Content Familiarity and Gender-Neutral Texts in Foreign Language Reading Comprehension

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ABSTRACT

Based on the schema theory, it has been found that the background knowledge of males and females differs. This difference in background knowledge can affect the students' reading comprehension. In Iran, although boys and girls study in different schools, they follow the same curricula and syllabuses in all the schools. The present article reports the results of a study that investigated the interaction between content familiarity and gender on two neutral texts. To this end, data were elicited from 123 high school students (86 = female and 37 = male), ranging from 16-18 years old. They were randomly assigned to four groups and were presented with four texts. Two of the texts were familiar to the students and the other two texts were unfamiliar. The students' reading comprehension was assessed through two different testing measures namely the recall protocol and the cloze test. The performance of the four groups was compared using a between-subjects design and a two-way MANOVA test. Results indicated that there was a two-way interaction effect between familiarity and gender. Females scored higher on familiar texts whereas males outperformed the females on the unfamiliar texts. Based on the obtained results, it can be concluded that gender differences contribute to students' performance in reading comprehension.

Keywords: *Gender, Content Familiarity, Neutral Text, EFL Readers, Reading Comprehension*

INTRODUCTION

Reading is an inseparable part of teaching and an irreplaceable skill, which has a special importance in foreign language learning. Since the main goal of EFL students in countries where English is taught as a foreign language, is reading, focusing on the ways and methods to improve the students' reading comprehension is inevitable. In Iran, "very little time is devoted to comprehension instruction in high school reading classes where the primary focus of its language textbooks is on reading skill" (Lotfi, 2013, p. 38). Dahmardeh (2009) asserted that the education, which the Iranian students receive, does not enable them to attain full competence in using the English language.

Previous researches on EFL reading comprehension have shown that a plethora of variables is involved in the reading process and one of these variables affected on reading comprehension is prior knowledge. But the participants of most researches were selected from the university level (EI-daly, 2010; Erten & Razi, 2009; Jalilfar & Assi, 2008). Consequently, very few empirical researches have examined students at the high school level.

According to the schema theory, the background knowledge of male and female readers differs and this difference is what makes the readers interpret the same reading text differently. Therefore, gender is one of the important reader variables associated with individual differences in reading comprehension of a second language (Brantmeier, 2001). Dornyei (2005) also asserted that gender is a critical variable that influences every aspect of the language learning process. As such, the difference in gender might affect text

interpretation.

A gender-neutral text is identified as a text that is free from gender bias (Bugel, 1993). Utilizing a gender-neutral text with readers from different genders can add an intriguing dimension to the schema theory and previous studies. Most of the past studies (Ansari & Babai, 2003; Biglar, 2009; Fatemi, et al., 2011, Sotoudehnama & Asadian, 2011) in Iran had examined the impact of gender-oriented texts on students' reading comprehension. However, the influence of gender-neutral texts on readers' comprehension has not been explored. As Al-Shumaimeri (2005) asserted, there is a need for more research on L2/FL reading comprehension using gender-neutral texts.

In connection with the influence of content familiarity on text comprehension based on gender, one can pose the following research question, 'Does the effect of content familiarity on students' reading comprehension depend on the students' gender?' It is hoped that the findings of the present study will help EFL teachers to improve their students' reading comprehension test scores and contribute to EFL students in improving their comprehension of expository texts. Moreover, it is hoped that these results can provide useful information to test makers and publishers when they select texts for EFL students.

Gender Differences in Content Familiarity

Readers comprehend what they read by analyzing the text based on their previous knowledge (schema) or internal organization of past personal experiences. Ausubel (1968, p. vi) who is an educational psychologist believed that the single most critical factor affecting learning is what the reader knows about the text. According to Shin (2002), it is clear that background knowledge that readers bring to the reading process will influence the way they process and comprehend the text. As a result, by activating or providing sufficient background knowledge, the reading task can be made more meaningful, comfortable, and comprehensible to the readers.

Since males and females possess different experiences, needs, motivation, and knowledge, they have different schemata. Therefore, the role of background knowledge and gender on reading comprehension has captured the attention of many researchers (Brantmeier, 2003, 2004; Keshavarz & Ashtarian, 2008; Al-Shumaimeri, 2005; Wei, 2009; Yazdanpanah, 2007; Zhau, 2008).

Brantmeier (2003) investigated the impact of certain individual differences such as topic familiarity, enjoyment, and interest, on text comprehension of male and female readers. Results of her study showed that gender-oriented passage content and readers' gender are key variables that significantly affect their performance on the recall comprehension task at the intermediate level. Brantmeier (2004) also investigated the effect of topic familiarity levels on second language (L2) readers. She examined the comprehension of university level male and female students with two different authentic violence-oriented texts using written recall and multiple-choice questions.

In another study, Al-Shumaimeri (2005) explored whether there were any differences between reading comprehension of Saudi male and female EFL students at the tertiary level. The aim of the study was to explore the gender differences between male and female students in reading comprehension of gender-neutral texts. Findings revealed that males performed significantly better in multiple-choice tests compared to their female counterparts but no significant interaction effect was found between content familiarity and gender. Keshavarz and Ashtarian (2008) investigated the relationship between reading comprehension of three types of texts (history, essay, and story) and the gender of Iranian EFL students at the university level, which was measured using multiple-choice questions. The main finding of their study showed that there was a difference between male and female EFL students in reading comprehension ability with females being better in the comprehension of English passages.

Zhau (2008) studied the effect of gender on reading comprehension of 26 male and 55 female Chinese EFL students. Two instruments were used in Zhau's study to measure the students' reading comprehension: multiple-choice and short-answer questions. The findings of the study indicated that there was no statistically significant effect between male and female students' performance. However, in a recent study, Wei (2009) investigated the relationship between gender differences, reading comprehension, and reading strategies at the secondary level in China. The results of the study indicated

that a strong relationship existed between gender differences and reading comprehension that could affect test outcomes, in some cases.

