

## Assessing the Arabic-English Bilingual Reading Competences

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### Abstract

This study investigated the relationships between students' reading ability in their native and second languages. The researchers assessed the Arabic-English bilingual reading accuracy, fluency, and comprehension of 186 male and female grade four Emirati students from four primary schools. To assess students' reading fluency and accuracy, students read aloud grade appropriate reading passages in Arabic (L1) and English (L2). The read aloud tests were used to measure reading accuracy which was determined by the number of syllables read correctly in one minute and reading fluency which was measured by the Multidimensional Fluency Scale. Silent reading comprehension tests were used to measure the students' competence in reading comprehension. The reading comprehension tests involved students reading grade appropriate passages in Arabic and English as determined by analyses of the curriculum and textbooks, and answering comprehension questions. Pearson product-moment correlation coefficients were computed to ascertain the relationships between the variables. The research results showed significant positive correlations between the students' L1 (Arabic) reading competencies (accuracy, fluency and comprehension), between their L2 reading competencies, and between their L1 & L2 reading competencies.

*Keywords:* Bilingual reading, reading assessment, Arabic-English bilinguals, UAE

## Introduction

Arabic is the official language of the United Arab Emirates (UAE); however, a high level of English proficiency is of great importance to the academic future of Emirati students in the UAE as English has become the medium of instruction in government and private higher education institutions. One of the English skill areas that many Emirati students face difficulties with is reading. The ability to comprehend and interact with university-level texts is a vital skill for academic success. Reading is a complicated skill that is not acquired naturally like other aspects of language but has to be learned and practiced. Reading skills are crucial to all learning activities in school, hence, acquiring them is regarded as a cornerstone for academic success. Research demonstrates that it is important for children to learn the basics of reading early and failure to do so may result in difficulty in acquiring knowledge and mastering other skills. Thus, supporting effective Arabic-English bilingual reading development is vital to the academic success of Emirati students.

The purpose of the study was to investigate the relationships between students' reading competencies (accuracy, fluency, and comprehension) in their L1 (Arabic), in their L2 (English) and between their L1 and L2. This study attempted to answer the following research questions:

1. What are the relationships between Emirati fourth grade students' ability in Arabic (L1) reading accuracy, fluency, and comprehension?
2. Is there a relationship between Emirati fourth grade students' ability in English (L2) reading accuracy, fluency, and comprehension?
3. What are the relationships between Emirati fourth grade students' achievements in Arabic (L1) and English (L2) reading competences (accuracy, fluency and comprehension)

This study was limited to participants from two male model schools and two female model schools in Abu Dhabi, and it was limited to investigating the relationships between Arabic and English reading competence in accuracy, fluency, and comprehension. Other literacy skills were not investigated in this study. Model schools are public schools that parents pay additional school fees. The class sections used for the study were randomly selected, but the selection of the four schools was based on the convenience method. Other limitations may include extraneous variables such as learning environment variables (teacher efficiency and experience, exposure to quality literature, parental involvement, parents' level of education, and socioeconomic status) and/or learner variables (ability, attitude, and motivation to learn L1 and or L2).

## The Reading Competence

The reading competence can be assessed by measuring reading accuracy, fluency, and comprehension. Reading accuracy is the speed with which the reader decodes letters and words into spoken language (Fuchs, Fuchs, Hosp & Jenkins, 2001; Midraj & Midraj, 2011a; Midraj & Midraj, 2011b; Rasinski, & Padak 2005). Reading accuracy can be measured by calculating the average number of words read aloud accurately per minute (Jackson & McClelland, 1979; Rasinski, & Padak 2005).

Reading fluency is the ability of the reader to read with enthusiasm, expression, phrasing and pace that reflect understanding of what was read (Allington, 1983; Rasinski, & Padak, 2005). Fluency is measured through accuracy, automaticity, and prosody. A fluent reader decodes words accurately with minimal interruption, uses appropriate phrasing, and shows expression and enthusiasm. The Multidimensional Fluency Scale can be used to measure reading fluency (Rasinski, & Padak 2005; Zutell & Rasinski, 1991).

Reading comprehension is the ability of the reader to understand a written text based on knowledge in and outside the text. Measuring young learners reading comprehension involves the reader decoding and understanding written text. The learner can show the level of understanding by telling/retelling what was read and answering oral and or written questions about the text (Midraj & Midraj, 2011a; Midraj & Midraj, 2011b; Rasinski, & Padak, 2005).

