

**IMPACT OF PRIOR KNOWLEDGE, RHETORICAL PATTERNS,
AND GENDER DIFFERENCES ON READING COMPREHENSION
OF IRANIAN EFL STUDENTS**

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**FACULTY OF EDUCATION
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AND GENDER DIFFERENCES ON READING COMPREHENSION
OF IRANIAN EFL STUDENTS**

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Abstract

According to the schema theory, reading comprehension involves interaction between a text and a reader. This interaction involves the reader's prior knowledge of the subject on the one hand, and the rhetorical structure of the text on the other hand. Therefore, the current study examines the impact of three independent variables (prior knowledge, rhetorical pattern, and gender) on students' reading comprehension. In Iran, many high school students have difficulty in comprehending reading texts. Their L2 reading comprehension scores indicate that they are not performing well. Many studies have been done to investigate the influence of some factors on reading comprehension. However, the influences of prior knowledge, rhetorical pattern, and gender differences on reading comprehension simultaneously have been neglected. Guided by this view, this study is an attempt to examine the simultaneous impact of prior knowledge, rhetorical pattern, and gender on reading comprehension through detailed analysis of 232 high school major students. Statistical analysis including three-way ANOVA was applied on the collected data.

The sample consists of 72 male and 160 female students from high schools in Savojbolagh County in Iran. The participants are from the same level of proficiency. Using a between-subjects design, participants were divided into eight groups. For each of four groups of readers (females and males), two texts had familiar content with description or causation pattern, and two other texts had unfamiliar content with description or causation pattern. Each group was asked to recall the text and finish a cloze test after reading each of the four passages. Recall protocols (recall of idea units and importance level) and cloze test were used as the measures of reading comprehension.

Both recall protocol and cloze test analysis revealed that participants displayed better recall of the familiar text than the unfamiliar text, which suggests that prior knowledge has a facilitating effect on reading comprehension. Moreover, like many previous researches, this study found that the rhetorical pattern had a significant effect on recall. The comparison of means and standard deviations between groups at each level indicated that the students benefited more by causative text than by descriptive text. The results showed that prior knowledge and rhetorical pattern were two strong predictors of performance. Gender did not have a significant effect on subjects' comprehension except for

the cloze test. In the light of two-way interaction effect between variables, there was also a statistically significant interaction effect between prior knowledge and gender. More interestingly, the results of the three-way ANOVA indicated that there was not any statistically significant interaction effect between prior knowledge, rhetorical pattern, and gender. In other words, the findings showed that a two-way interaction between prior knowledge and rhetorical pattern was not moderated by gender. Overall, this study suggests that prior knowledge and rhetorical pattern are two critical variables which may improve students' reading comprehension. These results have practical implications in the EFL and ESL fields. Moreover, this research makes recommendations for further research on EFL reading.

Abstrak

Kesan Pengetahuan Sedia Ada, Corak Retorik, dan Perbezaan Jantina Ke Atas Pemahaman Membaca Pelajar EFL Iran

Mengikut teori skema, pemahaman membaca melibatkan interaksi antara teks dan pembaca. Interaksi ini merangkumi pengetahuan sedia ada pembaca tentang subjek dan kerangka retorik teks yang dibaca di sebaliknya. Oleh itu, kajian ini menyelidiki kesan tiga pemboleh ubah bebas (pengetahuan sedia ada, corak retorik, dan jantina) ke atas pemahaman membaca pelajar. Di Iran, ramai pelajar sekolah tinggi mengalami kesukaran dalam memahami teks bacaan. Skor pemahaman membaca mereka dalam bahasa kedua (L2) menunjukkan mereka tidak mempunyai pencapaian yang baik. Banyak kajian telah dijalankan untuk menyelidik pengaruh beberapa faktor ke atas pemahaman membaca. Walau bagaimanapun, kajian berkenaan pengaruh interaksi pengetahuan sedia ada, corak retorik (*rhetorical pattern*), dan perbezaan jantina ke atas pemahaman membaca jarang dijalankan. Memandangkan keadaan ini, kajian ini adalah usaha untuk meneliti impak interaksi pengetahuan sedia ada, corak retorik, dan jantina ke atas pemahaman membaca melalui analisis terperinci melibatkan 232 pelajar sekolah tinggi. Analisis statistik merangkumi ANOVA tiga hala diaplikasi ke atas data yang terkumpul.

Sampel kajian adalah 72 pelajar lelaki dan 160 pelajar perempuan dari sekolah tinggi di daerah Savojbolagh di Iran. Peserta kajian mempunyai tahap pencapaian yang sama. Menggunakan reka bentuk antara-subjek, peserta kajian dibahagikan kepada lapan kumpulan. Untuk setiap kumpulan pembaca (lelaki dan perempuan), dua teks yang mempunyai kandungan yang lazim yang berunsur deskripsi atau *causation*, dan dua teks yang mempunyai kandungan asing dengan unsur deskripsi dan *causation* diberi. Setiap kumpulan diminta mengingat kembali teks tersebut dan diminta melengkapkan ujian cloze selepas membaca setiap satu empat teks yang diberi. *Recall protocols* (*ingatan semula unit idea dan tahap kepentingan*) dan ujian cloze digunakan untuk mengukur tahap pemahaman membaca peserta.

Analisis *recall protocol* dan ujian cloze mendapati bahawa peserta kajian menunjukkan ingatan teks lazim yang lebih tinggi berbanding dengan ingatan teks asing, dan ini bererti pengetahuan sedia ada mempermudah pemahaman membaca.

Dalam pada itu, seperti kajian lain, kajian ini mendapati bahawa corak retorik mempunyai hubungan signifikan ke atas penguasaan semula. Perbandingan min dan sisihan piawai antara kumpulan di setiap tahap menunjukkan bahawa pelajar mendapat lebih manfaat dari teks *causative* berbanding dengan teks deskriptif. Dapatan kajian menunjukkan bahawa pengetahuan sedia ada dan corak retorik adalah peramal kuat pencapaian pelajar. Jantina tidak mempengaruhi pemahaman peserta secara signifikan melainkan bagi ujian cloze. Memandangkan kesan interaksi dua hala antara pemboleh ubah, terdapat kesan interaksi signifikan antara pengetahuan sedia ada dan jantina. Lebih menarik lagi, keputusan ANOVA tiga hala menunjukkan tiada kesan interaksi yang signifikan dari segi statistik antara pengetahuan sedia ada, corak retorik dan jantina. Dalam erti kata lain, dapatan kajian menunjukkan interaksi dua hala antara pengetahuan sedia ada dan corak retorik tidak dimoderasi oleh jantina. Secara keseluruhan, kajian ini mengandaikan bahawa pengetahuan sedia ada dan corak retorik adalah dua pemboleh ubah yang kritikal yang dapat memperbaiki pemahaman membaca pelajar. Dapatan ini mempunyai implikasi praktikal dalam bidang EFL (Bahasa Inggeris Sebagai Bahasa Asing) dan ESL (Bahasa Inggeris Sebagai Bahasa Kedua). Kajian ini juga memberi beberapa cadangan berkenaan dengan kajian lanjutan ke atas pembacaan EFL.