The above studies investigated whether a reader's gender accounted for differences in text comprehension, but there were significant differences in the research methodologies of each study: Brantmeier (2003, 2004) utilized university subjects, gender-oriented text content and the instruments were written recall and multiple-choice questions; Al-Shumaimeri's (2005) subjects were from the university level, the texts were gender-neutral, and the instrument was multiple-choice questions; Keshavarz and Ashtarian (2007) used story, history, and essay texts and subjects were from the university level; and Zhau (2008) used subjects from the university level and the instruments were multiple-choice questions and short answer questions. The above studies did not examine the effect of gender-neutral text on high school students measured using written recall and cloze test. Most investigations of this nature have been done with students from the university level using gender-oriented texts. Accordingly, it is possible that the gender effect may be confounded with neutral texts, high school level participants, and written recall and cloze test.

METHODOLOGY

Subjects

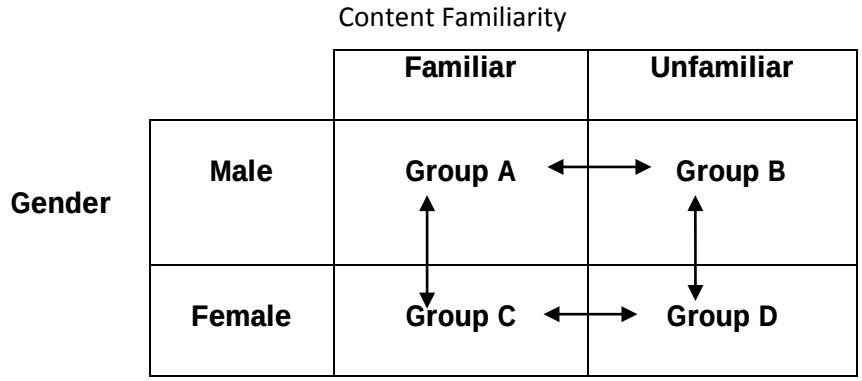
In order to explore the interaction effect of content familiarity and gender on students' reading comprehension test scores, 132 intermediate students ranging from 16 to 18 years old were asked to participate in the study. They were sampled from a population of 11th grade students majoring in experimental science in Savojbolagh County in the Tehran Province. The sample was drawn from this population based on the purposive sampling method due to familiarity of this population with the chosen text. Since the population of female students was more compared to the male students, the researcher selected 89 girls and 42 boys using the Morgan Randomization Table, which is a table for determining sample size for research activities (Appendix G). Equal sample sizes are not required in the present study following the track of previous studies on gender (e.g., Brantmeier, 2002, 2003, 2004; Bugel & Buunk, 1996; Young & Oxford, 1997). This method of determining the sample size was used to control the threats of internal validity of subject selection. The intermediate high school students were involved in the current study based on their EL reading ability in order to control the threats of the extraneous variable of reading ability. Based on official assessment (from the Ministry of Education in Iran), the students with marks of 14 to 17 were at the intermediate level and suitable for this study. Their reading ability was controlled by their English scores from the previous semester. Since the previous semester's English test was provided by the experts from the Ministry of Education, the English test for measuring the students' reading ability was regarded as valid and reliable.

The students were divided randomly into four homogenous groups so that the researcher could compare their recall of a familiar and an unfamiliar text.

Design

The students' reading comprehension was compared using a 2×2 between-groups factorial design. The researcher could control the threats of internal validity using the factorial design. It is possible that by using a factorial design, the researcher can assess not only the separate effect of each independent variable but also their joint effects. The independent variables were content familiarity and gender. The dependent variable consisted of scores for reading comprehension as measured by recall protocol and cloze test (Table 1).

Table 1. 2× 2 Factorial Design Matrixes



Material

Two gender-neutral expository texts with identical structure were used in this experiment (Appendix A). One of them was familiar and the other one was unfamiliar to the students. Text lengths were kept similar in terms of the number of words, paragraphs, and amount of information. The researcher gave an introductory sentence for each text.

The familiar text was on *Healthy Eating* and the unfamiliar text was on the *Sun God Statue in Cairo*. According to the experts (from the Ministry of Education in Iran), the two texts were neutral to the students. The familiar text used in this experiment was chosen from Sharp's (2002) study. Since the students' major was experimental science, the text was familiar to them. Moreover, *healthy eating* is a subject that has been frequently discussed in the media, including newspaper, television, radio, and satellite TV. The validity and reliability of using this instrument had been established in Sharp's (2002) study. The unfamiliar text was chosen from the EnglishTestStore (ETS). The participants' knowledge of unfamiliar text was assessed using the Richgels' (1987) method.

Flesch-Kincaid's readability formula was also applied to both texts to measure text difficulty and grade level. The readability formula is able to control the threats of internal validity of instruments. There are two tests in this formula: the **Flesch Reading Ease** and the **Flesch–Kincaid Grade Level**. These tests have been designed to indicate comprehension difficulty when reading a passage of contemporary academic English. These readability tests make it easier for teachers, parents, and others to assess the readability level of various books and texts.

The Ease score of familiar and unfamiliar texts were 52 and 54. The grade level of both texts was 10. Further, three professional teachers who were asked to comment on the difficulty level of each text confirmed them. Therefore, both texts were appropriate for the subjects from the third grade high school level (Table 2).

Table 2. A Summary of Characteristics of the two Reading Texts

Feature	Familiar Text	Unfamiliar Text
Number of Words	**163**	**171**
Number of Sentences	**11**	**11**
Number of paragraphs	**2**	**2**
Flesch-Kincaid Reading Ease Score	**52**	**54**
Flesch-Kincaid Grade Level	**10**	**10**
Number of idea units	**26**	**26**
Number of Missed Words in Cloze tests	**28**	**30**

INSTRUMENTS

The three instruments used for data collection were a background knowledge questionnaire, a free recall test, and a cloze test. In order to control for extraneous threats and increase the validity of the texts, the researcher assessed the participants' knowledge using the Richgels' (1987) method (Appendix F). Richgels' method is a direct measure of students' background knowledge. This method helps the researcher understand the students' perspective about the topics. The students were asked three questions using this method. Any student who scored more than 6 points was not suitable for this study. Therefore, in the present study, 5 students who had prior knowledge of unfamiliar text and 4 students who did not complete all the tests were excluded from the data analysis.

