a very demanding effect on learning French as their third language. Swain et al. (1990) claim that the positive effects of third language learning can be generalized and were not limited to literacy-based interdependence hypothesis. Sanz (2000) also found evidence supporting the positive effect of bilingualism on third language acquisition.

Keshavarz and Astaneh (2004) also studied the relationship between bilinguality of second language learners and their vocabulary achievement in the third language that the participants were supposed to learn. The results conferred that the native participants (Turkish and Armenia) who spoke a second language (Persian) performed significantly better in the English vocabulary test than Persian monolinguals which were learning English. In another study conducted by Shams Esfandabad and Emamipour (2010) the prevalence of verbal learning styles was higher in bilingual participants, while the prevalence of visual learning styles was higher in monolinguals. The study conducted by Thomas (2010) lends support to this by proving that the bilingual speakers with a prior knowledge of their L1, here Spanish, had an advantage over their monolingual peers. Eisenstein (1980) also found out a bilingual advantage in children. Acquiring two languages can influence their foreign language abilities as adults.

There exists other research projects led to a neutral attitude toward bilingualism and its' probable effects on different aspects of academic achievement (Barik and Swain, 1978). In their studies, Barik and Swain (1978) investigated the performance of larger samples and control variables such as gender and age, and found no significant difference between monolinguals and bilinguals in terms of their mental development and academic achievements. In 1999, Mouw and Xie also found no evidence supporting the positive effects of bilingualism on academic achievement of the learners. More recently, Shibata (2004) and Schuster (2005) found no significant statistical difference between monolingual and bilinguals academic achievement.

Clarkson (1992) argues that the level of competence in each language that a bilingual individual may use is very demanding, if academic achievement is considered. He believes that the studies which confer a bilingual advantage in relation to students' academic achievement can lend support to using their original language in schools. He further had mentioned that the use of students' original language may also provide the way for easy access to traditional concepts in the classrooms. Clarkson (1992) claims that using students' original language in school may help them to have access to relevant

ideas in a specific domain easier. A further reason for using students' original language in school is based on linguistic theory. It is argued that bilingual students who are equally proficient in the two languages can make more benefits from their bilinguality, since their languages are not two distinct systems. Rather, they can act on each other, and therefore achievement in one is a function of success in the other. Such instructions, Clarkson believes, also strengthen the underlying conceptual and linguistic proficiency that is related to both language abilities, as well as academic skills.

### **1.5. Bilingualism, Verbal, and Non-verbal abilities**

Wodniecka, Craik, Lou, Bialystok (2010) assert that most of the recent findings that reveal a bilingual advantage have been reported in attentional tasks that need the resolution of conflicting information in the visual field such as Simon task, Stroop task, and ANT task. They believe that this conflict resolution is done by the complex process of executive control. Executive control is needed for all forms of high processes done in the brain including the memory procedures used in everyday cognitive tasks, neglecting interference, performing on the ongoing streams of information, using effective retrieval procedures, and processing materials sufficiently. They claim that memory retrieval consist of two major components: familiarity and recollection. The difference between familiarity and recollection can be described in everyday lives and while recognizing someone you may know beforehand, for example. The face may give you some hints of familiarity, but you cannot recollect the details about that specific person at that moment (Wodniecka et al., 2010). It is generally agreed that the two processes of familiarity and recollection are supported by different mechanisms; familiarity shows the general strength of memory trace while, recollection involves the retrieval process of remembering the details of different events and situations in which the individual is involved (Wodniecka et al., 2010). Wodniecka et al. (2010) had compared younger and older bilinguals and monolinguals on a memory task that involved separate measures of familiarity and recollection. The results obtained revealed that younger adults outperformed older adults on those measures and there was a minimal support for a bilingual advantage in the younger group. Older bilinguals were superior especially in non-verbal task.

This study is also supported by the findings of the recent study done by Andreou and Karapetsas (2004). The findings of Andreou and Karapetsas (2004) revealed study show a bilingual advantage for almost all verbal subtests. The highly proficient bilinguals outperformed others in different verbal tests. They claim that the use of two languages can

increase cognitive elaboration and the ability to adopt more efficient learning strategies. The positive transfer between languages can increase the bilinguals' vocabulary and language understanding as well. Andreou and Karapetsas (2004) believe that the bilingual individuals can make effective use of their rich linguistic background and acquire the ability to make connection between two languages through abstract learning. The bilinguals are also able to express the same ideas with two different languages. This provides the bilinguals with the efficient foundations for higher mental flexibility and assists them to acquire more cognitive control in the processing of the information (Andreou and Karapetsas, 2004). They further claim that some other scholars such as Cummins, Carroll, and Spark have asserted that cognitive benefits can be gained only among those individuals who have attained higher stages of balanced bilingualism. Andreou and Karapetsas (2004) believe that these researchers are supporting the "Threshold Theory", put forwarded by Cummins (1976). This theory refers to the minimal level of language proficiency needed to achieve functional abilities in second language. (Richards, J. and Schmidt, R., 2002). It also maintains that bilinguals should attain high levels of linguistic proficiency in both of their languages to promote the cognitive development.

