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GENDER DIFFERENCES IN SELF-ESTIMATES OF MULTIPLE INTELLIGENCES AMONG LEARNERS OF ENGLISH

Abbas Zare-ee
Department of English, Faculty of Foreign Languages & Literature, University of Kashan
Islamic Republic of Iran

Zuraidah Mohd Don
Department of English Language, Faculty of language and Linguistics, University of Malaya
Malaysia

Gerry Knowles
University of Lancaster
United Kingdom

Iman Tohidian
Department of English, Faculty of Foreign Languages & Literature, University of Kashan
Islamic Republic of Iran

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Abbas Zare-ee
zare-ee72@kashanu.ac.ir

Zuraidah Mohd Don
zuraida@um.edu.my

Gerry Knowles
g.knowles@lancaster.ac.uk

Iman Tohidian
tohid_483@yahoo.com

Abstract

According to Howard Gardner, human intellectual ability cannot be measured by a unitary concept of general intelligence, and the performance of cognitive tasks draws on different types of intelligence, including linguistic, logical-mathematical, musical, spatial, bodily-kinaesthetic, interpersonal, intrapersonal, natural, and existential. Despite the lack of adequate empirical support and recent doubts raised about its validity, this view of multiple intelligences has been extensively employed for the characterization of learners and the development of tasks for language teaching and learning. Whereas gender differences in the learning and use of language have been extensively researched, context-specific information on gender differences in different domains of multiple intelligences has not been seriously examined. The survey reported here is based on the hypothesis that multiple intelligences vary not only at the individual level, but also in the case of gender at a cultural level, and uses Mckenzie's *Multiple Intelligences Survey* to explore possible gender differences in Gardner's intelligences. Questionnaire data relating to each of the nine intelligences was elicited from 300 undergraduate volunteers studying English at the University of Kashan in central Iran. The questionnaire included 90 statements and 10 items on each intelligence, and was used to identify the intelligence profile of the participants according to their own self-estimates. The scores for each intelligence type were calculated, analyzed and compared across genders. The results of the study showed that in contrast to the trend observed in previous research, female learners tended to rate themselves higher on most intelligences and their means were significantly higher than those of male learners in the areas of naturalistic and existential intelligences. The findings have both theoretical and practical implications not only for the reconsideration of previous claims that males rate themselves more highly with regard to intelligences, but also for the MI theory itself.

Key words: Multiple Intelligences, Learning Styles, Howard Gardner, Individual Differences.

1.Introduction

Howard Gardner is well known for his theory of multiple intelligences (MI), first put forward in 1983, which claims that human intelligence is not a unitary concept, and that there are at least seven distinct intelligences: linguistic, musical, logical-mathematical, spatial, bodily-kinesthetic, intrapersonal, and interpersonal. Later versions of the model (Gardner, 1999) add two more, namely naturalistic intelligence and existential intelligence. More recently, Gardner (2004:217) also includes the "mental searchlight intelligence" that allows individuals "to scan wide spaces in an efficient way thus permitting them to run society smoothly" and the "laser intelligence" that permits them to generate "the advances (as well as the catastrophes) of society".

These different types of intelligence have been widely used in the last three decades for the development of new teaching materials, a range of practical classroom techniques, and the investigation of their use and value. It is evident from the number of journals, books, websites, and workshops relating to multiple intelligences that there has been a dramatic increase in attempts to use the MI model in education. According to Waterhouse (2006:207), MI educational websites accessed by Google increased tenfold from 25,200 to 258,000 between June and December 2005, while online MI workshops increased from 10,600 to 48,300. This marks a significant revival of interest after a period in which the value of intelligence as an indicator of individual differences was downgraded in educational circles, and its very existence was called into question (Schiff and Lewontin, 1986).

Research and practice concerning the educational relevance of intelligence ranges from aversion and total banishment at one extreme to enthusiastic interest and support on the other (see Akbari, Hosseini, 2008). However, the existence of differences in human intellectual abilities is a reality that merits attention, exploration, and validation through adequate context-specific research. "As an abstract noun to denote the state of being intelligent, intelligence is real enough, in much the same way as success and productivity and happiness are real" (Howe, 1997:36). On the other hand, there is little actual empirical evidence to justify the recent attention paid to multiple intelligences in education. Reviewing the evidence, Waterhouse (2006) concludes that that "MI theory has no validating data" (p. 207), and goes on to attribute the success of MI-based education to issues such as novelty, teachers' and students' interest, enthusiasm, and motivation, and recommends that "MI theory should not be taught without consideration of the absence of empirical validating evidence for MI theory or without consideration of alternate evidence-based models of human cognition" (pp 213-214).