In the free recall test, students were asked to read a text, put it aside, and then to write down everything they can recall from the text in complete sentences, and not just list isolated words or ideas. This procedure provides a rich sample of their individual construction of the text. According to Bernhardt (1983a, p. 31), "recall protocols reveal something about the readers' retrieval strategies, how information is stored and organized, and reflect how readers reconstruct and encode information in a text".

Cloze test was used as another instrument for the experiment (Appendix B). Cloze is typically constructed by deleting every fifth word from selected texts. One or two sentences are usually left intact at the beginning and at the end of the text to provide some degree of contextual support (Alderson, 2000, p. 207). In a cloze test, the test-taker has to restore the words that have been deleted in the text. In some scoring procedures, credit may also be given for providing a word that makes sense in the gap, even if it is not the word, which was originally deleted. In this study, the exact word scoring procedure that requires the word put in to be the exact word as used in the original text was used. Deletion rates for the text were: *familiar* - every 5th word and 28 deletions; *unfamiliar* - every 5th word and 30 deletions. Therefore, in this research, students were presented with a text from which every fifth word had been systematically deleted and replaced with blanks, and they were asked to replace these missing words. One point was given for each correct exact word.

Procedures and Data Collection

At the outset of the experiment, the participants were divided into four groups. They were distributed equally in the groups based on their reading ability scores. In order to create homogenous groups among the students' with similar reading ability, members of the four groups were carefully matched based on their English scores from the previous semester. They were randomly assigned to the experimental conditions, and told that participation would not affect their course grade.

Two different texts were distributed evenly among the students. Each student received a background knowledge questionnaire and an envelope containing a gender-neutral text (familiar or unfamiliar), which was written on a yellow paper, a cloze test on the same text, which was written on a blue paper, and a white blank sheet where they could write their recall protocols. The experiment started with the researcher reading the instructions aloud in the Farsi language while the students read them silently. They were given a brief introduction about the topic and were then asked to read the text and take notes if they wished to, within fifteen minutes. After reading the text, they were asked to put the text inside the envelope and write down everything they could remember from the text in complete sentences both in terms of structure and in words used, within ten minutes. Since the students wrote everything they could remember immediately after reading the text, it could not be a test of memory. As English is a foreign language in Iran, recall needed to be written in the student's native language, Farsi; otherwise, it becomes a writing test. Therefore, they could use their own words or those of the original text but in Farsi, without consulting the text or their notes. As Bernhardt and James (1987, p. 67) stated, "recall protocols were written in the participants' first language so that their productive skills do not interfere with the analysis of their comprehension skills". They were instructed to put their answer sheet in the envelope after completing the recall task. The cloze test was then attempted in fifteen minutes.

Data analysis

Following the Johnson (1970) and Zhang (2008) system, each of the two texts was divided into idea units by three different raters (two native English speakers and one non-native English speaker whose first language was Farsi) (Appendix C). According to Sharp (2002), since there is a certain amount of overlap in the text reconstructions, it is recommended that it is confirmed by both native and non-native English speakers. Johnson (1970) and Zhang's (2008) systems of using idea units and importance level were selected as most suitable for this research study because their application is simpler than the Meyer (1975) system and they allow quantitative (importance level) and qualitative (idea units) assessment of recall. Separately, the researcher and the two native English speakers identified the total idea units for each text and then compared the results. The identical information in both text versions was reduced to 26 idea units for the purpose of marking. An idea unit is called a linguistic unit (Bransford & Franks, 1971) and an information unit (Roller 1990), is the minimum words necessary to express a thought or idea. One mark was given to each idea unit that the participants recalled. Moreover, accounting for the importance level differences in recall was similar to Sharp's (2002) and Zhang's (2008) study in which the idea units were accounted for the importance level within the text. Level three was accounted for the main generalization, level two was accounted for the supporting generalization, and level one was accounted for the supporting detail. Participants' reading comprehension was measured by the number of idea units recalled and importance level recalled (Appendix E).

Since the participants were asked to write what they remembered in Farsi, the researcher and the two non-native English speakers provided a Farsi-equivalent matrix and divided the idea units once more and translated them into Farsi language. The result of both the idea unit divisions (English and Farsi) in number was similar.

Scoring

In this study, two experienced English teachers who were instructed by the researcher on how to score recall protocols of students, scored the students' protocols. Inter-rater reliability for idea units' recall was .90 and .81 for importance level. The reliability of text scoring by the two scorers was highly correlated. Therefore, the final score for data analysis was the average of the two scores given by the two scorers.

Recall protocols were scored for elaborations and distortions, which were dissolved through discussion between the researcher and the two scorers. Synonyms and word changes were allowed if they did not change the meaning of the passage. Grammatical mistakes and misspelling did not affect the participants' scores in this study because they did not mirror participants' understanding of the texts.

The 123 cloze tests were scored by two raters. Since the cloze test required exact words, the two scorers were completely agreeable with each other.

Statistical Analysis

Since the raw scores of the cloze test were different, the researcher converted the raw scores into percentages. The number of idea units recalled was also transformed into a percentage of the number of idea units in the original text based on Zhang (2008). After the administration of scoring, the data were collected and subjected to statistical analysis. Using Statistical Package for Social Sciences (SPSS), the means and standard deviations of the two groups' responses were computed. For further analysis, a two-way multivariate analysis of variance (MANOVA) was employed to determine the interaction effect of content familiarity and gender on participants' reading comprehension. SPSS offers an adjustment for unequal sample sizes in MANOVA. Therefore, unequal sample sizes in the MANOVA test are not problematic. The critical F value for significance level was set at $p < 0.05$.