### **L1 and L2 Associations and Interaction**

The literature shows significant associations between L1 and L2 literacy skills (Cummins, 1979, 1981, 2000; Cummins & Swain, 1986; Dweik, Abu Al Hommos, & Muslim, 2007; Geva and Yaghoub Zadeh, 2006; Van Gelderen et al., 2004). The associations are correlational, not causal. In addition, the relationships are directional from L1 to L2 and/or bidirectional. The magnitude and the effects of interaction are very complex and depend on various variables (Bell, 1995; Cook, 2002, 1991; Hornberger, 1989; Laija-Rodriguez, Ochoa & Parker, 2006; MacSwan; 2000). Research supports the notion that L1 literacy skills can be transferred to L2 literacy skills. Dweik, Abu Al Hommos, and Muslim found positive and significant relationships between high school students' writing skills in Arabic and their writing skills in their L2 (English). The authors assumed that the participants transferred their writing skills in Arabic to English (2007). Geva and Yaghoub Zadeh found that accurate word recognition concurrently predicted reading fluency in their study of L2 and L1 students in Grade 2 (2006). In addition, reading accuracy and reading comprehension skills were highly correlated in L1 and L2 learners, reading fluency correlated with reading comprehension, and L1 reading comprehension significantly contributed to L2 reading comprehension (Van Gelderen et al., 2004). This positive impact on L2 and the proficiency transfer from L1 to L2 needs motivation to learn and exposure to the L2 (Cummins, 1979, 1981, 2000; Cummins & Swain, 1986). Cummins maintains that L2 learners may develop reading skills in L2 when they have a minimum level of L1 linguistic knowledge and a certain threshold (1981).

On the effects of L1 interaction with L2, Lesaux, Lipka, & Siegel's study compared the reading comprehension ability of grade 4 children who entered kindergarten as ESL learners to those who were native English speakers. They found no differences in reading and phonological processing when comparing ESL and native English learners. However, the syntactic awareness and verbal working memory of the ESL students was significantly lower than the native English speakers (2006).

The literature also shows that Cummin's threshold hypothesis may be intangible as the relationships between L1 and L2 literacies are very complex and numerous studies reported correlational rather than causal relationships (Bell, 1995; Hornberger, 1989; MacSwan; 2000; Laija-Rodriguez, Ochoa & Parker, 2006). The interaction between L1 and L2 can be bidirectional and might have both positive and/or negative impacts on L1 and L2 learning. Cook (2002) suggests that the degree of separation, integration, and interaction vary between languages due to the magnitude of relationships between L1 and L2. Cook (1991) introduced the L1 and L2 multi-competence language system where L1 and L2 are not separate in the language learner's mind. Ringbom hypothesized that L2 learning may contribute to L1 metalinguistic awareness (2007 cited in Djigunovic, 2010). On the other hand, Bell (1995) and Hornberger (1989) maintain that L1 literacy skills may aid in the learning of L2 literacy skills to some extent, but it may also impede L2 literacy in other complex aspects of language learning. Dual language learning has directional and/or bidirectional metalinguistic awareness that may impact L1 and L2 learning. This impact most likely reinforces language learning when there is

adequate motivation and exposure to the languages learned. Several complex variables determine the magnitude and the direction of this transfer and awareness. Relationships and interaction between dual language literacy skills are correlational, not causal. The level of L1 transfer and interaction between L1 and L2 depend on the degree of separation and integration, learner's motivation and exposure to L2, and the level of bilingual competence-dominant, balanced, or limited.

### **Research Method**

The purpose of the non-experimental, correlational design of this study was to determine whether, and to what degree, relationships exist between fourth grade Emirati students' reading in their L1 (Arabic) and their L2 (English). Areas of reading achievement assessed in both Arabic and English include reading accuracy (number of syllables read correctly in one minute); reading fluency (as measured by the multidimensional scale--expression, phrasing, smoothness and pace); and silent reading comprehension (as measured by paper-pencil silent reading tests). Data was collected in the form of researcher-constructed reading tests. Correlational statistics were used to compare the variables.

### *Sample*

The subjects who participated in this study were fourth grade Emirati students from four model primary schools in Abu Dhabi in the United Arab Emirates. The research subjects, whose first language was Arabic, studied in both English and Arabic. English was used as the medium of instruction in math, science and computer sciences while Arabic was learned as a subject and was used as the medium of instruction for the remaining subjects in the curriculum. Convenience sampling was used to select two model schools for boys and two model schools for girls. After the schools agreed to participate in the study, the researchers randomly selected three to five sections of fourth grade students for the study.

The study took place at the end of the students' academic year. One hundred eighty-six students (85 male and 101 female) completed both the silent reading comprehension tests and the read alouds in Arabic and English.

### *Instruments*

For the purposes of this study, researcher-constructed comprehension and fluency assessments were utilized to measure the students' reading comprehension, fluency, and accuracy in Arabic and in English. The researcher-constructed reading exams specifications were based on an analysis of the curricular documents (Abu Dhabi Education Council, 2006) and the Grade 1- 4 textbooks. Reading comprehension in Arabic and in English was assessed by students taking Arabic and English silent reading comprehension tests. Both tests had two reading passages: one written at Grade 2 level and one written at Grade 4 level, and each test had 25 questions. The question types included multiple-choice, fill-in the blank with a word bank, short answer, and ordering of events. Two versions of each test were created with the only differences being the order of the questions and/or distracters. The method of rational equivalence was used to estimate the internal consistency of the reading comprehension test. The reliability coefficient obtained from the Kuder-Richardson 20 on the Arabic Test Version A and Version B was .91. The reliability coefficient obtained from the Kuder-Richardson 20 on the English Test Version A was .92 and .91 on Version B.