One of the major areas in which sufficient evidence is manifestly lacking is language ability. Oller (1978) explains the close identity connection between language proficiency and intelligence with statistical evidence for close relationships between performance on intelligence tests and measures of language proficiency, with striking similarities between IQ tests and language proficiency tests, and with neurolinguistic evidence showing overlaps among brain areas responsible for language and performance on IQ tests. After about two decades, he still stresses the ideas that most of the advocates of the innate view of intelligence ignore the role of language in IQ measurements, incorrectly interpreting language proficiency as an inborn problem-solving ability or as intelligence (Oller, 1997). Gardner (1999) claims his intelligence domains are relatively independent, and warns that the tendency to measure non-verbal abilities with verbal measures leads to artificially high correlations among the ability domains. However, this claim is still controversial.

According to Oller (1997), verbal measures of intelligence – including measures of verbal/linguistic and interpersonal intelligences, as well as all the pictorial or non-verbal measures – rely, in a sense, on linguistic performance. According to the findings of applied linguistics research carried out over the last few decades, males and females differ in the learning and use of language. Now if these claims are both true, it is possible to predict differences between males and females in the case of multiple intelligences. All human beings are said to possess all the intelligences, one or more of which can flourish in an individual depending on genetic as well as social conditions. What has not been shown is the possible contribution of gender to the distribution of intelligences, which could in turn contribute to individual differences in language learning.

Language learning researchers, language teachers, and language learners seem to have generally focused on tasks based on MI and how these tasks contribute to language learning. Arnold and Fonseca (2004) state that based on the theory of multiple intelligences "language learning, that is to say, developing learners' verbal linguistic intelligence in a foreign/second language, can be favored by using a variety of learning tasks which call upon diverse intelligences" (p. 126). They continue that in this approach, "the teacher offers a choice of tasks, not to teach to specific intelligences but to give learners the opportunity of apprehending information in their preferred way, as well as to promote the development of their other intelligences" (p. 126). However, as long as previous research has not definitely validated multiple intelligences and their (in)dependence, and as long as the role of intervening variables like gender has not been well explored in different cultures, one can expect to find and consider male-female differences in approaching MI-based learning at least in some domains of intelligence. With this background and in the hope of contributing to the literature on the use of multiple intelligences in language teaching and learning, the present study was designed to explore possible male-female differences in questionnaire-based self-reports of multiple intelligences.

2.Literature review

There are at least nine different types of intelligence in Gardner's recent models (1983, 1999): linguistic, logical-mathematical, musical, spatial, bodily-kinesthetic, interpersonal, intrapersonal, natural, and existential. Even though all individuals possess all intelligences, they possess different degrees of strength in each case. Gardner (1993) stresses different manifestations of intelligence in different individuals and sees no single type of intelligence as being intrinsically superior to the others. Table 1 below summarizes these intelligences with short descriptions along with examples of the people who are claimed would possess them at higher levels than others.

Table 1. *Gardner's nine intelligences and their short descriptions*

Intelligence	Description	Persons
Linguistic	Sensitivity to spoken and written language and the ability to use language, as well as the ability to learn new languages.	speakers, writers
Spatial	The ability to recognize both large and small visual patterns.	sculptors, chess players

Logical/Mathematical	The ability to study problems, to carry out mathematical operations logically and analytically, and to conduct scientific investigations	Mathematcians,logicians,
Interpersonal	Understanding the intentions, motivations, needs, and desires of others	teachers, clinicians, salespeople
Intrapersonal	The ability to understand and to have an effective working model of oneself, the awareness of one's own desires, fears, and abilities	high self-esteem people
Naturalistic	The ability to recognize and classify objects.	hunters, farmers, and gardeners
Bodily-Kinesthetic	The potential of using the whole body or parts of the body in problem-solving or the creation	dancers, actors, and athletes
Musical	Ability in the performance, composition, and appreciation of musical patterns.	Composers
Existential	To ponder the meaning of life	Different