RESULTS

Since multiple analyses of variance (MANOVA) was employed in the current study, the assumptions of the MANOVA analysis were expected to be met. In order to establish the violation of normality

distribution, the researcher examined the skewness and kurtosis of the data. As displayed in Table 3, skewness and kurtosis for all three measures are between -2 and +2. Therefore, the dependent variables namely the idea units, importance level, and cloze test, were normally distributed.

Table 3. Test of Normality Distribution for dependent variables Based on the Values of Skewness and Kurtosis

N		Idea Units	Importance Level	Cloze Test
	Valid	123	123	123
	Missing	0	0	0
Skewness		0.194	0.116	0.118
Std. Error of Skewness		0.218	0.218	0.218
Kurtosis		-0.775	-0.846	-1.11
Std. Error of Kurtosis		0.433	0.433	0.433

Further, in order to check whether the groups have approximately equal variance on the dependent variables, the researcher conducted the Levene's Test. As seen in Table 4, the significance value for all three measures was greater than 0.05. Therefore, it is concluded that the variances were approximately equal and there is homogeneity of variances in the dependent variables across the groups.

Table 4 Levene's test of Equality of Error Variances

Dependent variables	Levene Statistic	df1	df2	Sig.
Idea Units	0.027	1	121	0.868*
Importance Level	0.020	1	121	0.887*
Cloze Test	0.101	1	121	0.751*
*Not Significant at p>0.05				

The data gathered in this study were subjected to a quantitative analysis. The specific statistical procedure for analyzing this research was a two-way multivariate analysis of variance (MANOVA) that was used to test the effect of the two independent variables (content familiarity and gender) on the dependent variable. The dependent variable in this study was reading comprehension scores as measured by the scores of idea units, importance level, and cloze test.

Research Question: Does the effect of content familiarity on students' reading comprehension depend on the readers' gender?

1) In the recall of idea units, as Table 5 (at the end of the text) shows, mean scores for familiar and unfamiliar texts read by female students are *M*= 76 and *M*= 55; the difference is 21. The mean scores for familiar and unfamiliar texts read by males are *M*= 67 and *M*= 67; the difference is 0. The difference between 21 and 0 is 21 points. This point is a significant mark for the interaction effect. Thus, it can be interpreted that the effect of content familiarity on text comprehension depends on the different genders. In other words, female students performed slightly better on familiar texts, while male students performed better on unfamiliar texts. Therefore, the difference in performance of the students at the high school level (third grade) on gender-neutral texts seems to be due to their gender.

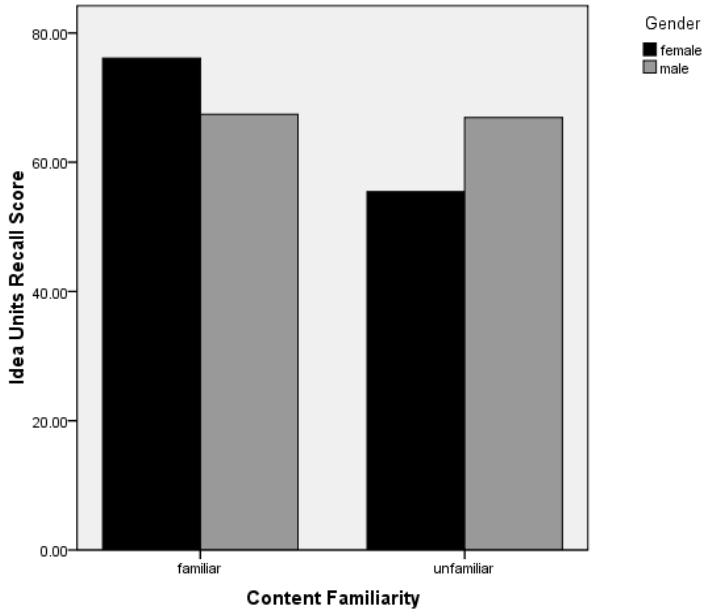


Figure 1 ***Mean comparisons of interaction effect of content familiarity and gender for idea units recall***

As Figure 1 clearly shows, there is a two-way interaction effect between content familiarity and gender in the recall of idea units. In other words, female students did better on familiar texts, while male students did better on unfamiliar texts.

In Table 6, the results of the two-way multivariate analysis of variance (MANOVA) for the recall of idea unit scores also indicated that there was a statistical interaction effect between content familiarity and gender F (1, 119) = 31.54, $p < 0.05$. This implies that male students took more advantage of familiarity of content to comprehend unfamiliar text whereas female students took more advantage of familiarity of content for familiar text.

2) For the importance level, Table 5 presents the mean scores for familiar and unfamiliar texts read by female students as M= 71 and M= 53. The difference is 18. Mean scores of familiar and unfamiliar texts for male students are M= 65 and M= 59. The difference is 6. The difference of 18 is much higher compared to the difference of 6. This comparison shows that female students performed better on familiar text, while male students performed better on unfamiliar texts. Thus, the effect of content familiarity is different across different genders.

Table 5. Descriptive Statistics for Familiarity and Gender

Familiarity	Gender		Idea unit Recall	Importance Level Recall	Cloze Test
Familiar	Female	Mean	76.11	70.72	73.38
		N	46	46	46
		Std. Deviation	9.40	10.73	11.73
	Male	Mean	67.41	64.60	64.16
		N	19	19	19
		Std. Deviation	11.09	11.17	11.18
	Total	Mean	73.57	68.93	70.68
		N	65	65	65
		Std. Deviation	10.61	11.13	12.24
unfamiliar	Female	Mean	55.44	52.98	55.39
		N	40	40	40
		Std. Deviation	8.03	11.98	10.56
	Male	Mean	66.91	58.96	60.49
		N	18	18	18
		Std. Deviation	8.37	11.22	12.25
	Total	Mean	59.00	54.84	56.98
		N	58	58	58
		Std. Deviation	9.681	11.98	11.26
Total	Female	Mean	66.50	62.47	65.01
		N	86	86	86
		Std. Deviation	13.56	14.35	14.33
	Male	Mean	67.17	61.86	62.38
		N	37	37	37
		Std. Deviation	9.73	11.40	11.70
	Total	Mean	66.70	62.28	64.22
		N	123	123	123
		Std. Deviation	12.49	13.49	13.60