To assess students' reading accuracy and fluency in Arabic and English, students read aloud

shortened versions of the Grade 4 reading texts that were used on the silent reading comprehension tests. Students' reading accuracy was determined by the number of syllables read correctly during a 60-second time period. The use of syllables instead of words was due to the nature of the two languages being investigated and the expected level of proficiency in each language (L1 versus L2) as described in the curriculum and manifested in the materials. Moreover, the Arabic text was vowelized for the participants which is typical in reading texts at the primary stage. Short vowels were added to make the text easier to read in Arabic. Students' reading fluency was measured using the Multidimensional Fluency Scale which rates reading expression and volume, phrasing and intonation, smoothness, and pace (Rasinski & Padak, 2005; Zutell & Rasinski, 1991). One-minute reading tests have been used to assess students' reading accuracy and fluency (Wessam, Elbert, & Landerl, 2010; Rasinski, N.D). A grading sheet was constructed to record the aforementioned information for each student. Silent reading comprehension tests in Arabic and English were used to measure participants reading comprehension.

### *Data Collection*

The researchers along with representatives from the schools administered the reading assessments after training the invigilators. In the students' classrooms, the students completed a practice silent reading comprehension test with examples of the question types found on the tests used to assess their reading comprehension. After the researchers discussed the answers of the practice test with the whole class, the students took the English reading comprehension test and then the Arabic comprehension test.

In order to ensure reliable marking of the short answer portion of the written exam on both the Arabic and English comprehension tests, the tests were double-marked by the researchers using a common key. Student answers on the reading comprehension tests were transferred to bubble sheets and graded using Remark Office OMR Version 6 to allow for consistent marking and easy statistical analysis. Students' overall percents on the Arabic and English reading comprehension tests were used to represent their Arabic and English silent reading comprehension and were entered on the spreadsheet.

The research team administered the final part of the reading assessment, the read aloud, in quiet areas of the school after the silent reading comprehension test. During this portion of the assessment, the researchers recorded the students reading in Arabic and English using digital voice recorders. All number-coded sound files were stored on a password-protected portable hard drive. Two English teachers and two Arabic teachers were trained to use the scoring sheet and the Multidimensional Fluency Scale. After the raters marked consistently on the practice recordings, they marked the recordings. The English teachers rated the English sound files and the Arabic teachers rated the Arabic recordings. The raters were instructed to first mark the accuracy per minute. After they completed all of the accuracy marking, the raters listened to and marked the recordings again using the Multidimensional Fluency Scale. The recordings were double-marked and the average of the two scores was used unless there was a discrepancy of more than two points out of a total of 16 points. In this case, the recording was third-marked. Twenty-one Arabic sound files (16%) needed to be third-marked while seventeen English sound files (13%) needed to be third-marked. This aspect of the marking yielded the scores for the students' accuracy and fluency in Arabic and English, and this data was entered on the spreadsheet.

## Results

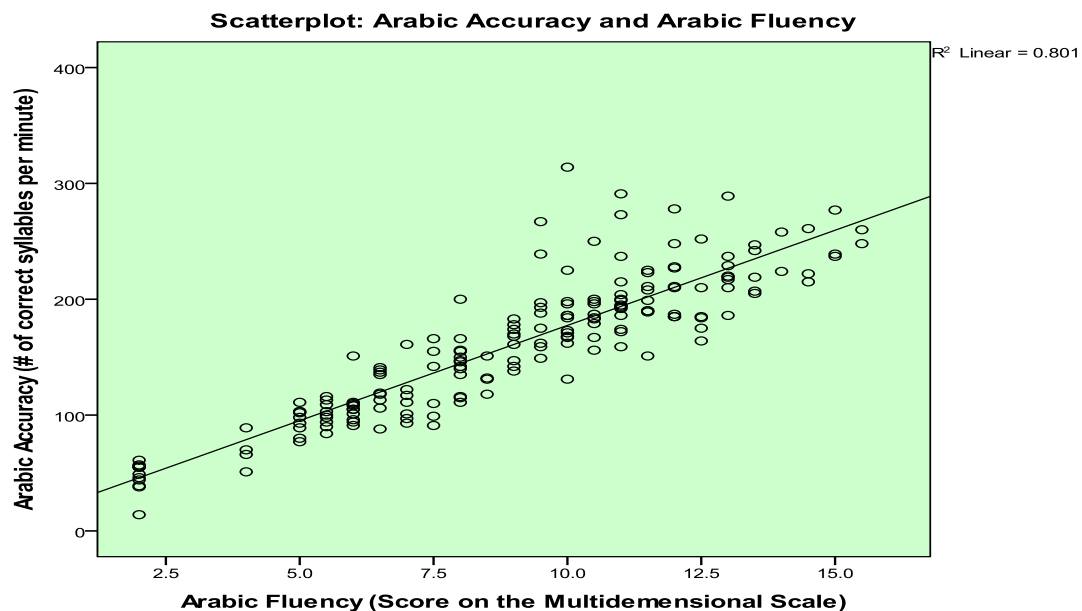
The purpose of the study was to examine the relationships between fourth grade Emirati students' reading in Arabic (L1) and English (L2). The researchers sought to find out if there were relationships between students' reading accuracy as measured by the number of syllables read correctly in one minute, reading fluency as measured by the Multidimensional Fluency Scale, and reading comprehension as measured by their percent score on the silent reading comprehension tests. In order to explore these areas, students' scores in reading comprehension, reading fluency, and reading accuracy were compared using Pearson product-moment correlation coefficients. SPSS Version 19 was used, and the level of statistical significance needed to reject the null hypotheses was .05.