The idea of multiple intelligences has been enthusiastically received in the ELT community in different parts of the world, and this includes Iran. The theory has inspired many different classroom techniques and language learning tasks which attempt to match students with different MI profiles (e.g. Vincent and Ross, 2001 and Smagorinsky, 1995). Research examining the application of MI theory in the teaching of English at university level in Iran has so far been less than critical, and has generally shown positive associations between the use of MI-based activities and different aspects of English language learning, and English language teachers have been encouraged to use MI ideas in teaching. Razmjoo et al. (2009) studied multiple intelligences in relation to vocabulary learning knowledge and vocabulary learning strategies among EFL Iranian learners in Shiraz, and found linguistic and natural intelligences to be predictors of vocabulary learning knowledge. In an earlier study of 278 male and female PhD candidates at Shiraz University, Razmjoo (2008) had found no significant relationship between language proficiency and the combination of intelligences in general and the types of intelligence in particular, and no significant MI differences between male and female students. Yeganehfar (2005) investigated the relationship between language proficiency and multiple intelligences using IELTS scores and the Multiple Intelligences Developmental Assessment Scale (MIDAS) and found that overall language proficiency correlated significantly with interpersonal intelligence, while writing ability correlated significantly with linguistic and spatial intelligences. Akbari and Hosseini (2008:82) reported significant relationships between some intelligence types and general proficiency and the use of learning strategies, and noted that "the more intelligent language learners use the language learning strategies more efficiently". In this study, natural, linguistic and interpersonal intelligences were positive predictors of language learning strategy use, and kinesthetic intelligence was a negative predictor. In another similar study, verbal/linguistic intelligence emerged (perhaps unsurprisingly) as a positive predictor of language proficiency (Marefat, 2007).

Even though the intervening variable of gender has not been considered in any of the above studies, international research has shown that there are indeed differences at least in how male and female learners estimate their global intelligence and their multiple intelligences. In the case of general intelligence, most studies report that, due to psychometric properties of instruments or gender stereotypes or other unexplored factors, males estimate their intelligence higher than females (Bennett, 1996; Hogan, 1978; Zang & Gong, 2001). Studies of people in China (Zhang & Gong, 2001), Germany (Rammstedt & Rammsayer, 2002), and Scotland (Bennett, 2000) also confirm this. In the case of multiple intelligences, results are too few and too varied to make generalizations possible. For example, Scottish males rated their logical, mathematical, and spatial intelligence higher, while females saw their musical and interpersonal intelligence stronger (Bennett, 2000). Furnham et al. (1999) reported gender differences only in logical/mathematical and spatial intelligences, for which males received higher scores. Sex differences in mathematical/numerical and spatial intelligence has also been confirmed in the work of Furnham, Shahidi, & Baluch, (2002) involving Iranian and British participants. Hogan (1978) reviewed 11 studies of gender differences and intelligence, and found significant differences in self-estimates of IQ levels between males and females in most cases. Hogan argued that women tend to be perceived as less intelligent than men because society possibly denies them intellectual equality.

If MI theory is to be used appropriately in teaching and learning, it is essential to have context specific information, and to know to what extent the different intelligences are valid. More importantly, if learners' self-estimates of their own multiple intelligences are to be used as the basis of language teachers' beliefs and assumptions about the potential performance of their students, and about the nature of the tasks that may suit them, it must be borne in mind that these self estimates can be affected by variables such as gender. Holling and Preckel (2005) argue that social comparisons in giving an estimate, experience with and feedback on the tasks applied to assess the estimated ability, and gender differences moderate relationships between estimated and tested intelligences (p. 504). Stressing the lack of any differences in psychometrically assessed intellectual abilities between males and females, Holling and Preckel point out that "most studies on self-estimated abilities reveal significant gender differences" (p. 506). Consequently, more data on gender differences in estimated multiple intelligences from different socio-cultural backgrounds can help teachers clearly contextualize their approach in the use of MI-based activities. Moreover, cross-cultural comparisons can help scholars evaluate the theory of multiple intelligences itself more effectively. The present study was carried out to explore possible gender differences among Iranian university learners of English as a foreign language in terms of perceived multiple intelligences.

3.Method

Much of the published MI research in language learning and teaching focuses on the applications and benefits of MI-based learning activities, and seeks to show how the idea of multiple intelligences can be put into practice or how its application can affect the outcomes of language learning and teaching. This work, by contrast, uses a questionnaire in conjunction with a cross-sectional survey of Gardner's multiple intelligences among Iranian undergraduate learners of English to explore gender differences in intelligences as reflected in learners' responses to an MI inventory.