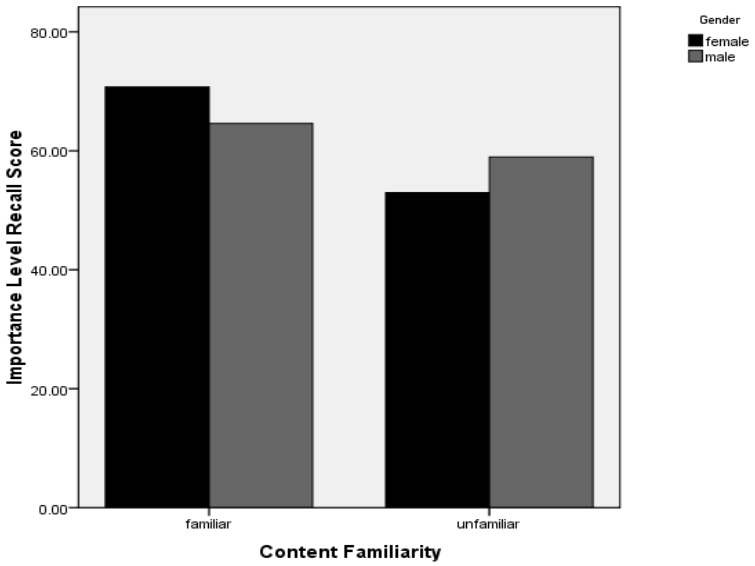


Figure 2. ***Mean comparisons of interaction effect of content familiarity and gender for importance level recall***

As illustrated in Figure 2, 12 points is the mark of an interaction effect. Therefore, there is a two-way interaction effect between content familiarity and gender on the importance level.

Table 6 .Results of Two-Way MANOVA Test

Source	Dependent Variables	SS	df	MS	*F*	Sig.
Familiarity	Idea Unit	2890.908	1	2890.908	34.73	.000
	Importance Level	3526.761	1	3526.761	27.65	.000
	Cloze	3027.44	1	3027.44	23.45	.000
Gender	Idea Unit	49.543	1	49.543	0.595	0442
	Importance Level	0.115	1	0.115	0.001	.976
	Cloze	109.552	1	109.552	0.849	.359
Familiarity * Gender	Idea Unit	2625.774	1	2625.774	31.54	.000
	Importance Level	945.026	1	945.026	7.41	.007
	Cloze	1320.787	1	1320.787	10.23	.002
Error	Idea Unit	9905.505	119	83.24		
	Importance Level	15176.823	119	127.536		
	Cloze	15358.188	119	129.06		
Total	Idea Unit	566350.743	123			
	Importance Level	499437.028	123			
	Cloze	529922.305	123			
Corrected Total	Idea Unit	19057.23	122			
	Importance Level	22211.537	122			
	Cloze	22580.45	122			

a. R Squared = .480 (Adjusted R Squared = .467)
b. R Squared = .317 (Adjusted R Squared = .299)
c. R Squared = .320 (Adjusted R Squared = .303)

As presented in Table 6, the two-way MANOVA indicates a significant interaction effect between content familiarity and gender F (1, 119) = 7.41, $p < 0.05$. With regard to the significant differences observed in the MANOVA result, it is possible to claim that, male students performed better than female students on the unfamiliar text while female students performed better on familiar text.

3) The data from this study were used to determine whether there is an interaction effect between content familiarity and gender for the cloze test scores. As Table 5 presents, mean scores for familiar and unfamiliar texts read by female students are M= 73 and M= 55. The difference is 18. On the other hand, mean scores for familiar and unfamiliar texts read by male students are M= 64 and M= 60. The difference is 4. The difference between 18 and 4 is 14. This point is a significant mark for the interaction effect. Thus, the effect of content familiarity on reading comprehension depends on the different genders.

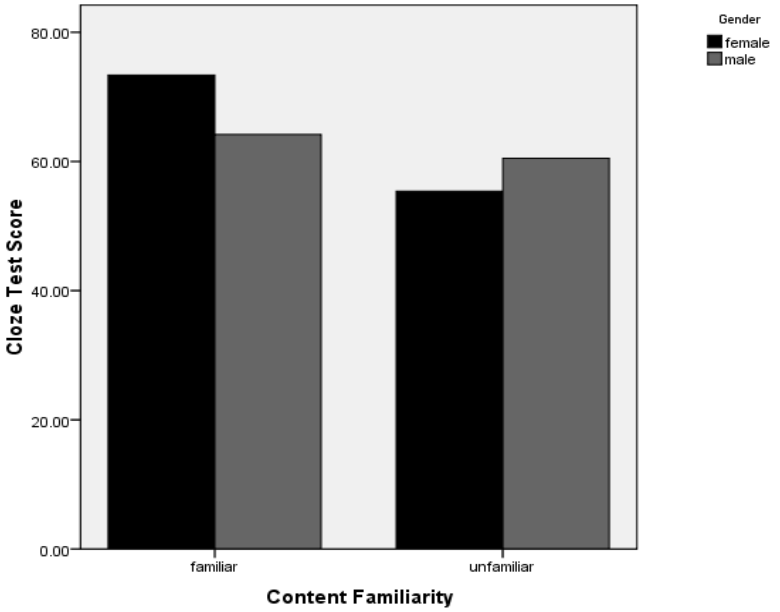


Figure 3. ***Mean comparisons of interaction effect of content familiarity and gender for cloze test***

Figure 3 is also a graphic representation of this interaction effect for cloze test scores. As can be seen, there is a two-way interaction between content familiarity and gender. In other words, females scored higher on familiar texts, but the performance of both genders were equal on unfamiliar texts.