### *Arabic Reading*

The first research question examined the relationship between Emirati fourth grade students' ability in Arabic reading accuracy, fluency, and comprehension. The following hypothesis was analyzed: There are no correlations between reading accuracy, fluency, and comprehension in Arabic of fourth grade Emirati EFL students. To investigate the hypothesis, a Pearson product-moment correlation coefficient was used to ascertain the relationships between Arabic accuracy, fluency, and comprehension.

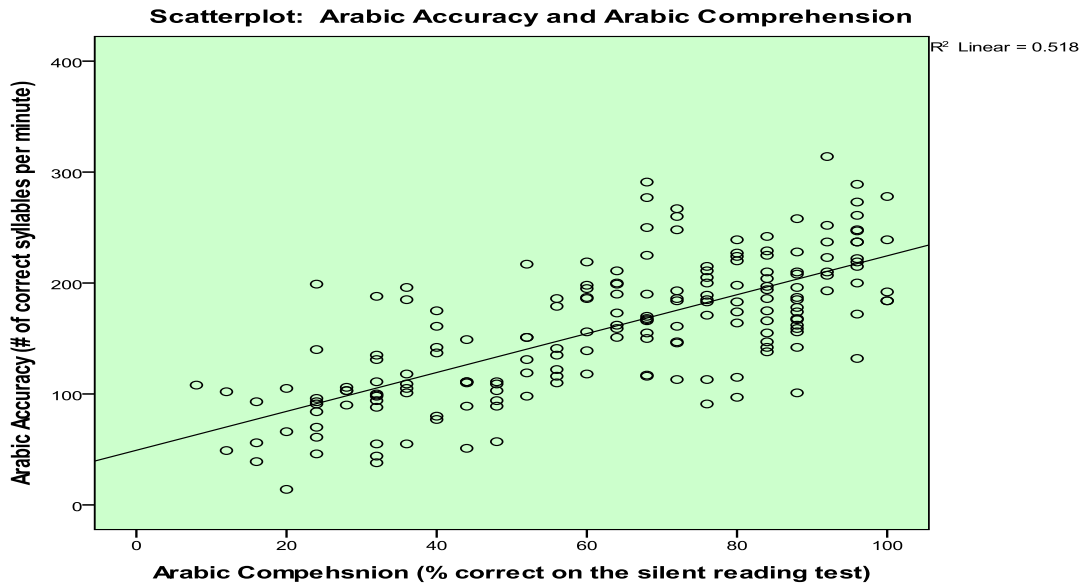
The results showed that there was a significant positive correlation between Arabic accuracy and Arabic fluency,  $r(184) = 0.90$ ,  $p = 0.000$ . The scatterplot below illustrates the data (Figure 1).

**Figure 1. Arabic Accuracy and Arabic Fluency**



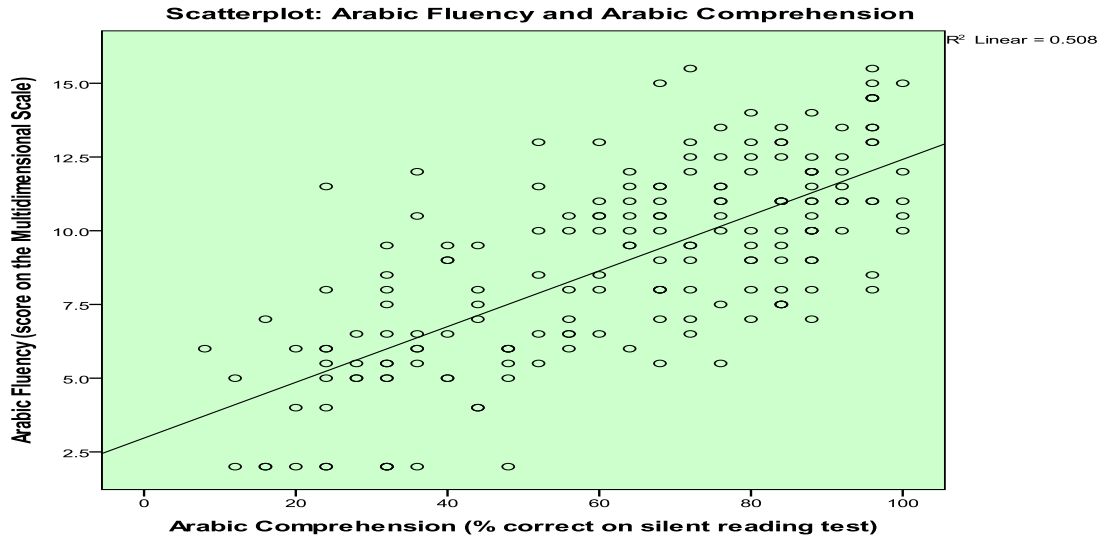
There was a significant positive correlation between Arabic accuracy and Arabic comprehension,  $r(184) = 0.72$ ,  $p = 0.000$ . The scatterplot below illustrates the data (Figure 2).