3.1.Participants

The sample used for this study consisted of 300 volunteers who together made up about 80% of the population of Iranian undergraduate students studying English at the University of Kashan in central Iran. English language learners were chosen in view of the current proliferation of research and teaching activities recommending the application of MI theory in the teaching of English as a second, foreign, or international language. The participants were homogenous in terms of nationality (all Iranians), mother tongue (Persian), and place and course of study. They differed in gender (46.7% male, n=140; and 53.3% female, n=160), age (19 to 24), year of study (freshman, sophomore, junior, and senior), and in their level of proficiency in English. They participated in the study on a voluntary basis, which reflects their admirable interest in responding to the questionnaire and finding about their own profiles. The greater number of female participants reflects the balance of male and female learners in the study programme. The participants individually filled out hard copies of the research questionnaire in break times between classes, or in student residential complexes when classes were over. Participants who wished were given details of their MI profiles.

3.2.Data collection

To collect data for the study, Mckenzie's (1999) MI Inventory was downloaded and used for the calculation of each learner's scores on each of the intelligences. According to the developer, the inventory provides a snapshot in time of the intelligence profile of the respondents. The questionnaire includes 90 statements, 10 on each of Gardner's nine intelligences. The Cronbach alpha reliability scores for the questionnaire and its nine sections are shown in Table 2.

Table 2. *Cronbach's Alpha reliability for McKenzie's questionnaire and its sections*

MI Component	Cronbach's Alpha	N of Items
Naturalistic Intelligence	.613	1-10
Musical Intelligence	.401	11-20
Logical/Mathematical Intelligence	.512	21-30
Existential Intelligence	.713	31-40
Interpersonal Intelligence	.651	41-50
Bodily-Kinesthetic Intelligence	.744	51-60
Verbal/Linguistic Intelligence	.620	61-70
Interapersonal Intelligence	.759	71-80
Visual Intelligence	.768	81-90
All nine intelligences	.890	All 1-90

The reliability index for the whole questionnaire was 0.89 and all components also showed high indexes. The lowest index, 0.4, was related to musical intelligence. Other researchers using this instrument have also reported overall internal consistency in the range of 0.85 and 0.90 for the questionnaire (Al-Balhan, 2006; Razmjoo, 2008; Razmjoo et al., 2009). The questionnaire is not a test of multiple intelligences, but a cross-sectional indication of how respondents perceive their own intelligences. Even though doubts can always be raised about how accurately learners can estimate their intelligences through such questionnaires, criterion-referenced validity checks of self-estimates of multiple intelligences has mostly shown weak to moderate correlations

between self-estimated and tested intelligence (Mabe and West, 1982; Holling and Preckel, 2005).

3.3.Procedures

All students in the undergraduate English language programme at the University of Kashan were notified through emails, notices, and class announcements that they could learn about their own multiple intelligences by taking the questionnaire. Even though the survey is freeware and can be taken online, the researchers preferred to collect the data in printed form and make manual calculations for the sake of control and accuracy. The online version requires respondents to assign themselves one mark only on each of the 90 statements that definitely describes them and add up the marks on the 10 items and multiply by 10 to get a final score on each of the nine intelligences. However, since initial pilot testing showed that it was difficult for the participants to rule out some statements totally and assign scores only to some statements in a black or white fashion, they were asked to rate the relevance and truth of each item to themselves on a five-point scale, from 1 'this is not true about me at all' to 5 'this is certainly true about me'. The collected data were stored in SPSS format, and the scores for each participant on each of the nine intelligences were calculated for later analysis.

4.Results

To describe the participants' performance on the MI inventory, first the means and standard deviations on all the nine intelligences were calculated. As Table 3 shows, intrapersonal intelligence and bodily/kinesthetic intelligence received the highest means whereas the lowest means related to verbal/linguistic intelligence and musical intelligence for the whole population.

Table 3. *Total mean scores on sections of McKenzie's questionnaire (n=300)*

Intelligence	Mean	Std. Deviation
Intrapersonal Intelligence	41.55	4.764
Bodily-Kinesthetic Intelligence	40.82	5.241
Existential Intelligence	40.28	5.081
Logical/Mathematical Intelligence	39.22	5.797
Visual Intelligence	38.59	5.659
Naturalistic Intelligence	37.29	4.848
Interpersonal Intelligence	36.44	5.092
Verbal/Linguistic Intelligence	36.41	5.150
Musical Intelligence	28.55	5.609

This finding indicates a general lower estimate of sensitivity to spoken and written language and a lower perceived ability in using and learning new languages. The ability to perform, compose, and appreciate musical patterns received the lowest mean (28.55) for the whole group. The analyses also revealed that musical intelligence was the only domain that did not correlate with others. As Table 4 shows, except for musical intelligence, all relationships between the intelligences were positive and significant at the 0.01 level and were weak to moderate. The strongest correlations were observed between bodily/kinesthetic, visual and intrapersonal intelligences.