TABLE OF CONTENTS

Acknowledgements.....	iii
Abstract.....	iv
Abstrak.....	vi
Table of Contents.....	viii
List of Tables.....	xi
List of Figures.....	xii
List of Appendixes.....	xiv

CHAPTER I

INTRODUCTION.....	1
1.1 Background of the Study.....	1
1.2 EFL Background in Iran.....	6
1.3 Statement of the Problem.....	7
1.4 Research Questions and Hypotheses.....	9
1.5 Purpose of the Study.....	11
1.6 Significance of the Study.....	12
1.7 Theoretical and Conceptual Framework.....	13
1.8 Operational Definitions.....	18

CHAPTER II

REVIEW OF The RELATED LITERATURE.....	21
2.1 Introduction.....	21
2.2 Reading Comprehension.....	21
2.3 Bottom-up Process vs. Top-down Process.....	25
2.4 Schema-Theoretic View of Reading Comprehension.....	28

2.5	Factors Affecting Reading Comprehension.....	31
2.5.1	Prior Knowledge.....	32
2.5.2	Rhetorical Patterns.....	44
2.5.3	Gender Differences.....	55
 CHAPTER III		
METHODOLOGY.....		64
3.1	Introduction.....	64
3.2	Context of the Study.....	64
3.3	Participants of the Study.....	65
3.4	Design of the Study.....	67
3.5	Materials and Instrumentation.....	69
3.5.1	Immediate Recall Protocol.....	72
3.5.2	Cloze Test.....	74
3.6	Pilot Study.....	77
3.7	Procedures and Data Collection.....	78
3.8	Data Analysis.....	80
3.9	Scoring.....	81
3.10	Statistical Analysis.....	84
 CHAPTER IV		
FINDINGS.....		86
4.1	Introduction.....	86
4.2	Assumptions of Factorial ANOVA.....	90
4.3	Findings.....	95
	Research Question 1.....	95
	Research Question2.....	105

Research Question 3.....	109
Research Question 4.....	114
Research Question 5.....	119
Research Question 6.....	124
Research Question 7.....	128
4.4 Summary of Findings.....	133
CHAPTER V	
DISCUSSIONS, CONCLUSIONS, IMPLICATIONS, AND	
RECOMMENDATIONS.....	135
5.1 Introduction.....	135
5.2 Discussion of the Findings.....	137
Hypothesis I.....	137
Hypothesis II.....	138
Hypothesis III.....	142
Hypothesis IV.....	145
Hypothesis V.....	147
Hypothesis VI.....	150
Hypothesis VII.....	151
5.3 Conclusion.....	152
5.4 Pedagogical Implications of the Study.....	154
5.5 Limitations of the Study.....	158
5.6 Suggestions for Further Research.....	159
REFERENCES.....	162

List of Tables

Table 3.1: Demographic distribution of participants in independent variables.....	67
Table 3.2: 2 x 2 x 2 factorial design matrixes.....	68
Table 3.3: A summary of characteristics of the four reading texts.....	72
Table 3.4: Inter-rater reliability for the two scorers for idea units recall.....	83
Table 3.5: Inter-rater reliability for the two scorers for importance level recall.....	83
Table 4.1: Tests of normality distribution for dependent variables based on Kolmogorov-Smirnov.....	90
Table 4.2: Test of normality distribution for dependent variables based on the Values of Skewness and Kurtosis.....	91
Table 4.3: Leven’s test of equality of error variances.....	95
Table 4.4: Descriptive statistics of idea units recalled for each group.....	97
Table 4.5: Results of three-way ANOVA test for Idea Units Recall scores.....	99
Table 4.6: Descriptive statistics of importance level recalled for each group.....	100
Table4.7: Results of three-way ANOVA test for importance level recall scores.....	101
Table 4.8: Descriptive statistics of cloze test for each group.....	102
Table 4.9: Results of three-way ANOVA test for cloze test scores.....	103
Table 4.10: Overall summary of the findings.....	134

List of Figures

Figure 1.1: Conceptual framework of the study.....	18
Figure 4.1: Normality distribution for idea units recall.....	92
Figure 4.2: Normality distribution for importance level recall.....	93
Figure 4.3: Normality distribution for cloze test recall.....	94
Figure 4.4: Mean comparisons of familiar and unfamiliar texts for idea units recall.....	98
Figure 4.5: Mean comparisons of familiar and unfamiliar texts for importance level recall.....	101
Figure 4.6: Mean comparisons of familiar and unfamiliar texts for cloze test	103
Figure 4.7: Mean comparisons of descriptive and causative text types for idea units recall.....	106
Figure 4.8: Mean comparisons of descriptive and causative text types for importance level recall.....	107
Figure 4.9: Mean comparisons of descriptive and causative text types for cloze test.....	108
Figure 4.10: Mean comparisons of female and male students for idea units recall.....	110
Figure 4.11: Mean comparisons of female and male students for importance level.....	111
Figure 4.12: Mean comparisons of female and male students for cloze test.....	112
Figure 4.13: Mean comparisons of interaction effect of prior knowledge and rhetorical pattern for idea units recall.....	115
Figure 4.14: Mean comparisons of interaction effect of prior knowledge and rhetorical pattern for importance level recall.....	116

Figure 4.15: Mean comparisons of interaction effect of prior knowledge and rhetorical pattern for cloze test.....117

Figure 4.16: Mean comparisons of interaction effect of prior knowledge and gender for idea units recall.....120

Figure 4.17: Mean comparisons of interaction effect of prior knowledge and gender for importance level recall.....121

Figure 4.18: Mean comparisons of interaction effect of prior knowledge and gender for cloze test.....123

Figure 4.19: Mean comparisons of interaction effect of rhetorical pattern and gender for idea units recall.....125

Figure 4.20: Mean comparisons of interaction effect of rhetorical pattern and gender for importance level recall.....126

Figure 4.21: Mean comparisons of interaction effect of rhetorical pattern and gender for cloze test.....127

Figure 4.22: Mean comparisons of interaction effect of prior knowledge, rhetorical pattern, and gender for idea units recall.....129

Figure 4.23: Mean comparisons of interaction effect of prior knowledge, rhetorical pattern, and gender for importance level.....130

Figure 4.24: Mean comparisons of interaction effect of prior knowledge, rhetorical pattern, and gender for cloze test.....132

List of Appendixes

Appendix A: Texts Used in the Experiment.....	195
Appendix B: Cloze Test Based on 5 th Word Deletion.....	197
Appendix C: Idea Unit's Tables.....	199
Appendix D: Farsi-Equivalent Tables of Idea Units.....	203
Appendix E: Keys to Idea Units Rating.....	207
Appendix F: Prior Knowledge Awareness Test.....	208
Appendix G: Farsi-Equivalent Prior Knowledge Awareness test.....	209

CHAPTER I

INTRODUCTION

1.1. Background of the Study

Since English is one of the world's languages of wider communication, and most reading materials are published in this language, the priority for millions of learners around the world is how to get new information and read in this language. According to Rivers (1981), "most of the students who learn the language will have very little chance to converse with a native speaker and English program on TV or radio, but they will have access to the literature and periodicals, or scientific and technical journals written in English". Eskey (2005, p. 563) also asserts that, "many EFL students seldom need to speak foreign language in their daily lives but they need to read it so that they can access the wealth of information". Thus, the ability to read plays a significant role in academic learning, as well as for future social and economic opportunities and it is also a critically important skill. Bernhardt (1991) claims that reading ability is recognized to be the most constant and durable of the second language modalities. National Institute of Child Health and Human Development (2000) reported that one of the most important achievements for all students is certainly success in literacy, especially reading. Woolacott (2002) also states that, "reading is fundamental not only to academic learning in all subject areas but also to professional success and, indeed to life-long learning". As Carrell (2006) demonstrates, second or foreign language reading is highly important either for learners who need English for Academic Purposes in an EFL context or at an

advanced proficiency level. Zhang (2008) believes that reading skill, especially in English as EFL or ESL, is one of the most important skills for many people.