**Figure 2. Arabic Accuracy and Arabic Comprehension**



There was a significant positive correlation between Arabic fluency and Arabic comprehension,  $r(184) = 0.71, p = 0.000$ . The scatterplot below illustrates the data (Figure 3).

**Figure 3. Arabic Fluency and Arabic Comprehension**



There were strong positive correlations between the Arabic reading variables as higher scores in any of the reading areas were correlated with higher scores in the other Arabic variables. Specifically, higher scores in Arabic accuracy were correlated with higher scores in both Arabic fluency and comprehension; higher scores in Arabic fluency were correlated with higher scores in both Arabic accuracy and comprehension; and higher scores in Arabic comprehension were correlated with higher scores in both Arabic accuracy and fluency. Although all the relationships were significant, the relationship between fluency and accuracy was noteworthy. (Table 1).

**Table 1. Pearson Correlation – Summary Arabic Reading**

		Arabic Accuracy	Arabic Fluency
Arabic Fluency	Pearson Correlation	.90**	
	Sig. (2-tailed)	.000	
Arabic Comprehension	Pearson Correlation	.72**	.71**
	Sig. (2-tailed)	.000	.000

N=186

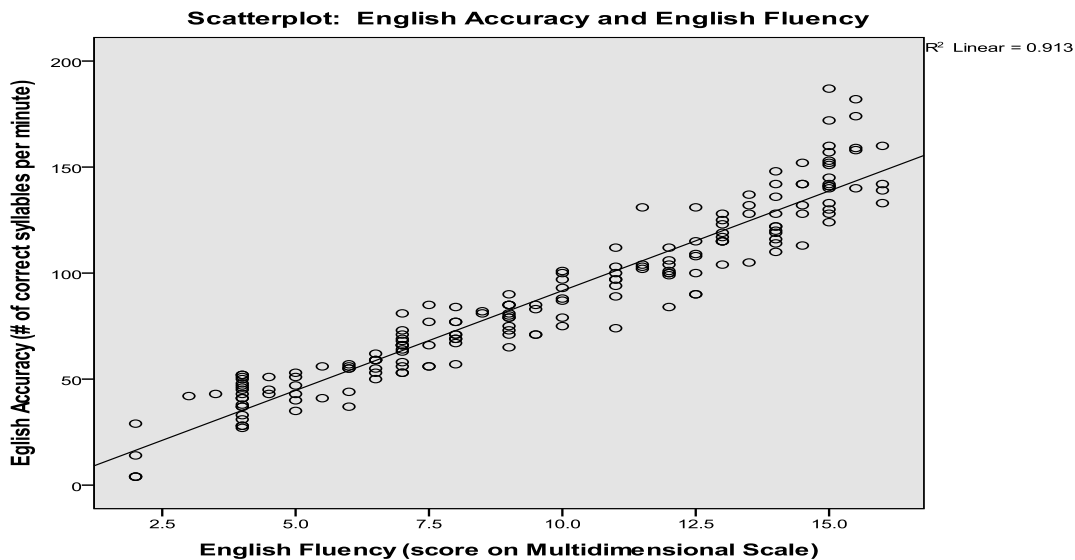
\*\* Correlation is significant at the 0.01 level (2-tailed).

**English Reading**

The second research question investigated the relationship between Emirati fourth grade students’ ability in English reading accuracy, fluency, and comprehension. The following hypothesis was analyzed: There are no correlations between reading accuracy, fluency, and comprehension in English of fourth grade Emirati EFL students. To investigate the hypothesis, a Pearson product-moment correlation coefficient was computed to assess the relationships between English accuracy, fluency and comprehension.

The results showed that there was a significant positive correlation between English accuracy and English fluency,  $r(184) = 0.96, p = 0.000$ . The scatterplot below illustrates the data (Figure 4).