According to Portocarrero et al. (2007) assessment of verbal fluency usually consists of phonetic and semantic fluency tasks. They examined the bilinguals' and monolinguals' phonetic and semantic fluency. The findings revealed that both groups of the participants had a similar performance on phonetic fluency. However, the bilinguals showed significantly lower abilities in semantic fluency. Portocarrero et al. (2007) believe that bilinguals performed weaker in semantic fluency because of cross language interference. They were also lower in receptive and expressive English vocabularies. In another study, Bialystok, Luk, and Craik (2008) examined the bilinguals' and monolinguals' working memory, lexical access, and executive control. The results obtained revealed that bilinguals and monolinguals had a similar performance on working memory tasks, and bilinguals performed better on executive control tasks. Monolingual participants were better on lexical retrieval tasks.

The goal of the present study was to investigate the probable difference of linguistic intelligence between Iranian bilingual and monolingual EFL learners. Three research hypothesis were formulated:

Ho.1: Linguistic intelligence is not different between Iranian bilinguals (Turkish and Persian) and monolinguals (Persian).

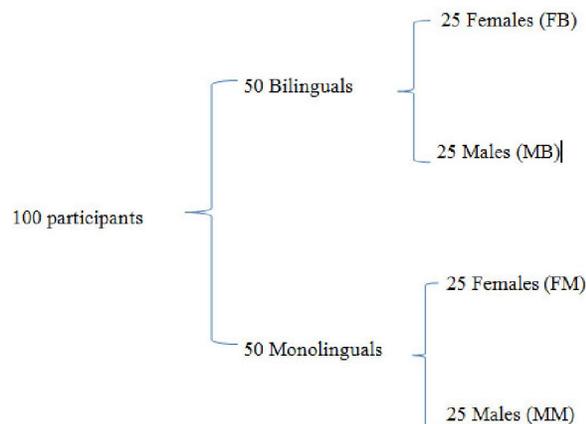
Ho.2: Linguistic intelligence is not different between Iranian bilinguals female (Turkish and Persian) and monolinguals (Persian).

Ho.3: Linguistic intelligence is not different between Iranian bilinguals male (Turkish and Persian) and monolinguals (Persian).

## 2. Methodology

### 2.1. Participants

The participants in this study were 100, female and male, English as Foreign Language (EFL) learners at Islamic Azad University, Tabriz and Mashhad branch. They were at the age of 20-30, bilingual in Turkish and Persian (the participants at Tabriz) and monolingual in Persian (the participants in Mashhad). They were grouped into two groups of bilinguals and monolinguals, each further divided into groups of female and male participants (Figure 1.).



**Figure 1.** Further subdivisions of the participants

### 2.2. Instruments

To determine the participants' linguistic and interpersonal intelligence scores, the researcher used the MIDAS test; MIDAS is a measurement scale recommended by Howard Gardner (1983), who put forward the theory of Multiple Intelligence (MI). It is a self-reported instrument, designed by Shearer (1994). This test takes 35 minutes to finish and contains 119 Likert-type items, which cover eight areas of intelligences. For eliminating the probable misunderstanding, which might arise from language proficiency limitation of some participants, a translated version of MIDAS, which was piloted to a group similar g, was used. The pilot group consisted of 28 bilingual (Turkish and Persian) and monolingual (Persian) EFL learners. The pilot study was carried out to determine any possible problems related to the data collection instrument and to make necessary changes. The pilot group was asked to mark any point which seemed to be problematic for them. After taking into account the points mentioned by the pilot group, the researcher conducted the

MIDAS test to the main group. The participants of the main group, after receiving enough information about the test, the procedure of the study, and a brief introduction of its' main purposes, were asked to go through each item and identify the best answer which suit them best at that point of their life. They were asked to mark their options on answer sheets. Providing the questionnaire is impossible because it is a copyrighted material. However, one sample for each type of intelligence is provided in Appendix 1.

The results obtained from the MIDAS analysis were analyzed through Statistical Package for the Social Sciences (SPSS). Independent samples t-test was done to investigate the difference between bilingualism and verbal intelligence of the participants.