Levine and Reves (1998) say that reading is a complex cognitive activity requiring a set of processes and strategies, and according to Paris, Lipson, and Wixson (1983), readers who are aware of appropriate or inappropriate strategies for specific reading situations are able to monitor their reading. Tovani (2000) defines reading as, “the process of thinking and constructing meaning from print”. Nassaji (2003, p. 261) notes that reading is a multivariate process involving a combination of linguistic and non-linguistic skills ranging from very low-level abilities, involved in decoding print to a high-level skill of syntax and semantics and still higher-order knowledge of text representation and the interaction of ideas with the readers’ global knowledge. Rumelhart (1977) states that reading is a complex activity involve the reader, the text, and the interaction between the reader and text. In other words, reading is a dynamic activity which involves interaction between the reader’s knowledge and text and it involves comprehension. Therefore, reader’s activity is not considered as reading unless they comprehend. Generally, reading skill involves a number of linguistic, cognitive and perceptual processes which are related to both text and reader variables and readers must use mental activities (reading skills) in order to construct meaning from text. The process of extracting meaning from the text gives us invaluable information about readers' cognitive processes during reading. Among mental activities that readers use, appropriate reading strategies will facilitate EFL learners’ reading comprehension. However, according to Tarchi (2010), one of the most important aspects in learning which plays a role in the process of acquisition, sharing, and construction of knowledge is reading comprehension.

Text comprehension is also a constructive process which involves building coherent mental representations of information from print (Anderson et al., 2006). So, the text places greater demands on reader when it becomes more challenging.

Spiro and Taylor (1980) claim that the ability to read and comprehend expository texts help students to learn more from reading, both in and out of school. They also believe that according to experts, reading expository texts are generally more difficult than narrative texts for students. According to Snow (2002), the children's lack of knowledge to process content of expository passage results in their difficulty regarding the comprehension of expository passage. In expository texts, subjects such as specific scientific and historical facts, relations between facts, or both are presented by the writer to provide the reader with information about concepts and events. Although the writer may attempt to describe familiar information in more concrete ways in some expository texts, it seems that students are still unfamiliar with much of the expository text's subject matter. However, according to Beck, McKeown, and Gromoll (1989), these are rather exceptional cases. Thus, since many students who enter higher education are not prepared for the reading demands placed upon them, it seems that there is a need to learn more about the factors which may influence EFL readers' reading comprehension.

One of the factors which influence what the students read is prior knowledge. Liu et al. (2009) distinguished two primary sources for background knowledge that may advantage certain test takers on reading texts: knowledge accumulated from systematic training in a major field of study and knowledge gained from being immersed in a specific culture. Anderson (1984) demonstrated that prior knowledge was organized knowledge of

the world which provides opportunity for reader to comprehend, learn, and remember ideas in stories and texts. In attempting to examine the impact of prior knowledge, some investigations have shown that reader's prior knowledge influences the type and amount of information recalled (Adams, 1982; Carrell, 1984a, 1984b; Huang, 2009; Hudson, 1982; Johnson, 1981, 1982; Roller & Matambo, 1992; Steffenson & Joag-Dev, 1984). The variable of prior knowledge in this study has two levels (familiar/ unfamiliar). If the readers have prior knowledge of subject-matter, the text is familiar for them. If the readers have no prior knowledge of the subject-matter, the text is unfamiliar for them. The determination of whether the readers had prior knowledge was made based on the Prior Knowledge Awareness Test (adapted from Richgels' 1987). This is discussed at length in Chapter 3 (Methodology).

Another factor influencing reading comprehension is rhetorical pattern. Sharp (2002) defined rhetorical pattern as the logical organization of the passage which the writer has applied to represent the intended meaning. Meyer (1975, 1979) distinguished five different types of expository organization (rhetorical patterns). She called them collection, description, causation, problem/solution, and comparison. Meyer's research has indicated that there is good support for the belief that these are significantly distinct types of prose. Many researchers (Armbruster, Anderson, & Ostertag, 1987; Carrell, 1984b, 1985, 1992; Foo, 1989; McGee, 1982; Salmani Nodoushan, 2010; Sharp, 2002; Tang, 1989; Tian, 1990; Vahidi, 2006; Zhang, 2008) have investigated the impact of rhetorical patterns on reading comprehension. Their results have indicated that the rhetorical pattern has an influence on reading comprehension in English as a second/foreign language. More importantly, some of these researchers such as Meyer and Freedle (1984), Carrell (1984a),

and Zhang (2008) believe that description type represents the loosest organizational type and students have more difficulty with this type of organization. They believe that the more highly organized types (causation, comparison, and problem/ solution) would be more influential on recall than a less overtly organized text such as, collection of description. According to the schema theory, since three formal schemata (comparison/contrast, problem/solution, and cause/effect) offer extra linkage, the recall of information is relayed by them better than the description schema.

Another variable which the current study intends to examine is the influence of gender on EFL students' reading comprehension. By examining gender differences in reading comprehension, researchers (Hyde & Linn, 1988; Myers, 2002; O'Reilly & McNamara, 2007; Sharp, 2002; Young & Oxford, 1997) reported different conclusions. The results in Sharp's (2002) study indicated that the girls' score was higher than boys in recalling. O'Reilly and McNamara (2007) showed that male students outscored female students on measures of text comprehension and science knowledge. Some researchers (Brantmeier, 2001, 2003; Bugel & Buunk, 1996) also examined the gender differences in reading strategy used. They reported that females used reading strategy more than males to comprehend the text.

On the whole, since according to Carrell (1984a, p. 441), "reading comprehension is an interaction between a reader's prior knowledge on the one hand, and the rhetorical organization of the text on the other hand", and the studies mentioned above have not explored the effects of prior knowledge, rhetorical patterns and gender differences in relation to reading comprehension simultaneously, it seems that there is a need to learn

more about these variables which may influence reading comprehension. Moreover, since the primary concern for any reading teacher is finding effective ways to help students develop their reading comprehension, a better understanding of the variables that influence foreign/second language reading comprehension can be extremely useful for efficient learning and teaching in EFL/ESL.