Table 4**.** *Correlations between nine intelligences (n=300)*

Intelligence	**Naturalistic**	**Musical**	**/Mathematical**	**Existential**	**Interpersonal**	**Bodily-Kinesthetic**	**Verbal**	**Interapersonal**	**Visual**
Naturalistic	1	.218**	.282**	.429**	.250**	.347**	.236**	.277**	.309**
Musical	.218**	1	-.006	.139**	.035	.195**	.042	.032	.158**
Logical/Mathematical	.282**	-.006	1	.253**	.192**	.239**	.245**	.275**	.260**
Existential	.429**	.139**	.253**	1	.460**	.343**	.342**	.431**	.395**
Interpersonal	.250**	.035	.192**	.460**	1	.305**	.433**	.500**	.394**
Bodily-Kinesthetic	.347**	.195**	.239**	.343**	.305**	1	.391**	.567**	.523**
Verbal/Linguistic	.236**	.042	.245**	.342**	.433**	.391**	1	.410**	.525**
Interapersonal	.277**	.032	.275**	.431**	.500**	.567**	.410**	1	.497**
Visual	.309**	.158**	.260**	.395**	.394**	.523**	.525**	.497**	1

The main research question was whether there was a difference between the mean scores of male and female participants on each on the nine intelligences. Table 5 summarizes the mean and standard deviations of the scores for each group. Female students obtained a slightly higher mean on eight of the nine intelligences. The only domain in which there was a slight difference in favour of male participants was interpersonal intelligence (F=36.27, M=36.64), which later analyses showed not to be significant anyway.

Table 5**.** *Gender differences in mean scores on nine intelligence (M=140, F=160)*

Type of Intelligence	sex	Mean	Std. Deviation	Std. Error Mean
Naturalistic Intelligence	male	36.44	4.744	.401
	female	38.04	4.829	.382
Musical Intelligence	male	28.04	5.893	.498
	female	28.99	5.327	.421
Logical/Mathematical Intelligence	male	38.68	4.544	.384
	female	39.70	6.682	.528
Existential Intelligence	male	39.43	5.062	.428
	female	41.03	4.994	.395
Interpersonal Intelligence	male	**36.64**	4.968	.420
	female	**36.27**	5.209	.412

Bodily-Kinesthetic Intelligence	male	40.51	5.534	.468
	female	41.10	4.971	.393
Verbal/Linguistic Intelligence	male	36.24	5.272	.446
	female	36.57	5.053	.399
Interapersonal Intelligence	male	41.45	4.529	.383
	female	41.64	4.973	.393
Visual Intelligence	male	38.39	5.532	.468
	female	38.77	5.779	.457

The differences between male and female participants were very slight, and a Chi-square analysis of the frequencies of responses to the items relating to each intelligence indicated that with the exception of intrapersonal intelligence (Chi-square value=37.38, df=23, two-tailed sig=0.030), the differences were not significant. To test the hypothesis that male and female university learners of English would rate their intelligences differently, the means were compared using independent samples t-test, and the results are summarized in Table 6 below.

Table 6. *Independent Samples t-test for mean differences on nine intelligences (M=140, F=160)*

Type of Intelligence	**t-value**	**df**	**Sig. (2-tailed)**	**Mean Difference**
Naturalistic Intelligence	-2.890	298	**.004**	-1.602
Musical Intelligence	-1.458	298	.146	-.945
Logical/Mathematical Intelligence	-1.526	298	.128	-1.021
Existential Intelligence	-2.745	298	**.006**	-1.596
Interpersonal Intelligence	.634	298	.526	.374
Bodily-Kinesthetic Intelligence	-.977	298	.329	-.593
Verbal/Linguistic Intelligence	-.558	298	.577	-.333
Interapersonal Intelligence	-.351	298	.726	-.194
Visual Intelligence	-.573	298	.567	-.376

The t-values were significant only for naturalistic and existential intelligences, indicating that in these two domains only the mean differences in favour of female learners were significant. In other words, female participants seemed to contemplate more on the meaning of life and to better recognize and classify objects in the natural environment.