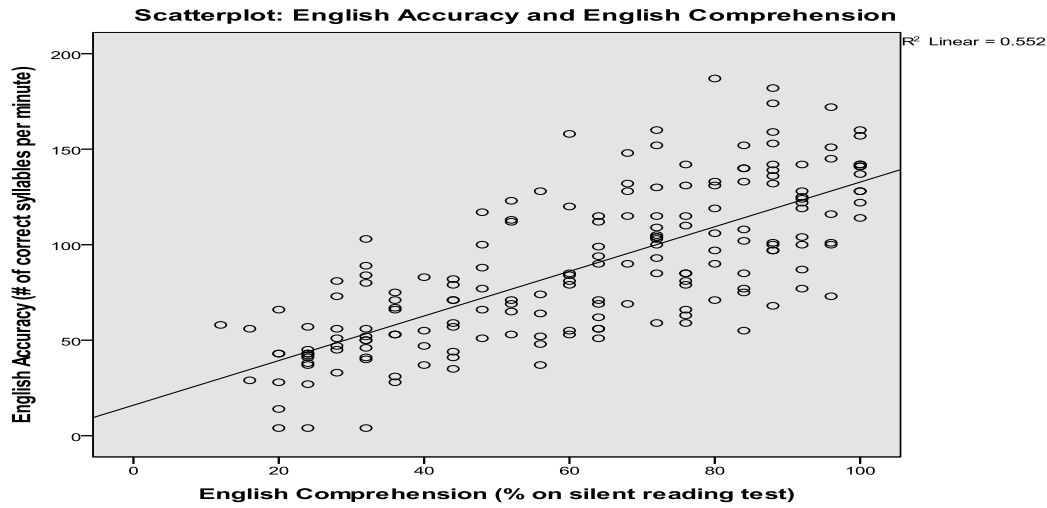
**Figure 4. English Accuracy and English Fluency**



There was a significant positive correlation between English accuracy and English comprehension,  $r(184) = 0.74, p = 0.000$ . The scatterplot below illustrates the data (Figure 5).

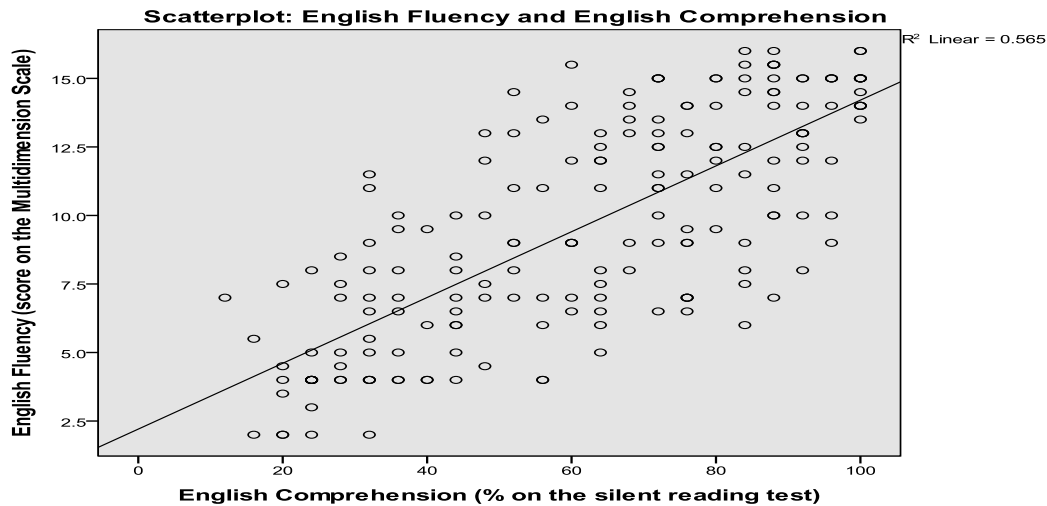


**Figure 5. English Accuracy and English Comprehension**



There was a significant positive correlation between English fluency and English comprehension,  $r(184) = 0.75, p = 0.000$ . The scatterplot below illustrates the data (Figure 6).

**Figure 6. English Fluency and English Comprehension**



There were strong positive correlations between the English reading variables as higher scores in any of the reading areas were correlated with higher scores in the other English variables. Specifically, higher scores in English accuracy were correlated with higher scores in both English fluency and comprehension; higher scores in English fluency were correlated with higher scores in both English accuracy and comprehension; and higher scores in English comprehension were correlated with higher scores in both English accuracy and fluency. Although all the relationships were significant, the relationship between fluency and accuracy was noteworthy. (Table 2).

**Table 2. Pearson Correlation – Summary English Reading**

		English Accuracy	English Fluency
English Fluency	Pearson Correlation	.96**	
	Sig. (2-tailed)	.000	
English Comprehension	Pearson Correlation	.74**	.75**
	Sig. (2-tailed)	.000	.000

N=186

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

***Arabic and English Reading***

The third research question investigated the relationship between Emirati fourth grade students' ability in reading in their L1 (Arabic) and their L2 (English). For descriptive purposes, the respective means for the students' scores in accuracy, fluency, and reading comprehension are reported in Table 3.