1.2. EFL Background in Iran

In Iran, EFL learners have little or no contact with English native speakers. This is attributed to a variety of social and political reasons in the past three decades. Therefore, in Iranian schools, one can seldom find foreign English-speaking nationals teaching English as a second language (ESL). Additionally, with the rapid growth of Internet and satellite technology in recent years, Iranian EFL learners have little opportunity to use them (Rahimi, Riazi, & Saif, 2004). So, most Iranian students depend on English reading textbooks. Aliakbari (2004, p. 3) stated that although at times textbooks whereas in the Iranian context textbooks are expected to be covered in their entirety, most EFL programs treat them as a resource from which the most relevant items are selected for use. Richards (1993, cited in Aliakbari, 2004) also emphasizes the resource-based view of the use of textbooks and presents his idea as, “I see textbooks as resource books rather than course books”. Thus, according to Abdollahi-Guilani, Mohd yasin, and Hua (2011), textbooks are the foundation of school instruction and the primary source of information for teachers in helping their students learn a language. As Nooreen and Arshad (2010) also asserted, there is no doubt that textbooks serve as one of the vital instruments for shaping knowledge, attitudes, and principles of the students. According to Abdollahi-Guilani et al (2011, p. 25), “Iranian text books are mainly void of cultural points”. “ELT text books in use in

Iranian high schools have not also been successful in familiarizing students with cultural understanding of other countries” (Khajavi & Abbasian, 2011, p. 184). “In addition, in high school textbooks no national identity and history of Iran has been taken into account” (Khajavi & Abbasian, 2011, p. 184). So, since the culturally different passages are not representative samples of texts used in classroom situations, the present study explored the impact of two culturally neutral texts on students’ reading comprehension. However, high school textbooks in Iran are designed based on the grammar-translation approach, and language teaching during high school is also mostly grammar-translation based with little or no attention paid to language use. A large class size of 35 to 40 students also contributes to the overall inadequacy of English language instruction in Iran.

1.3. Statement of the Problem

Reading for comprehension plays an important role in foreign language learning, and it is an important skill in academic success for many students. That is why Hassany (1995) believes that the main objective of teaching English in Iran is reading comprehension. However, many Iranian high school students have difficulty in comprehending reading texts. Their L2 reading comprehension scores indicate that they are not performing well. The education that these students receive does not enable them to attain full competence in using the English language (Dahmardeh, 2009). When these students enter university, they are not prepared for the reading demands of expository texts. As Payvandi (2003) explains, “experts at different levels maintain that teaching or learning foreign languages in Iran has not been successful”.

In Iran, many studies have been done to investigate the influences of some factors on reading comprehension. But, most of these studies have focused on the role of gender; reading ability, text familiarity, task type; linguistic simplification, content schemata; relationship between text types and gender; location of topic sentence and the interaction effect between reading comprehension test and gender in a formal testing context in EFL reading comprehension at the university level (Farhady & Sajadi, 1999; Keshavarz & Ashtarian, 2008; Keshavarz, Atai, & Ahmadi, 2007; Naderi, Abdullah, Hamid, Sharir, & Kumar, 2009; Salmani-Nodoushan, 2003; Yazdanpanah, 2007). However, the influences of prior knowledge, rhetorical patterns, and gender differences on reading comprehension simultaneously at high school level have been neglected. The previous studies have tended to focus on each factor separately. Therefore, this study attempts to fill this gap and add several important insights to promote the earlier researches.

According to the schema theory, reading comprehension involves interaction between a text and a reader (Adams & Collins, 1979; Carrell, 1983a, 1983b, 1983c, 1984; Carrell & Wallace, 1983; Carrell & Eisterhold, 1983; Meyer, 1975; Meyer & Freedle, 1984; Rumelhart, 1977). “This interaction involves the reader’s prior knowledge of the subject and the rhetorical structure of the text” (Carrell, 1984a). Carrell (1984a, 1987) also states that, “if EFL readers utilize rhetorical structure of text to organize their recall protocols, more information is retrieved”; she also notes that readers have more difficulty with unfamiliar context than unfamiliar form. Research into influence of prior knowledge has also shown that children who possess relevant prior knowledge tend to read the text faster, remember more information and make more inferences (Lipson, 1983; Steffenson, Joag-Dev, & Alderson, 1979). Peregoy and Boyle (2000) contend that prior knowledge is

a critical variable for both native and non-native English readers. Daniels and Zemelman (2004) also state that prior knowledge is a determining factor when it comes to comprehension. A question raised at this point is whether these two factors influence reading comprehension of Iranian EFL students and which factor has more influence on the information that the reader recalls.

The other key variable that Brantmeier (2004b) claims influences reading comprehension is gender. She emphasizes the need to carry out more research on it. According to Alderson (2000), test makers need to consider gender differences when designing reading comprehension tests in order to not favor one gender over another, in a L2 reading context. Thus, by examining the role of prior knowledge, rhetorical patterns and gender differences in reading comprehension, this study attempts to provide more insight into the interaction effect between these different factors, which adds to the knowledge of L2 reading research, helps to better understand the role of these factors and improves reading teaching in a non-traditional way.

1.4. Research Questions and Hypotheses

The current study specifically, attempts to address the following research questions:

1. Does prior knowledge (familiar/unfamiliar) influence Iranian EFL students' reading comprehension? (Objective 2)
2. Do rhetorical patterns (description-causation) influence Iranian EFL students' reading comprehension? (Objective 3)

3. Does gender influence Iranian EFL students' reading comprehension?
(Objective 4)
4. Is there a two-way interaction effect between prior knowledge and rhetorical patterns on Iranian EFL students' reading comprehension? (Objective 5)
5. Is there a two-way interaction effect between prior knowledge and gender on Iranian EFL students' reading comprehension? (Objective 6)
6. Is there a two-way interaction effect between rhetorical patterns and gender on Iranian EFL students' reading comprehension? (Objective 7)
7. Is there a three-way interaction effect among prior knowledge, rhetorical patterns and gender on Iranian EFL students' reading comprehension?
(Objective 8)

The following hypotheses will be tested in this study:

Hypothesis I. Prior knowledge (familiar/unfamiliar) influences Iranian EFL students' reading comprehension.

Hypothesis II. Rhetorical patterns (description-causation) influence Iranian EFL students' reading comprehension.

Hypothesis III. Gender influences Iranian EFL students' reading comprehension.

Hypothesis IV. There is a two-way interaction effect between prior knowledge and rhetorical patterns on Iranian EFL students' reading comprehension.

Hypothesis V. There is a two-way interaction effect between prior knowledge and gender on Iranian EFL students' reading comprehension.

Hypothesis VI. There is no two-way interaction effect between rhetorical patterns and gender on Iranian EFL students' reading comprehension.

Hypothesis VII. There is no three-way interaction effect among prior knowledge, rhetorical patterns and gender on Iranian EFL students' reading comprehension.

1.5. Purpose of the Study

The aim of the present study is to determine whether prior knowledge, rhetorical patterns, and gender influence EFL reading comprehension levels of high school students in Iran. A quantitative method is chosen because the purpose of the study is to examine the interaction effect between prior knowledge and rhetorical patterns and to consider the potential influence of these variables on students' reading comprehension. The gender variable is also statistically analyzed to determine whether gender influences the dependent variable of reading comprehension.

This study will specifically pursue the following objectives:

1. To gain a better understanding of reading comprehension
2. To examine prior knowledge's influence on EFL learners' reading comprehension
3. To examine the influence of rhetorical patterns on EFL learners' reading comprehension
4. To examine gender differences on EFL learners' reading comprehension
5. To examine two-way interaction effect between prior knowledge and rhetorical patterns on EFL learners' reading comprehension.
6. To examine two-way interaction effect between prior knowledge and gender on EFL learners' reading comprehension.