As shown in Table 6 the results of the two-way MANOVA revealed a statistically significant effect for interaction effect between content familiarity and gender for the cloze test scores where F (1, 119) = 10.23, $p < 0.05$. This is a significant implication that female students outperformed male students on familiar texts.

All interaction effects tests were statistically significant for the recall of idea units, importance level, and cloze test for Iranian EFL students at the high school level. In other words, content familiarity interacts with gender to affect the Iranian EFL high school students' reading comprehension. Therefore, the researcher cannot conclude that the familiarity of content is a key variable; it depends on the students' gender.

DISCUSSIONS

This section discusses the results with reference to the theoretical framework that guided the study. The specific aim of the current study, stated in the form of a research question, was to find out if content familiarity and gender affected students' reading comprehension. The results of the current study indicate that content familiarity and gender are two critical variables influencing EFL students' reading comprehension. The findings support the idea that reading comprehension of EFL students is influenced by content familiarity based on gender differences. The interaction effect between content familiarity and gender revealed that female students performed better on familiar texts while male students outperformed female students on unfamiliar texts.

By reviewing literature (e.g., Brantmeier, 2003), the researcher anticipated that the effect of familiarity of content on reading comprehension of EFL high school students depended on the readers' gender. Since the texts' content selected by Brantmeier was gender-biased, the researcher used two gender-neutral texts in this study. Moreover, in this study the students' level is high school in contrast to Brantmeier's subjects who were university students.

The findings of the current study support the researcher's anticipation that gender differences

influenced the students' comprehension of text content. It indicates that there was a statistically significant interaction effect between content familiarity and gender on all dependent measures: idea units, importance level, and cloze test, respectively. In general, this study suggests that the overall performance of female students' reading comprehension of a familiar text was higher compared to the male students based on the three dependent measures. In contrast, the overall performance of male students' reading comprehension of an unfamiliar text was higher compared to female students based on the recall of idea units and importance level measures. On the cloze test measure, the mean score of female and male students in the unfamiliar text was equal. However, the performance of female students was better compared to the male students in reading the familiar text. It can be concluded that text content affects the performance of both female and male students in this study.

The result of the current study can be explained through the Gender Schema Theory, which suggests that one's sexual self-concept influences how one structures items in one's memory (Bem, 1981). This result also lends support to Bugle and Buunk's (1996) notion in which, the background knowledge of female and male students differ from each other, and each individual has his/her own interpretation of the subject matter of a passage.

These results are supported by the findings of Bügel and Buunk (1996, p. 24) who stated that, "there is a significant interaction effect between content familiarity and gender". They suggested that gender difference in text topic contributes to female and male students performing better in reading comprehension. Barntmeier (2003) also claimed that gender interacts with passage content on L2 reading comprehension at the intermediate level. According to Brantmeier (2003), differences in gender-related experiences are due to gender differences in self-reported topic familiarity. Baker and Wigfield (1999 cited in Wei, 2009) believe that readers who are interested in the reading text and are motivated are more likely to succeed than readers who are not interested or are poorly motivated. Logan and Johnston (2009) also claim that substantial gender differences are constantly found in reading attitude and motivation. Thus, it is assumed that females are more interested in familiar topics and this text is more memorable to them. However, this is an assumption and further research is necessary in order to determine this. This result supports Bugel and Buunk's (1996) notion in which, gender differences in FL text comprehension are influenced by the topic of the text.

On the other hand, the unexpected result of greater advantage of males over females on the unfamiliar text may be traced to the fact that, boys and girls naturally use different reading strategies (Thompson, 1987). Bacon (1992) found that males used more translation strategies. Zoubirshaw and Oxford (1995) suggested that there was a significant difference between males and females in using guessing and contextualization. Another explanation for the superiority of males in comprehending unfamiliar text is due to the females' FL anxiety. According to Wei (2009), females show higher anxiety compared to males. Moreover, one possible explanation for this difference can be related to the fact that males tend to read much more informative literature compared to females (Brantmeier, 2003; Bugle & Bunnk, 1996; O'Reilly & McNamara, 2007; Pae, 2004; Yongqi, 2002). Boys prefer reading the historical and non-fiction genre (Bauerlein & Stotsky, 2005). Hence, this interaction effect may be due to both males and females being exposed to different reading topics in daily life.

The findings disagree with Young and Oxford (1997), Barntmeier (2002), Pae (2004), Al-Shumaimeri (2005), and Yazdanpanah (2007) who claimed that gender did not affect text content. The results of Al-Shumaimeri's (2005) study showed that there was no interaction effect between gender and content familiarity in FL text comprehension. This difference in results may be due to the differences in participants and selection of assessment tests. Yazdanpanah's (2007) findings indicated that gender differences play a role in strategy used. She believed that gender differences are affected by what is tested more than the text topic in reading comprehension tests. The difference in results between this study and Yazdanpanah's (2007) study may be due to differences in test items, text topics, and subject selection.

The findings of the present study also reject the result of a recent study, which had been conducted by Sotoudenama and Asadian (2011). Their study indicated that the performance of male and female students on neutral text was the same. This difference can be traced to the fact that age of the subjects in the two studies was different. Furthermore, the difference may be due to utilizing a different measurement

task - i.e. cloze test.

CONCLUSION

This study aimed to find out whether Iranian EFL high school students are affected by content familiarity and gender when reading in English. The researcher used four groups of students, to read two reading texts (familiar and unfamiliar), to conduct this study. Their reading comprehension scores obtained from the recall protocol and cloze test were compared to each other using a two-way multivariate analysis of variance (MANOVA). The research question was answered based on the comparison of the data. Regarding the results of the current study, one interesting conclusion was that the content familiarity and gender had a two-way interaction effect. Female students performed better on familiar texts, while male students performed better on unfamiliar texts.