**Table 3. Descriptive Statistics – Arabic and English Means**

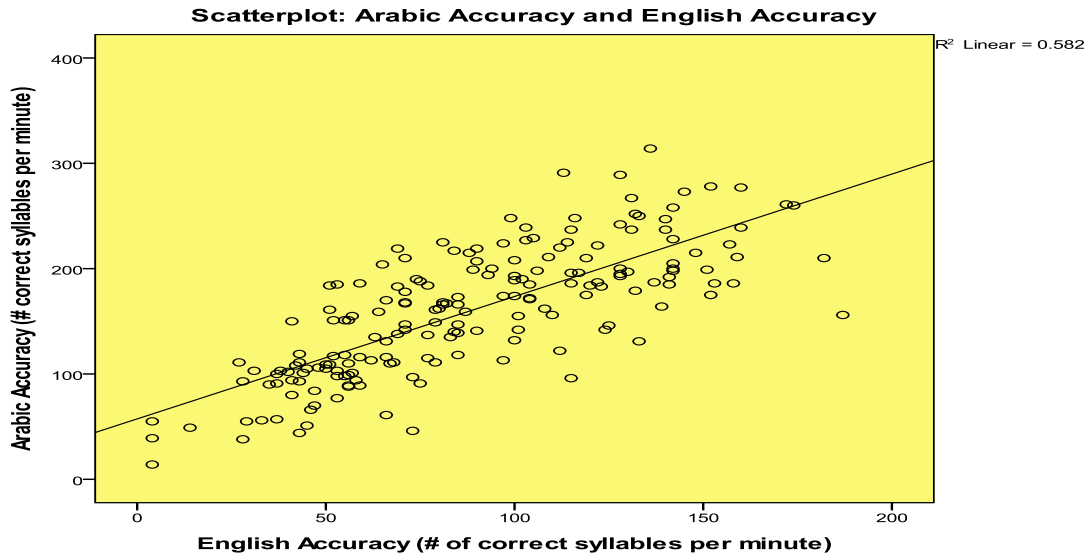
	Arabic Mean (L1)	English Mean (L2)
Accuracy (Syllables read correctly per Minute)	159.81	88.2
Fluency out of 16 points using (Multidimensional Fluency Score)	8.9	9.6
Comprehension (Score on silent reading test out of 100 points)	63.1%	61.8%

To analyze the following hypotheses, Pearson product-moment correlation coefficients were used:

1. There is no correlation between EFL grade four students' reading accuracy in their L2 (English) and their reading accuracy in their L1 (Arabic).
2. There is no correlation between EFL grade four students' reading fluency in their L2 (English) and their reading fluency in their L1 (Arabic).
3. There is no correlation between EFL grade four students' reading comprehension in their L2 (English) and their reading comprehension in their L1 (Arabic).

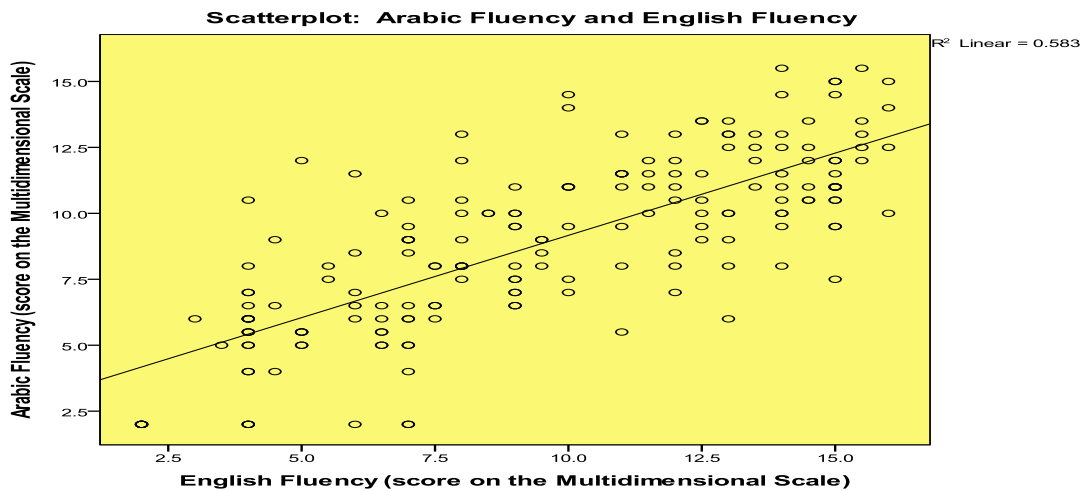
There was a significant positive correlation between Arabic accuracy and English accuracy,  $r(184) = 0.76$ ,  $p = 0.000$ . The scatterplot below illustrates the data (Figure 7).