### 2.3. Procedure

The study was conducted in both Tabriz and Mashhad Branch of Islamic Azad University among EFL learners. The randomly selected participants were administered a package which consisted of a MIDAS test, an answer sheet, and a guideline, which provided them with the information regarding how to deal with the tests in written form, for those visual students who might not benefit effectively from the oral explanations of the researcher about the test. They further received the oral explanations about the test which was presented by the researcher in detail and they were asked not to have any communication with each other in order to eliminate the distracting effects. It is worth mentioning that the group received the translated form of the MIDAS test, which was piloted before to the control group. According to the standards of the MIDAS test, they had 35 minutes to answer 119 questions, which tapped eight areas of multiple intelligences.

## 3. Results and Discussion

In order to check the linguistic intelligence of the participants, the researcher made use of a translated version of MIDAS test with the reliability of 0.86. Table 4.1 indicates the reliability of the test.

**Table 1.** Reliability of the MIDAS Test

Cronbach's Alpha	No. of Items
0.86	119

Table 1 indicates that the reliability of the translated version of MIDAS test was 0.86, and therefore it was regarded reliable enough to render accurate information about Iranian language learners.

To test the first research hypothesis an independent samples t-test was done. Table 2 below shows the descriptive and inferential statistics and the results of the test.

**Table 2.** Descriptive Statics and Independent Samples t-test for Linguistic Intelligence of Bilingual and Monolingual EFL Learners

Language	N	Mean	F	Sig	t	df	Sig.(2-tailed)
Linguistic Monolingual	50	47.9800	3.276	0.073	-2.061	98	0.042
Bilingual	50	54.4600					

As Table 2 indicates, an independent samples t-test was run to compare the means of bilingual and monolingual EFL learners. On the linguistic intelligence, there was a significant difference in scores (Sig.2-tailed= 0.042) and therefore, it can be concluded that there was a meaningful difference in linguistic intelligence of bilinguals and monolinguals participating in this study. According to the Mean difference obtained from the analysis, bilinguals (Mean =54.46) performed significantly higher than monolinguals (Mean= 47.98). Therefore, the null

hypothesis, there is no difference between Iranian bilinguals (Turkish and Persian) and monolinguals (Persian) in terms of their linguistic intelligence, was rejected.

To address the second research hypothesis, with the aim of comparing linguistic intelligence of female bilinguals and monolinguals, the researcher implemented another independent sample t-test was run. Table 3 illustrates the descriptive and inferential statistics and the results of the tests.

**Table 3.** Descriptive Statics and Independent Samples t-test for Linguistic Intelligence of Female Bilingual and Monolingual EFL Learners

Language	N	Mean	F	Sig	T	df	Sig.(2-tailed)
Linguistic FM	25	51.4400	2.188	0.146	-2.011	48	0.050
FB	25	60.4000					

The results obtained from the independent samples t-test which compared linguistic intelligence of bilingual and monolingual females revealed that there was a significant difference in scores of the participants (Sig. 2-tailed = 0.05). That is to say, there was a significant difference between bilingual females and the females who were monolingual in terms of linguistic intelligence. The Mean difference has also revealed a positive support for bilingualism, while the Mean for bilingual females was 60.4 and for monolingual females it was 51.44. This confers that the bilingual females were significantly higher in

linguistic intelligence than their monolingual peers. Therefore, the null hypothesis, there is no difference between Iranian female bilinguals (Turkish and Persian) and monolinguals (Persian) in terms of their linguistic intelligence, was also rejected.

The final research hypothesis aimed at comparing linguistic intelligence between male bilinguals (Turkish and Persian) and monolinguals (Persian). The obtained results are shown in the Table 4 below.

**Table 4.** Descriptive Statics and Independent Samples t-test for Linguistic Intelligence of Male Bilingual and Monolingual EFL Learners

Language	N	Mean	F	Sig	t	df	Sig.(2-tailed)
Linguistic MM	25	44.6200	0.005	0.944	-0.899	48	0.373
MB	25	48.1200					

The results obtained from the conducted independent samples t-test which compared linguistic intelligence of bilingual (Turkish and Persian) and monolingual (Persian) males revealed that there was no significant difference in the performance of the male bilinguals and monolinguals, while the Sig. 2-tailed did not reached its meaningful level (Sig. 2-tailed=0.3). In other words, bilingualism had shown to have no effect on the linguistic intelligence of the male participants in this study; therefore, the third null hypothesis, there is no difference between Iranian male bilinguals (Turkish and Persian) and

monolinguals (Persian) in terms of their linguistic intelligence, was not rejected.