7. To examine two-way interaction effect between rhetorical patterns and gender on EFL learners' reading comprehension.
8. To examine three-way interaction effect among prior knowledge, rhetorical pattern, and gender on EFL learners' reading comprehension.

1.6. Significance of the Study

The knowledge about the role of prior knowledge, rhetorical patterns and gender, in relation to reading comprehension which students employ in L2, will enable EFL teachers to understand some of the underlying causes of differences in their students' ability to comprehend what they read.

It is hoped that a better understanding of these variables can contribute to enhance the students' and teachers' knowledge in the reading comprehension area. Such an understanding will provide significant insights to improve students' academic competence and develop their reading ability in preparation for university education.

It is also expected that the result of this study can provide useful information and solutions to improve the reading comprehension scores of Iranian EFL high school students.

Moreover, the output of this study can have pedagogical value and also be used as a future reference for researchers of reading comprehension. And importantly, this study will be a key attempt in promoting reading comprehension of EFL readers. It will be beneficial to textbook developers and for those who prepare reading comprehension tests.

1.7. Theoretical and Conceptual framework

This study is based on the schema theory of the Gestalt psychologist Bartlett (1932). Bartlett's theory suggested that our understanding of the world is formed by a network of abstract mental structures. Schema theory is a theory of how knowledge is obtained and processed. It is a framework for the mental representation of knowledge; it deals with preexisting or prior knowledge that is stored in our mind (Nassaji, 2002). The concept of schema is a technical word used by many linguists and cognitive psychologists to explain the interaction of key elements affecting the comprehension process (Garduno, 2008). Reber and Reber (2001) defined schema as a plan, a structure, a framework, and a program. Schemata can also be defined as patterns representing the way experience and knowledge are organized in the mind. According to Ajideh (2003, p. 4), "schemata are hypothetical mental structures for representing generic concepts stored in memory. A schema is created through experience with people, objects, and events in the world". Therefore, what different readers comprehend of a written discourse may vary considerably. Additionally, readers use schemata as a powerful means in comprehending information which is both explicit and implicit. Understanding written text depends on activation of information or 'schemata' in the reader's mind.

Schemata have components which are activated as readers attempt to comprehend written text. Hudson (1982) distinguished three major components in the reading comprehension process. These three components were defined as the linguistic components, the prior knowledge components, and the affective components. As Shen (2008, p. 105) stated, "in the schema theory, the efficient interaction between linguistics knowledge and knowledge of the world result in skill in reading". In a review of schema

theory, in Carrell's (1988) framework, three different dimensions of schemata was distinguished: content, formal, and linguistic. She contended that each of these dimensions plays a role in the interaction between the text and the reader. According to Carrell (1988b, p.245), "the apparent reading problems of students may be problems of insufficient background knowledge (content, formal, and linguistic)". Carrell (1987, p. 476) also stated that, "each component-content and form- plays a significant, but different, role in the comprehension of text." As Al- Issa (2006, p. 41) pointed out, "research in this area indicate that when readers are familiar with the content of the text they are reading (content schema), skillful in recognizing the text structure (formal schema), and aware of the decoding features needed to recognize words and recognize how they fit together in a sentence (linguistic schema), they can comprehend the text efficiently.

However, as pointed out by Al-Issa (2006, p. 42), "one of the most important schemata is content which refers to familiarity of the subject matter of the text". He asserted that content schema is part of the reader's cultural orientation, and since culture affects all aspects of life, it certainly has a major impact on all elements of reading. Carrell and Eisterhold (1983 p. 80) stated, "one of the most obvious reasons why a particular content schema may fail to exist for a reader is that the schema is culturally specific and is not part of a particular reader's cultural background". While many previous studies (Abu-Rabia, 1996; Chen, 1993; Osman, 1990; Rosowosky, 2000) have been done to examine the importance of content schema in terms of cultural familiarity in the comprehension process, the present study intends to examine the impact of content schema in terms of culturally neutral text on students' reading comprehension. The term 'culturally neutral' is used in Iranian context to refer to the contents which are not related

to any source or target language's culture. As Khajavi and Abbasian (2011, p. 181) stated, "Iranian high school text books are mostly neutral in terms of target language's culture".

On the other hand, formal schemata are about the background knowledge of the organizational forms and rhetorical structures of different types of texts (Carrell & Eisterhold, 1983, p. 560). Previous studies indicated that familiarity of readers with rhetorical structures of different written texts help to facilitate text comprehension (Geva, 1992; Roller, 1990). Meyer (1979) applied schemata to expository texts with emphasis on top-down processing. She claimed that skilled readers have a finite number of abstract, super-ordinate schemata that are used in text comprehension and that if readers recognize and use the author's rhetorical structure, they will be able to understand better and remember more of the text that they read. Meyer (1979) has related her research to a model of reading comprehension based on an interactive, schema-theoretic view of reading (Adams & Collins, 1979; Rumelhart, 1977), in order to find out why some types of rhetorical structures should be more memorable than other types, and also to explain why certain types are perceived as being "more tightly organized" than others. Theoretical research within the framework of schema-theoretical approaches to reading has indicated that reading comprehension is an interactive process between a text and a reader (Meyer & Freedle, 1984).

As Adams and Collins (1979, p. 3) explain, the schema theory's goal is to deeply delve into the interface between reader and text, to examine how the reader's existing knowledge interacts with the text and to dictate the structuring of that knowledge to facilitate the interaction. Rumelhart (1977) pointed out that according to the schema

theory, in reading, the operations of bottom-up and top-down processing are simultaneous. As shown in some researches (Brantmeier, 2004a; Nunan, 1999), proficient students employ both top-down and bottom-up processing simultaneously. They draw both on background and formal schemata as well as linguistic decoding, while less proficient readers depend primarily on bottom-up processing (Barnett, 1989; Carrell, 1989).

However, a quick look at the first and second language reading research focusing on the interaction between text and reader has indicated a strong tendency towards the theoretical principles of the schema theory (Anderson & Pearson, 1984; Barnett, 1989; Bernhardt, 1991; Carrell, 1988; Carrell & Eisterhold, 1983; Hauptman, Post, & Lopate, 1996; Rumelhart, 1980; Rumelhart & Ortony, 1977; Zerhouni, 1996). These researches on the theory of schema have had a great impact on reading comprehension.

Another basis for this research is drawn from Bem's (1981) Gender Schema Theory which suggests that one's sexual self-concept impacts how one structures items in memory. Further, these memory structures are thought to play an anticipatory role in the search for an assimilation of incoming information. Bem (1981) has recommended Gender schema theory as an explanation of how one's gender influences the individual's cognitive structure. Gender schema theory has shed light on how gender-schematic processing influences attention, organization, and memory of gender-related information (Carter & Levy, 1988; Ruble & Martin, 1998). Martin and Halverson (1981) stated that the ability of children to label themselves and others as males or females is considered necessary for gender schema development to begin.

Moreover, Eccles et al. (1983) and Eccles, Adler, and Meece (1984) suggested a model in which, they not only considered social and psychological factors, such as possible gender differences in socialization experiences, in belief, in attributions, in expectations, and in self image, but gender differences in aptitude. They believed that as a result of such differences, females may have other expectations of success than males.