5.Discussion

Judging by the analysis of the data collected for this study, undergraduate students of English rated themselves generally higher in intrapersonal and bodily/kinaesthetic intelligences, and lowest in verbal/linguistic intelligence and musical intelligence. These results may differ from those in other contexts where, for example, composing and listening to music of various forms is much more common than in the context of this study, and where approaches to the performance, composition, and appreciation of music are different.

Contrary to reports in most previous studies of gender differences in MI domains (Bennett, 1996; Hogan, 1978; Zang & Gong, 2001), the results of this study indicate that female students obtained a slightly higher mean score on eight of the nine intelligences (i.e. all except interpersonal intelligence). Furnham et.al. (1999) and Shahidi, & Baluch, (2002) reported gender differences only in the case of logical/mathematical and spatial intelligences where males received higher scores; whereas the present study suggest slightly higher naturalistic and

existential intelligences in girls. This finding also raises doubts about the justifications that men rate themselves higher and are rated higher on the more masculine intelligence domains such bodily/kinesthetic.

From a scientific point of view, negative or inconclusive results that rule out logical possibilities are valuable, and make a positive contribution to the development of theory. Our exploration of possible male-female differences in questionnaire-based self-reports of multiple intelligences has yielded little, and in any case little agreement with previous work. The question to be asked is why this should be.

There are in fact several possibilities, including cultural factors. If males are expected to assess their own intelligences more highly than females, the finding that this is not the case is in itself interesting and important. It could indicate, for example, a growing confidence in females, and perhaps declining confidence among males. Another interesting finding is that language students do not claim any superiority in linguistic intelligence. Language students receive ample feedback on their level of proficiency, and a realistic awareness of how much they have yet to learn could make it difficult for them to claim a high level of linguistic intelligence.

It is also important to re-examine the notion of multiple intelligences itself. Gardner has argued persuasively against the notion of a unitary intelligence, but that does not mean that general intelligence is to be dismissed out of hand. One can question the validity of the tests originally designed by Alfred Binet (Gardner, 2006, p. 3) to predict academic performance, and one can point to the language bias in IQ tests developed subsequently; but academic systems across the globe rely in practice on the prediction of future performance. Binet's tests were adapted to select recruits for the US army in the First World War; and as Gardner himself (2006, p. 3) argues rather illogically, since the US won the war [sic], the intelligence testing must have been effective. In the study of human evolution, growth in brain size is taken as an indicator or increasing intelligence, and while it may be true that hominids must have had multiple intelligences, it would be bizarre and pompous to argue against an increase in general intelligence.

A close look at Gardner's linguistic intelligence shows that it also contains several components. He claims (2006, p. 7) that 'one core of linguistic intelligence is the sensitivity to the phonological features of a language'. This implies that there are other cores, and indeed six pages later (Gardner, 2006, p. 13), the literary and creative writing skills of T. S. Eliot are put forward as the exemplar of linguistic intelligence. Eliot is an unfortunate choice, as he was a protagonist in what Ricks (1963) described in his opening chapter as the 'Milton controversy'. John Milton had long been regarded as second only to Shakespeare in the English pantheon, but in the middle third of the last century, a group of poets and literary critics held the view that he was not such a good poet after all. Now phonological awareness surely has little if anything to do with the subjective rating of different poets. The point is that linguistic awareness is open to exactly the same kind of objections, albeit at a more detailed level, as those Gardner raised against the notion of unitary intelligence. We have to take account of multiple linguistic intelligences.

At this point we have to reconsider McKenzie's (1999) MI questionnaire. The questions included in section 7 are entirely appropriate given Gardner's description of linguistic intelligence, and ask about interest in foreign languages, in reading and writing, in public speaking, and in language games. And yet these questions do not necessarily have anything at all

to do with the special skills and motivations of language students. Young people who study English in the modern world may have employability in mind, rather than any particular interest or ability *per se* in English as a foreign language.

Gardner presents his theory of multiple intelligences as 'an alternative vision', 'a radically different view of the mind' (2006, p. 5). Perhaps general intelligence and multiple intelligences are concerned with human mental abilities at different degrees of delicacy. The literature of psychology contains a huge multidimensional array of precise measures of mental abilities, cognitive abilities and brain functions of every conceivable nature; but psychologists need to generalise sometimes, and general intelligence may be a good way of saying how clever people are. Educationists are very much aware of the differences among students, and of the fact that different students learn in different ways. The notion of multiple intelligences enables the researcher to zoom in on more precise sets of abilities, and for many educational purposes this is an appropriate level of delicacy. This is a possible explanation for the fact that Gardner's ideas have found much more widespread acceptance in education than in psychology.