The primary purpose of the present study was to compare the linguistic intelligence between bilingual and monolingual Iranian EFL learners. Many studies such as Andreou and Karapetsas (2004); Bialystok, Luk, and Craik (2008); Clarkson (1992); Sampath (2005); and Sanz (2000) claim positive effects of bilingualism on different aspects of cognition, memory, verbal and non-verbal abilities, creative thinking, abstract reasoning, social judgment, and personality. Scholars have also tried to explore the

effect of gender on different aspects of cognition and multiple intelligences. The findings of this research seem to support the findings of other researchers such as Andreou and Karapetsas (2004); Sampath (2005); Kharkhurin (2010), and Wodniecka, Craik, Luo, and Bialystok (2010) in terms of bilinguals superiority in linguistic and interpersonal intelligence in comparison with the monolinguals.

The first research hypothesis of the present study was concerned with the difference of linguistic intelligence between bilinguals and monolinguals. As the results obtained from the MIDAS test indicates, there was a meaningful difference between the bilinguals and monolinguals in terms of their linguistic intelligence. Therefore, the first null hypothesis, there is no difference between Iranian bilinguals (Turkish and Persian) and monolinguals (Persian) in terms of their linguistic intelligence, was rejected. In other words, linguistic intelligence is different between Iranian bilingual (Turkish and Persian) and monolingual (Persian) EFL learners. This finding supports the results claimed by Sampath (2005), who reported a high performance for bilinguals in terms of linguistic intelligence. Sampath also found that bilinguals were superior in the components of verbal intelligence, such as vocabulary abilities and solving arithmetic problems. He believes that the bilinguals attending in his survey possess higher levels of second language proficiency and believes that levels of second language proficiency and range of information possessed by a bilingual individual are interdependent. Andreou and Karapetsas (2004) also found similar results. They found out that the proficient bilinguals performed better for almost all verbal sub-tests. They claim that the bilingual participants in their study have achieved high levels of linguistic abilities, so that their bilingualism can enhance their cognitive development.

As suggested in various research studies, gender may affect different aspects of multiple intelligences (Furnham 2001; Furnham, Rakow, & Make 2002; Rammstedt & Rammsayer 2000; and Halpern & LaMay 2000). Furnham (2001) and Furnham et al. (2002) found out that the male participants rate themselves higher in logical-mathematical and spatial intelligence. In the present study, as mentioned earlier, the difference between female bilinguals and monolinguals was significant in linguistic intelligences. The comparison indicated that bilingual females were higher in linguistic intelligence. However, there was no significant difference between the bilingual and monolingual males regarding their linguistic intelligence. Therefore while lending support to previous studies in terms of gender (Halpern & LaMay, 2000; Make, 2002; and

Rammstedt & Rammsayer, 2000); the second null hypothesis regarding the non-existence of difference in linguistic intelligence between females was rejected. Bilingual females were superior to the monolingual peers both in linguistic and interpersonal intelligence. This finding is also supported by Rammstedt and Rammsayer (2000) who claimed that females performed higher in interpersonal and musical intelligences. Halpern and LaMay (2000) also claimed that females are better in the tasks which need higher level of verbal abilities. However, the third null hypothesis regarding the non-existence of difference in linguistic intelligence between males was accepted.

The results obtained from this study should be interpreted with great caution on the ground that there are so many factors which may affect linguistic intelligence of individuals. However, the findings may be very helpful for syllabus designers, policy makers, teachers, and also parents, who should be notified with the positive effects of bilingualism. In conclusion, from the data available, which showed higher performance of bilinguals in terms of linguistic intelligence, it is suggested that bilingualism may lead to enhanced levels of linguistic intelligence.

The present inquiry suffered from a number of limitations. First of all, as the instrument used to measure the multiple intelligences of the participants was a self-estimated measure, the results obtained are very much dependent on the participants' perception of their own abilities and intelligences. It is possible that the participants might have underestimated or overestimated their intelligences, which could have affected the obtained results. Furthermore, research manageability made it necessary to delimit the study in terms of the age of the participants and their field of the study. Thus, the results obtained from this study cannot be generalized to other language learning context and age range. Studies have shown consistent relationship between bilingualism and various concepts of cognitive and mental abilities. This study was limited to only two aspects of multiple intelligences: linguistic and interpersonal intelligences. Other aspects of multiple intelligences such as spatial and mathematical intelligences in relation to bilingualism can be the subject of study for those interested. Future studies may also take into account the levels of proficiency in second language and its probable effects on different aspects of memory and cognition, as well as different verbal and non-verbal abilities. Furthermore, more studies may be conducted with different age groups and various fields of study in different learning contexts. Other researchers may be interested also in comparing degrees of bilingualism across different genders.

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