There are some critical theoretical and practical pedagogical implications from the results of this study. At the outset, the central aim of the present study is to contribute to a better understanding of the impact of content familiarity and gender on EFL students' reading comprehension as well as to contribute some new insights toward the schema theory. The findings of this research lead to important implications for EFL students, EFL reading teachers, and test makers. EFL reading teachers can adjust their teaching to assist EFL readers, to increase efficiency of their text comprehension by equipping them with the required background knowledge or schemata before they embark on reading a passage. As Anderson and Lynch (2000) advocated, equipping the students with prior knowledge, besides the systematic knowledge, provides them with the necessary information to facilitate comprehension of unfamiliar topics.

The findings indicated that the familiarity of readers to text content is affected by gender differences in FL reading comprehension. As the results showed, male students performed better than female students on unfamiliar texts, so EFL teachers and test makers should consider much more when they select texts for FL examinations and females should be encouraged to read more informative texts. EFL teachers cannot alter the gender or even the background knowledge of the students, however, they can offer in-class activities, which notify students of new information required to process in the text. A teacher cannot teach a student all the possible instances where gender-related variations may occur in a subject matter that would have an impact on comprehension; however, some of the suitable related schemata that are found lacking in the students can be taught effectively. In general, it can be stated that teachers who are at least equipped with the knowledge of gender variations in reading comprehension would be more likely to be successful in dealing with those differences when they appear in their reading comprehension classes. As Alderson (2000) and Poole (2005) stated, teachers cannot change the gender of the students, but they should be careful about using texts that could be biased towards either gender. They could also be much more reasonable in evaluating their students' reading ability. According to Wei (2009), teachers can provide successful learning situations if they are aware of students' differences. This is the only way to handle the class efficiently and achieve the teaching goals.

This study has also several limitations in spite of the meaningful implications for practical teaching and learning. The findings of the current study cannot be generalized to all content familiarity texts since texts used in this study are not representative of all possible texts. Another limitation is the sample size, which is not large enough. The present data therefore, may not be large enough for a statistically significant generalization. The third is the between-subjects design as the results may be different with the within-subjects design. Fourthly, in this study, the sample consisted of high school students in Iran. Therefore, the results may be different with subject samples from other countries. Fifthly, in the present study, the students were asked to recall and complete a cloze test immediately after reading the texts. The students were not asked to recall later. The results might be different with delayed reading comprehension tests.

Since learning and recalling information from reading materials have become a critical task in EFL schools, these are some suggestions for further research on the impact of content familiarity and gender on second language reading. First, the texts for the current study were two passages on *healthy eating* and *a God's statue in Cairo*, which were not related to the students' gender. The use of gender-oriented texts might have a diverse impact on second/foreign language reading at the high school level. Secondly,

comparison among different age groups of readers would improve the generalization of the study on the impact of the two independent variables on FL reading comprehension. This study could also be replicated with other students at other levels and other foreign languages.

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APPENDIX

Appendix A

Texts used in the experiment

Familiar text (causation)

Our bodies need a variety of foods to stay healthy. A poor diet can cause disease.

If our bodies are provided with food that contains the right substances then we are less likely to become ill. A lack of vitamins can cause diseases like rickets and scurvy. Fruit and vegetables are necessary to avoid these diseases. A lack of protein can also result in illness, but this can be avoided by eating eggs, fish and meat. If we are able to eat plenty of carbohydrates then the body will be provided with the energy it needs. Carbohydrates can be found in foods like potatoes, bread and rice. Lack of Fiber from foods like cereals, bread, vegetables and fruit are a cause of problems such as constipation. If we eat too much animal fat instead of vegetable fat then this may cause heart attacks, particularly when we get older. Fast food may be unhealthy because of high animal fats. We should eat them less.

Adopted from Sharp (2002)

Unfamiliar Text (Causation)

There is a huge statue in Cairo. This statue of the Sun God has the body of a lion and the face of a human being.

There are serious problems for the statue. Since there are no proper drains and water pipe in the neighborhood and the underground passages round it, too much water has been running into the stone statue for several years. As a result, tiny pieces of salt have been left on the stone and have damaged it. Air pollution from the increasing amount of traffic in Cairo is also causing the ancient statue to destroy. The air is also full of poisonous gases which cause the stone to destroy faster. The statue is being damaged because of extreme temperatures. Although the air is very cold at night, the strong sun causes the stone statue become very hot during the day. Other natural forces, such as extreme sandstorms, also attack the statue. Therefore, a combination of salt, air pollution, sun, sand and wind may destroy the huge statue.

Adapted from EnglishTestStore (ETS) and EnglishPDF

Appendix B

Cloze Test based on 5th word deletion

Familiar Text (Causation)

Our bodies need a variety of foods to stay healthy. 1.____ (A) poor diet can cause 2._____ (disease).

If our bodies are 3._____ (provided) with food that contains 4._____ (the) right substances then we 5._____ (are) less likely to become 6._____ (ill). A lack of vitamins 7._____ (can) cause diseases like rickets 8._____ (and) scurvy. Fruit and vegetables 9._____ (are) necessary to avoid these 10._____ (diseases). A lack of protein 11._____ (can) also result in illness; 12._____ (but) this can be avoided 13._____ (by) eating eggs, fish and 14._____ (meat). If we are able 15._____ (to) eat plenty of carbohydrates 16._____ (then) the body will be 17._____ (provided) with the energy it 18._____ (needs). Carbohydrates can be found 19._____ (in) foods like potatoes, bread 20._____ (and) rice. Lack of Fiber 21._____ (from) foods like cereals, bread, 22._____ (vegetables) and fruit are a 23._____ (cause) of problems such as 24._____ (constipation). If we eat too 25._____ (much) animal fat instead of 26._____ (vegetable) fat then this may 27._____ (cause) heart attacks, particularly when 28._____ (we) get older. Fast food may be unhealthy because of high animal fats. we should eat them less.

Unfamiliar Text (Causation)

There is a huge statue in Cairo. 1._____ (The) statue of the Sun 2._____ (God) has the body of 3._____ (a) lion and the face 4._____ (of) a human being.