The researcher in language education has a problem. The term *linguistic intelligence* seems to promise a set of abilities at exactly the right degree of delicacy, but in fact it turns out to have as much to do with writing poetry as with learning languages. To investigate a set of abilities appropriate for language learners, we have zoom in to another level of delicacy, and deal with such familiar abilities as pronunciation, vocabulary learning, and the ability to extract meaning from syntactic constructions.

The conclusions to be drawn depend on the degree to which we accept the theory of multiple intelligences itself. If we accept the theory as put forward by Gardner, it is difficult to argue that male or female learners are expected to exhibit higher levels of intelligence in some of his intelligence domains (Gardner, 1993, 1999). We would argue that it is better to claim that male and female learners of English are merely *different* in their self-estimates. Differences in the way people are seen to be intelligent or see themselves to be intelligent can just mean they are different; it does not necessarily correlate with higher or lower intelligence scores, and there is no justification for generalizations claiming that boys (or girls) rate themselves or indeed score higher for different intelligences. Context differences, cultural differences, social settings and many other factors can affect the way clever people see themselves or are seen by other people. Gardner (1993) explains that "We are all so different largely because we all have different combinations of intelligences. If we recognize this, I think we will have at least a better chance of dealing appropriately with the many problems that we face in the world" (p.12). We would suggest that the word *combinations* in Gardner's statement has been largely overlooked in attempts to match different learning activities to individual domains of intelligence, and in claims about male or female superiority in specific domains.

On the other hand, we may take a more critical view of the theory of multiple intelligences. The theory takes a necessary and useful step in zooming in on a set of abilities related to language. But there is no guarantee that this is a natural set, or even a set of abilities that can usefully be measured together. Nor is there any reason for confidence that the notion of linguistic intelligence is set at the appropriate level of delicacy. Perhaps researchers in language education need to zoom in further to a greater degree of delicacy. In short, our findings give little support to the notion of linguistic intelligence, or to the assumption that the theory makes any substantial addition to the understanding on the part of applied linguists of language-related abilities.

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APPENDIX A: Items of Multiple Intelligences Survey ©1999 Walter McKenzie, retrieved from http://surfaquarium.com/MI/inventory.htm

Statements on Gardner's Intelligences	Mean(F)	Mean(M)	SD(F)	SD(M)
I enjoy categorizing things by common traits	4.19	4.18	.787	.867
Ecological issues are important to me	3.41	3.11	1.183	1.132
Hiking and camping are enjoyable activities	4.08	3.74	.873	1.036
I enjoy working on a garden	3.99	3.83	1.003	1.045
I believe preserving our National Parks is important	4.51	4.49	.700	.694
Putting things in hierarchies makes sense to me	4.50	4.44	.785	.761
Animals are important in my life	3.37	3.49	1.108	1.103
My home has a recycling system in place	3.26	2.91	1.000	1.118
I enjoy studying biology, botany and/or zoology	3.36	3.14	1.281	1.183
I spend a great deal of time outdoors	3.38	3.12	1.233	1.232
I easily pick up on patterns	3.56	3.59	.874	.952
I focus in on noise and sounds	3.96	4.01	1.018	1.056
Moving to a beat is easy for me	3.08	2.87	1.040	1.156
I've always been interested in playing an instrument	4.37	4.46	.782	.714
The cadence of poetry intrigues me	4.38	4.39	.784	.819
I remember things by putting them in a rhyme	4.48	4.01	4.037	.971
Concentration is difficult while listening to a radio or television	3.78	3.54	1.201	1.288
I enjoy many kinds of music	4.53	4.37	.691	.790
Musicals are more interesting than dramatic plays	4.33	3.99	4.158	1.032
Remembering song lyrics is easy for me	3.96	3.83	.947	1.010
I keep my things neat and orderly	4.01	3.67	.883	1.166
Step-by-step directions are a big help	4.02	4.04	.865	.808
Solving problems comes easily to me	3.51	3.64	.932	.824
I get easily frustrated with disorganized people	3.87	3.71	1.088	1.165
I can complete calculations quickly in my head	3.26	3.51	1.042	1.049
Puzzles requiring reasoning are fun	4.05	3.92	.983	.849
I can't begin an assignment until all my questions are answered	3.74	3.41	1.130	1.138
Structure helps me be successful	4.88	4.48	4.071	.948
I find working on a computer spreadsheet or database rewarding	4.08	4.11	1.019	.980
Things have to make sense to me or I am dissatisfied	4.29	4.19	.894	.830
It is important to see my role in the "big picture" of things	4.37	4.39	.774	.756
I enjoy discussing questions about life	4.31	4.26	.876	.870
Religion is important to me	4.45	3.99	.767	1.258