**Figure 7. Arabic Accuracy and English Accuracy**



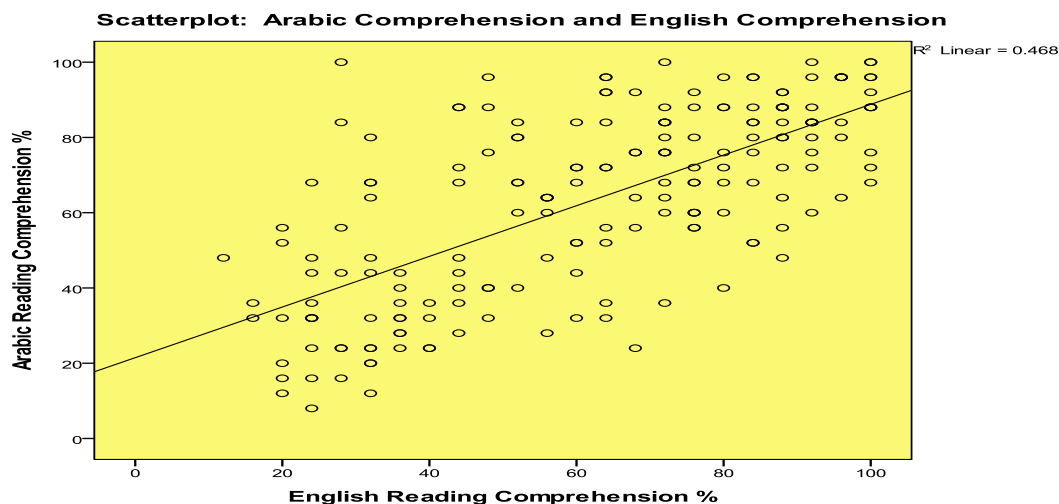
There was a significant positive correlation between Arabic fluency and English fluency,  $r(184) = 0.76, p = 0.000$ . The scatterplot below illustrates the data (Figure 8).

**Figure 8. Arabic Fluency and English Fluency**



There was a significant positive correlation between Arabic comprehension and English comprehension,  $r(184) = 0.68, p = 0.000$ . The scatterplot below illustrates the data (Figure 9).

**Figure 9. Arabic Comprehension and English Comprehension**



There were strong positive correlations between the Arabic and English reading variables: Higher scores in Arabic accuracy were correlated with higher scores English accuracy; higher scores in Arabic fluency were correlated with higher scores English fluency; and higher scores in Arabic comprehension were correlated with higher scores English comprehension (Table 4).

**Table 4. Pearson Correlation – Summary Arabic Reading /English Reading**

		English Reading Accuracy	English Reading Fluency	English Reading Comprehension
Arabic Reading Accuracy	Pearson Correlation	.76**		
	Sig. (2-tailed)	.000		
Arabic Reading Fluency	Pearson Correlation		.76**	
	Sig. (2-tailed)		.000	
Arabic Reading Comprehension	Pearson Correlation			.68**
	Sig. (2-tailed)			.000

N=186

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

**Conclusion**

The purpose of the study was to investigate the relationships between fourth grade students’ reading competencies in L1 (Arabic) and L2 (English) languages. The study explored the relationships between Emirati fourth grade students’ competence in L1 and L2 reading accuracy, fluency, and comprehension. The results of the research study demonstrated strong positive correlations between each of the L1 reading variables (accuracy, fluency, and comprehension), L2 reading variables, and L1 & L2 reading variables. The study results are correlational not causal. However, the significant positive correlation between L1 and L2

reading components support the interdependence and the threshold hypothesis due to the strong correlations between L1 and L2 reading variables. The results of this study support the notion of linguistic interdependence which suggests that language skills developed in one language can be transferred to another (Cummins, 2000, 1981, 1979; Cummins & Swain, 1986). A well-constructed bilingual education program that supports L1 linguistic competence might contribute to increasing reading proficiency in both L1 and L2. As such, it is recommended that support should be given to Arabic-English bilingual programs in the schools that place importance on developing Arabic literacy skills along with English language skills. Not only will this have a positive impact on the acquisition of both L1 and L2, it can also assist in the preservation of the Arabic language while assisting Emirati students in becoming active contributors to the diverse, multicultural, and dynamic global society.

Based on the findings of this research study, there are implications on classroom pedagogy, program curriculum and assessment, and government education policy. At the pedagogical level, it is important for teachers to employ various strategies that develop their students' dual language reading accuracy, fluency, and comprehension. Reading comprehension and reading fluency draw on similar learning processes in the primary grades. Careful alignment and amalgamation between L1 and L2 reading may reinforce the students reading competence (Wiley & Deno, 2005).

The curriculum, materials, and assessments should be designed to support and assess all reading competencies. Schools need to implement ongoing bilingual assessments at the primary stage and establish bilingual literacy programs to provide opportunities for differentiated learning (remediation and enrichment). Assessment results should inform policy makers for ongoing curriculum reform. Moreover, schools should work towards successful school-parent-community partnerships and establishing biliteracy programs for their students' parents. These programs have the potential to empower parents to assist their children in becoming successful readers (Midraj & Midraj, 2011a; Midraj & Midraj, 2011b).

As this study was limited to fourth grade participants from two male model schools and two female model schools in Abu Dhabi, conducting similar studies with different types of schools (public schools, model schools, and private schools) and different age groups may shed light on more factors that contribute to reading achievement in L1 and L2 and the relationships between L1 and L2. In addition to researching the relationships between the reading competencies in L1 and L2, it might be worthy to correlate those results to other learner and learning environment variables. Correlational studies are not causal, and correlational relationships that are related to language learning are very complex to explain. There is a need for more research that investigates the relationships between Arabic-English dual language skills to support and consolidate L1 and L2 positive transfer to develop the desired bilingual reading competence.

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