In a review of the schema theory, Omaggio (1993) and Bugel and Bunnk (1996) focused on the role of the individual in text comprehension and believed that the prior knowledge of male and female students differs. They noted that prior knowledge and interests affect the readers' interpretation and each individual has different internal representation for content of a text. According to Bugel and Buunk (1996), males and females have different interests, reading habits, aspirations, and prefer different subjects to read. They believe that these differences affect the male and female students' knowledge in performance of final examinations. They noted that males do better on informative literature such as technical, sports, political, economic, and violence, while females do better on medical topics, art, education, fiction, and human relations.

However, as mentioned before, up to now, few empirical researches has been done investigating the impact of prior knowledge, rhetorical pattern, and gender simultaneously on EFL students' reading comprehension which is the objective of the current research. The conceptual framework of this study was organized based on seven research questions. Figure 1.1 displays an overall picture of the conceptual framework for the present research. Three related concepts (prior knowledge, rhetorical pattern, and gender) were woven throughout the discussion of each research question. Each concept

offered a link between the reader and text to bring them together in order to promote knowledge instruction. Four texts (familiar/description, familiar/ causation, unfamiliar description, and unfamiliar causation) were employed in this study. After reading texts, the participants' reading comprehension was assessed by recall protocol and cloze test.

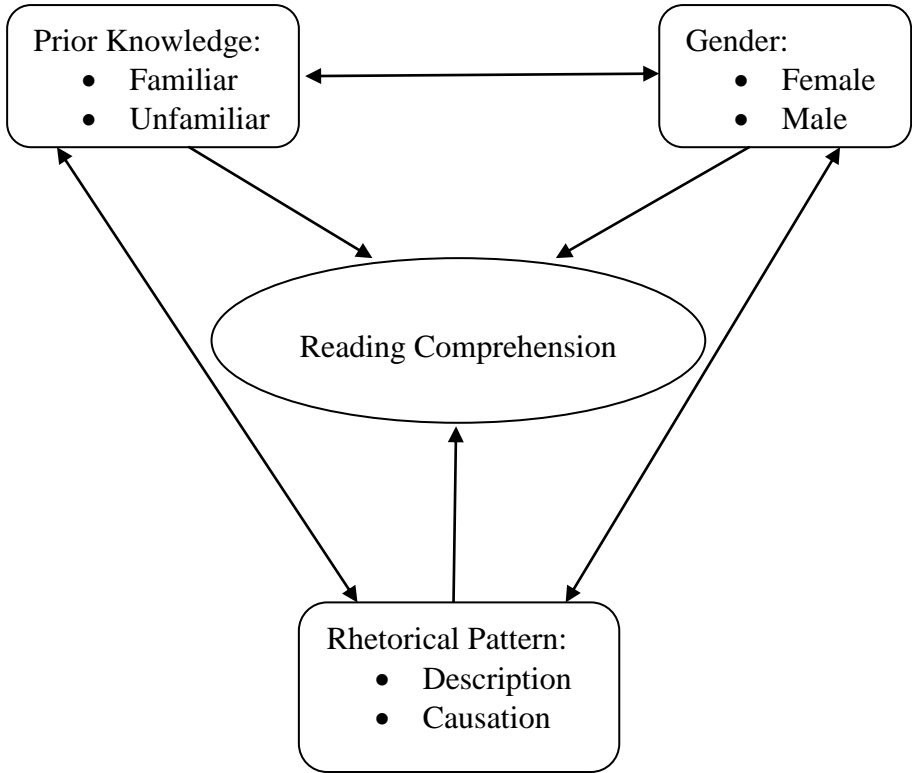


Figure 1.1. Conceptual framework of the study.

1.8. Operational Definitions

Cause/Effect Structure: It is a top-level structure that presents a causal relation between topics, as well as relationships in time; one idea is the antecedent or cause and the other is the consequent of effect (Raymond, 1993, p. 5; Taylor, 1992).

Content Schemata: Content schemata refer to the background knowledge relative to the content area of a text, or the topic a text talks about (Carrell, 1984).

Description Structure: It is a top-level structure that “presents topic and gives more information about it through attributes, specifics, explanations or settings” (Raymond, 1993, p. 4).

Expository Text: Lewis and Clark (2004) said that the main purpose of expository text is to inform or describe. It covers description, collection, cause/effect, compare/contrast, and problem/solution (Carrell & Eisterhold, 1983; Myers, 1997; Taylor, 1992).

Familiar text: A text in which the content is familiar to the reader. Texts on which participants have prior knowledge of the subject-matter are familiar texts.

Formal Schemata: Formal schemata refer to reader’s knowledge towards the organizational forms and rhetorical structures of written texts (Carrell, 1984).

Unfamiliar text: A text in which the content is unfamiliar to the reader. Texts on which participants have not any prior knowledge of the subject-matter are unfamiliar texts.

Pausal/Idea Unit: The sentence is divided at the place at which people would normally take a breath or where there is a chunk of a meaning (Johnson, 1970). According to Roller (1990), an idea unit is the minimal words necessary to express a thought or idea.

Prior Knowledge: Huang (2009) believes that prior knowledge is one’s special knowledge on a certain subject matter and one’s previously acquired comprehensive knowledge or world knowledge. Stevens (1980, p. 151) also defines prior knowledge as, “what one already knows about a subject”.

Reading Comprehension: Grabe and Stoller (2001) defined reading comprehension as extracting information from the text, and its combination with

background information the reader already has. According to Sweet and Snow (2003), it is the process of simultaneously extracting and constructing meaning.

Recall Protocol: A completed test script and responses of subjects to an experiment. Subjects are asked to write on a sheet of paper everything that they recall immediately after reading a text.

Rhetorical Patterns: According to Sharp (2002, p. 111), “a rhetorical pattern is part of the macrostructure of a passage and it contains the logical organization of the text which used by a writer to represent the intended meaning in a particular way”.

Schemata: Schemata refer to the internal mental networks of prior knowledge (Flynn, 2002). Cook (1990) defines schemata as, data structures, representing stereotypical patterns, which is retrieved from memory and employed in the understanding of a discourse.

Top-level Structure: It refers to the rhetorical relationship that ties all of the propositions in a text together and gives it its overall organization. Top-level structures are typical forms of texts that define it as a certain type (Meyer, 1984, cited in Tang, 1989).

CHAPTER II

REVIEW OF THE RELATED LITERATURE

2.1. Introduction

The purpose of this chapter is to review relevant literature based on specific issues involved in the topic. In order to provide this basis for the research study, this chapter focuses on several sections. The first section emphasizes on reading comprehension and bottom-up and top-down processing. The second section focuses on the schema theory. The third and last section discusses the factors affecting the reader's reading comprehension. This chapter will address these topics in detail in the following sections.

2.2. Reading Comprehension

Dorn and Soffos (2005) believe that comprehension is a complex cognitive process that is regulated by a person's mental, emotional, perceptual, and social experiences. So, for successful text comprehension, first, the reader must diagnose a series of letters as a word, then from the lexicon or mental dictionary find the meaning of the word, and integrate individual word meanings into a clear sentence level representation. Furthermore, text comprehension necessitates efficient coordination and use of cognitive processes such as decoding ability, linguistics awareness and prior knowledge (Kintsch, 1988, 1998; Perfetti, 1985). Stauffer (1969) and Walker (1974) argued that reading involves application, analysis, evaluation, and imagination. They believed that it is a process that needs thought and it is one activity through which the cognitive development of child can be promoted (cited in Collins & Pressley, 2001). Beech and Singleton (1997) state that, at one time little effort was made to teach the process of reading comprehension.