There are serious problems 5._____ (for) the statue. Since there 6._____ (are) no proper drains and 7._____ (water) pipe in the neighborhood 8._____ (and) the underground passages round 9._____ (it), too much water has 10._____ (been) running into the stone 11._____ (statue) for several years. As 12._____ (a) result, tiny pieces of 13._____ (salt) have been left on 14._____ (the) stone and have damaged 15._____ (it). Air pollution from the 16._____ (increasing) amount of traffic in 17._____ (Cairo) is also causing the 18._____ (ancient) statue to destroy. The 19._____ (air) is also full of 20._____ (poisonous) gases which cause the 21._____ (stone) to destroy faster. The statue 22._____ (is) being damaged because of 23._____ (extreme) temperatures. Although the 24._____ (air) is very cold at 25._____ (night), the strong sun causes 26._____ (the) stone statue become very 27._____ (hot) during the day. Other 28._____ (natural) forces, such as extreme 29._____ (sandstorms), also attack the statue. 30._____ (Therefore), a combination of salt, air pollution, sun, sand and wind may destroy the huge statue.

Appendix C

Idea units' tables

Familiar Text (Causation)

Level of importance	Pausal / Idea Unit	Recall Total
3	Our bodies need a variety of foods to stay healthy.	
3	A poor diet can cause disease.	
2	If our bodies are provided with food that contains the right substance	
2	then we are less likely to become ill.	
3	A lack of vitamins can cause diseases like rickets and scurvy.	
2	Fruit and vegetables are necessary to avoid these diseases.	
3	A lack of protein can also result in illness,	
2	but this can be avoided by eating eggs,	
1	Fish	
1	and meat.	
3	If we are able to eat plenty of carbohydrates	
2	then the body will be provided with the energy it needs.	
2	Carbohydrates can be found in foods like potatoes,	

1	Bread
1	and rice.
3	Lack of fiber from foods like cereals,
1	bread,
1	Vegetables
1	and fruit
2	are a cause of problems such as constipation.
3	If we eat too much animal fat instead of vegetable fat
2	then this may cause heart attacks,
1	Particularly when we get older.
1	Fast food may be unhealthy
1	because of high animal fats.
1	we should eat them less.

Adapted from Sharp (2002)

Unfamiliar Text (Causation)

Level of importance	Pausal/Idea Unit	Recall Total
3	There is a huge statue in Cairo.	
2	This statue of the Sun God has the body of a lion	
2	and the face of a human being.	
3	There are serious problems for the statue.	
2	Since there are no proper drains and water pipe in the neighborhood	
2	and the underground passages round it,	
3	too much water has been running into the stone statue for several years.	
1	As a result,	
2	tiny pieces of salt have been left on the stone	
2	and have damaged it.	
3	Air pollution from the increasing amount of traffic in Cairo	
2	is also causing the ancient statue to destroy.	
3	The air is also full of poisonous gases	
2	which causes the stone to destroy faster.	
3	The statue is being damaged because of extreme temperatures.	
2	Although the air is very cold at night,	
2	the strong sun causes the stone statue become very hot during the day.	
3	Other natural forces,	
2	such as extreme sandstorms,	
2	also attack the statue.	
1	Therefore,	
1	a combination of salt,	
1	air pollution,	
1	sun,	
1	Sand	
2	and wind may destroy the huge statue.	

Appendix E

Keys to Idea Units Rating

Key to Importance Level Rating:

Main generalization=3 Supporting generalization=2 Supporting detail=1

*repeated idea units not counted twice

Total number of idea units =
Total idea units in the recalled passage =
Percentage recalled =
Sum of importance level of each recalled units =
Sum of importance level of all idea units in the recalled passage =
Percentage importance recalled =

Adopted from Sharp (2002)

Appendix F

Prior Knowledge Awareness Test

Assigned point	Questions for prior knowledge awareness
4 3 2 1	1. How much do you know about the topic? a) a lot b) some c) a little bit d) nothing
4 3 2 1	2. How many ideas can you write on the topic? a) more than 4 ideas b) 3-4 ideas c) 1-2 ideas d) 0 ideas
4 3 2 1	3. How long an essay can you write on the topic? a) a long essay b) a short essay c) a few essays d) nothing

Adapted from Richgels (1987)

Appendix G

Morgan Randomization Table

Population Size	Sample Size	Population Size	Sample Size	Population Size	Sample Size
10	**10**	**220**	**140**	**1200**	**291**
15	**14**	**230**	**144**	**1300**	**297**
20	**19**	**240**	**148**	**1400**	**302**
25	**24**	**250**	**152**	**1500**	**306**
30	**28**	**260**	**155**	**1600**	**310**
35	**32**	**270**	**159**	**1700**	**313**
40	**36**	**280**	**162**	**1800**	**317**
45	**40**	**290**	**165**	**1900**	**320**
50	**44**	**300**	**169**	**2000**	**322**
55	**48**	**320**	**175**	**2200**	**327**
60	**52**	**340**	**181**	**2400**	**331**
65	**56**	**360**	**186**	**2600**	**335**
70	**59**	**380**	**191**	**2800**	**338**
75	**63**	**400**	**196**	**3000**	**341**
80	**66**	**420**	**201**	**3500**	**346**
85	**70**	**440**	**205**	**4000**	**351**
90	**73**	**460**	**210**	**4500**	**354**
95	**76**	**480**	**214**	**5000**	**357**
100	**80**	**500**	**217**	**6000**	**361**
110	**86**	**550**	**226**	**7000**	**364**
120	**92**	**600**	**234**	**8000**	**367**
130	**97**	**650**	**242**	**9000**	**368**
140	**103**	**700**	**248**	**10000**	**370**
150	**108**	**750**	**254**	**15000**	**375**
160	**113**	**800**	**260**	**20000**	**377**
170	**118**	**850**	**265**	**30000**	**379**
180	**123**	**900**	**269**	**40000**	**380**
190	**127**	**950**	**274**	**50000**	**381**
200	**132**	**1000**	**278**	**75000**	**382**
210	**136**	**1100**	**285**	**100000**	**384**