I enjoy viewing art masterpieces	4.22	3.95	.909	.962
Relaxation and meditation exercises are rewarding	3.82	3.24	.951	1.065
I like visiting breathtaking sites in nature	4.44	4.09	.799	.948
I enjoy reading ancient and modern philosophers	3.66	3.76	1.081	1.124
Learning new things is easier when I understand their value	4.37	4.32	.766	.875
I wonder if there are other forms of intelligent life in the universe	3.68	3.62	1.091	1.028
Studying history and ancient culture helps give me perspective	3.71	3.81	1.042	.974
I learn best interacting with others	4.09	4.19	.961	.845
The more the merrier	3.83	4.17	1.041	.889
Study groups are very productive for me	3.62	3.43	1.149	1.100
I enjoy chat rooms	3.09	3.28	1.090	.990
Participating in politics is important	3.24	3.28	1.227	1.126
Television and radio talk shows are enjoyable	3.39	3.18	1.155	1.237
I am a “team player”	3.84	4.03	.875	.848
I dislike working alone	3.17	2.99	1.209	1.138
Clubs and extracurricular activities are fun	3.90	3.89	.966	.945
I pay attention to social issues and causes	4.11	4.22	.851	.814
I enjoy making things with my hands	3.99	3.72	.928	1.073
Sitting still for long periods of time is difficult for me	4.17	4.06	1.037	1.168
I enjoy outdoor games and sports	4.34	4.41	.809	.831
I value non-verbal communication such as sign language	3.70	3.60	1.132	1.124
A fit body is important for a fit mind	4.54	4.56	.792	.751
Arts and crafts are enjoyable pastimes	4.38	4.38	.751	.694
Expression through dance is beautiful	3.82	3.51	1.174	1.306
I like working with tools	4.04	4.00	.917	.831
I live an active lifestyle	3.88	3.91	.879	.905
I learn by doing	4.22	4.35	.866	.767
I enjoy reading all kinds of materials	4.22	4.02	.859	1.021
Taking notes helps me remember and understand	4.19	4.23	.935	.884
I faithfully contact friends through letters and/or e-mail	3.17	3.09	1.230	1.234
It is easy for me to explain my ideas to others	3.53	3.59	1.093	1.162
I keep a journal	2.49	2.54	1.149	1.354
Word puzzles like crosswords and jumbles are fun	3.52	3.43	1.028	1.120
I write for pleasure	3.81	3.71	1.061	1.127
I enjoy playing with words like puns, anagrams and spoonerisms	3.88	3.48	1.042	1.160
Foreign languages interest me	3.95	4.20	1.103	.907
Debates and public speaking are activities I like to participate in	3.81	3.94	1.037	.998
I am keenly aware of my moral beliefs	4.25	4.20	.854	.946
I learn best when I have an emotional attachment to the subject	4.42	4.44	.756	.751

Fairness is important to me	4.16	3.96	.789	.909
My attitude effects how I learn	4.22	4.12	.790	.800
Social justice issues concern me	4.09	4.13	.907	.973
Working alone can be just as productive as working in a group	3.95	3.75	.930	1.033
I need to know why I should do something before I agree to do it	4.40	4.37	.720	.703
When I believe in something I will give 100% effort to it	4.39	4.44	.736	.761
I like to be involved in causes that help others	4.04	4.19	.886	.872
I am willing to protest or sign a petition to right a wrong	3.73	3.85	.911	.856
I can imagine ideas in my mind	3.82	4.00	.937	.929
Rearranging a room is fun for me	4.12	3.38	.921	1.083
I enjoy creating art using varied media	3.99	3.65	.955	1.187
I remember well using graphic organizers	3.69	3.81	1.035	.913
Performance art can be very gratifying	3.59	3.46	1.189	1.159
Spreadsheets are great for making charts, graphs and tables	3.73	3.89	1.026	.903
Three dimensional puzzles bring me much enjoyment	4.03	4.11	.977	.968
Music videos are very stimulating	4.20	4.18	.815	.833
I can recall things in mental pictures	3.96	4.04	.954	.948
I am good at reading maps and blueprints	3.65	3.88	1.004	.869