Early analysis of reading seemed to assume that once readers could decode accurately and fluently, comprehension would automatically follow. Even when this assumption was found to be false, efforts to improve comprehension focused more on product than on process.

Obviously, during the past thirty years, the reading comprehension definitions have changed. Durkin (1993) stated that, “reading comprehension has come to be the essence of reading”. Fielding and Pearson (1994) noted that in order to comprehend a text, just literal reproduction of the author’s words is insufficient; one inherently requires inferential and evaluative thinking too. Reading comprehension is also defined as “the ability to obtain meaning for some purpose” (Vellutino, 2003, p. 51). One main issue of argue regarding reading evaluation is whether reading comprehension should be viewed as a process or product. McNamara and Kendeou (2011) state that there is an important difference between reading processes and products, as well as their causal relationship: processes lead to certain products. Successful reading comprehension involves the construction of a coherent mental representation of the text in readers’ memory. This mental representation is the product of reading comprehension. Its construction, however, is the process of comprehension and happens moment-by-moment as the individuals read. According to Fletcher (2006), since reading comprehension is not an obvious process that can be directly observed, its assessment is difficult. Rather, only the products of the process of comprehending are observed. In fact, we cannot see the processes involved in reading; we can only deduce how a reader has comprehended. Therefore, all scores or data produced by tests of reading are indirect measures of the reading process. The reading comprehension assessment has emphasized that students’ success in reading and

comprehension depends on the material that is read and the task that is completed during or after reading this material. Teachers require access to assessments that are indicative of the students' ability to draw inferences and build coherent mental representations of the text. They also need access to comprehension assessment techniques that are likely to reflect a student's deep understanding of material. Several activities can be used in reading to help students learn how to make connections and, as a result, construct better mental representations of the texts (Kendeou, et al., 2007). The assessment of reading product can reflect a student's deeper level understanding (Kendeou, 2009).

Further, Psychological models of reading comprehension differentiate between the products of successful comprehension and the actual processes that lead to these products. Distinguishing between the products and processes is vital because the two are causally related: reading processes lead to reading products. Success or failure to comprehend is affected by specific reader characteristics, text properties, and the context in which reading take place (Kendeou, et al, 2010). According to Day and Park (2005), the idea of reading has altered from seeing it as primarily a receptive process to what is now an interactive process between the reader and the text.

While the research literature has witnessed a shift away from product to look at process as well, this study focuses on the product reading for the following reasons:

1. All scores or data produced by tests of reading are indirect measures of the reading process.
2. It reflects a student's deeper level comprehending of materials.
3. It indirectly reveals a reader's cognitive process when reading.

4. It helps the teacher quickly see how well the student comprehends in relationship to his grade level.

5. It helps the teacher evaluate student's reading ability, teach comprehension techniques, chart individual student progress, and improve standardized test scores.

Macaluso (2006) categorizes the elements of proficient reading as being: phonological awareness; orthographic awareness (a type of visual processing specific to written letters and words); alphabetic knowledge; lexical knowledge/vocabulary knowledge/semantic knowledge; knowledge of grammar rules and structure/syntactic knowledge, short-term/working memory; long-term/permanent memory; processing speed; attention/ability to attend to information; and motivation. After decades of study, reading scholars believe that reading with understanding is a highly interactive and complex process involving a number of components each of which is dependent on a variety of factors. In general, two significant factors may impact reading comprehension: internal factors and external factors. Internal factors, also called reader variable, refer to everything related to the reader such as background knowledge. External factors, called text variable, refer to everything related to text such as rhetorical structure in this study. Consequently, many researchers (Aebersold & Field, 1997; Alderson & Urquhart, 1984; Rumelhart, 1977; Widdowson, 1979) believe that reading comprehension involves three main elements: the reader variable, the text variable, and the interaction between reader and text variables. Freimuth (2008) also stated that reading can be done using bottom-up and top-down processing which take place at various levels of cognitive organization: phonological, grammatical, lexical and propositional. Bottom-up processing refers to the reader constructing meaning from the letters and words of a text and reconstructing the

intended message that way. Top-down processing, on the other hand, refers to the readers' ability to look at a text as a whole and to connect and relate it to their prior knowledge and expectations. Both processes are needed to work together obtain the message from a text.

2.3. Bottom-up Process vs. Top-down Process

As Samuels and Kamil (1988) noted, experts in reading have long attempted to build explicit models of the reading process. These models should describe the entire process from the moment the eye meets the page until the reader experiences the "click of comprehension". Today, it is generally accepted that readers derive meaning through the integration of two processes: bottom-up and top-down. So, both top-down [concept-driven] and bottom-up [data-driven] processes are necessary in comprehending texts.

Paran (1997) and Alderson (2000) defined bottom-up process of reading as a serial model where the reader begins with the printed word, recognizes graphics stimuli, decodes them to sound, recognizes words, and decodes meanings. In contrast, according to Jay (2003), a top-down process is based on our expectations affecting information processing; in short, we match the recognized data being read to the activated concepts in our schemata. According to Alderson (2000, p. 16) top-down approaches imply these schemata and the reader's contribution are more significant than the text input. The reader monitors information from the bottom-up, replacing initial expectations with the new one triggered by the text. Different words and sentences suggest new expectations (Alderson, 2000). Eskey (1988) also believed that top-down models require the prediction of meaning by using context clues and combining them with prior knowledge. Carrell (1998, p. 4)

demonstrated that the schema theory influenced the top-down model, which emphasizes the significance of the reader's prior knowledge in the reading process.

Gascoigne (2002) states that the proponents of the bottom-up model believe that the meaning resided just in the text to be discovered, so the focus was primarily on textual features such as vocabulary, syntax and discourse markers; the reader and what he brought to the text were totally ignored. Eskey (1973, cited in Carrell, 1988) relates that one of the deficiencies of this model is in underestimating the role of the reader.

While Goodman (1965), Smith (1971) and their proponents maintained that good readers guess more and use the context more, a great many studies have largely proved that although all readers use context, good readers use it less than poor ones. Good readers approach texts with top-down strategy and then use selected schemata to integrate the text, discarding inappropriate schemata. Less able readers tend to overly rely on either a top-down strategy or a bottom-up process, which has a negative effect on comprehension. What in fact distinguishes the two groups is not the degree of guessing which poor ones are also good at, but the ability of the former group to decode both rapidly and accurately (Stanovich, 1980; Mitchell & Green, 1984 cited in Paran, 1996; Urquhart & Weir, 1998). An overemphasis on top-down processing results in inferences not warranted by the text, while an overemphasis on bottom-up processing --staying close to print-- results in word calling (Beech & Singleton, 1997).

However, since there is a contraction between reader and writer (Eco, 1979; Grice, 1975), and everything cannot be explicit in the written text, it is imperative that

readers apply top-down processes to make text understandable. It is obvious that second language readers in order to comprehend what they read rely extensively on their knowledge of text informational structure. This knowledge of structure may operate in a top-down manner such that any unfamiliar words or phrases seen will inspire knowledge about how ideas relate in the text, so that the reader can make up for missing information by guessing the closest meaning (Adams, 1982; Hudson, 1982).

As presented in “Stanovitch’s (1980) interactive-compensatory model” of reading comprehension, reading is an interactive process in which both bottom-up and top-down processing take place at the same time at all levels of text information processing. He believes that if there is a deficit in any particular process, this deficit will be compensated by a heavier reliance on other knowledge sources (Stanovich, 1980, p. 32). According to Nunan (1999, p. 254), reading is an interactive process whereby readers alternate between bottom-up and top-down processes. Bernhardt (1991) and Brantmeier (2004a) suggest that we handle not only micro-level or text-derived features, such as pattern identification, letter recognition, and lexical access, but also macro-level or reader-driven features, such as prior knowledge activation and comprehension monitoring. Apparently, during the reading process, readers must look at both words on the pages (bottom-up processing), and activate prior knowledge (top-town processing), and then build all the elements into comprehension (Rumelhart, 1980). Rumelhart (1977) asserts that bottom-up and top-down processing occurring simultaneously at all levels of analysis is an aspect of schema-theoretic accounts of language comprehension.

As a consequence, more recent research on schema theory, however has indicated that reading may be neither exclusively a top-down process nor a bottom-up process, but rather an interactive process in which both strategies interact with each other (Tang,1989).

2.4. Schema-Theoretic View of Reading Comprehension

The ‘schema-theoretic model’ is the most famous model of reading that originated from the top-down model. Bartlett (1932, cited in Anderson & Pearson, 1988) was the first psychologist who used the term ‘schema’. Schemata, plural of schema are defined as, “the abstract knowledge structures that represent the relationship among the component parts of a reader’s previously acquired knowledge set” (Gascoigne, 2002). Anderson and Pearson (1988) believed that to understand the text completely, the existing schemata should be modified in such a way that the new information fits it well. According to Hauptman (2000), in the schema-theoretic model, both top-down and bottom-up processes are important and are taken into consideration. Carrell (1998) emphasizes that top-down processing becomes important as readers make inferences based on the pre-existing schemata in their minds and on the other hand, the incoming data wherein the features of the data enter the system through the best fitting, bottom level schemata evoke bottom-up processing. Lally (1998) believes that in order to comprehend a text efficiently, there must be a match between the text and reader’s schema, suggesting reading is an interaction between top-down and bottom-up processes.

The theoretical perspective guiding the current study about reading comprehension is the schema theory. The schema theory plays a significant role in reading comprehension which is based on the assumption that the reader’s prior knowledge

directly impacts new learning situations. So, the place of prior knowledge in the reading process has been discussed within the schema theory (Bartlett, 1932; Carrell & Eisterhold, 1983).

The schema theory focuses on “previous knowledge structures which are stored in the mind” (Nassaji, 2002, p. 444), and how ESL or EFL readers combine their pre-existing knowledge with what they read (Ajideh, 2003; Alderson, 2000; Alptekin, 2006; Anderson, 1999; Carrell, 1983c; Carrell & Eisterhold, 1983; Grabe & Stoller, 2002; Johnson, 1981, 1982; Ketchum, 2006; McKay, 1987; Murtagh, 1989). Nunan (2001) states that according to the schema theory, our knowledge will firmly influence our ability to find out new information by providing a framework within which that new information might fit. According to Shen (2008), schema theory suggests that a text only provides directions for the readers to retrieve or construct meaning of their own experience, namely acquired knowledge. This previously acquired knowledge is called the reader’s prior knowledge. Similarly, the previously obtained knowledge structures are called schema.

Swaffar (1988, cited in Roller & Matambo, 1992, p. 126) states that “every L2 study published confirms the theory that reading comprehension will be facilitated by familiarity with a schema”. It is not unusual to distinguish different types of knowledge or schemata. Carrell (1983a, cited in Alderson, 2000), for example, differentiates between formal schemata and content schemata. She defines the former as knowledge of language and linguistic conventions, including knowledge of how the underlying ideas in texts are organized, and what the main features of particular genres are. Essentially, she defines the latter as knowledge of the world, including the subject matter of the text.

Rumelhart (1985) also asserts that readers require knowledge about the content of the text in order to be able to comprehend it. Generally speaking, the term schema is an umbrella term encompassing both 'content schemata' and 'formal schemata'; the former includes background knowledge in different content areas, while the latter includes background knowledge of form and rhetorical organization structures of different texts (Grabe, 1991; Oded & Walters, 2001). Hudson (1982, cited in Grabe, 1991) found that "researchers argue that a high degree of background knowledge about content can overcome linguistic deficiencies". Carrell (1987) conducted a study examining the simultaneous effects of both culturally different content schemata and formal schemata on ESL reading comprehension. She also investigated any potential interaction between them. In her study, high-intermediate ESL students were asked to read, recall, and answer questions about each of the two texts. One half of the participants read the texts in a familiar, well-organized rhetorical structure; the other half read the texts in an unfamiliar, altered rhetorical structure. Results revealed that the subjects performed better on familiar content and familiar rhetorical form conditions; the results showed poor reading comprehension for unfamiliar content and under unfamiliar rhetorical form conditions. More interestingly, the results for the "mixed" conditions (familiar content, unfamiliar rhetorical form; unfamiliar content, familiar rhetorical form) showed that content schemata influenced text comprehension more than formal schemata. Carrell (1988, p. 104) also argued that "implicit content knowledge presupposed by a text and a reader's own cultural background knowledge of content interact" with the result that understanding a text based on one's own culture becomes easier than a text which is syntactically and rhetorically equivalent but based on a less familiar distant culture. Brantmeier (2001) believes that many researchers have investigated the role of content and formal schemata

in comprehension and the results of their experiments have proved the importance of both types of schemata in text comprehension and the lack of each of them is the major source of processing difficulty with second language readers. Gasparinatou, Tsaganou, and Grigoriadou (2007) studied the influence of prior knowledge on learning from high- and low-coherence texts in the Informatics domain. Using four versions of a text, they investigated students' comprehension. Their instruments to examine comprehension were free-recall measure, text-based questions, problem-solving questions, and the sorting task. The results indicated that readers with low prior knowledge outperformed with a coherent text, while readers with high prior knowledge outperformed after reading the low-coherence text.

2.5. Factors Affecting Reading Comprehension

The review of literature on reading comprehension points to a number of factors that affect reading comprehension either in the ESL or EFL context. Barnett (1989) proposes the components which are text-based as vocabulary, syntax, rhetorical structure, and cultural content. The reader-based components, on the other hand, are background knowledge, cognitive development, interest and purpose in reading, and reading strategies. Among the reader-based components, some researchers (Alderson, 2000; Anderson & Pearson, 1984; Brown, 1982; Callender, 2008; Carrell & Eisterhold, 1983; Chen, 2008; Coady, 1979; El-daly, 2010; Erickson & Molloy, 1983; Erten & Razi, 2009; Florencio, 2004; Hirsch, 2006a; Jalilfar & Assi, 2008; Keshavarz et al., 2007; Kintsch, 1988; Langer, 1984; Meneghetti, Carretti, & De Beni, 2006; Steffensen et al., 1979; Tierney, 1983; Winograd, 1985) claimed that prior knowledge had the most important influence on reading comprehension. Among the text-based components, other researchers (Abdollah

Zadeh, 2006; Carrell, 1981, 1984a, 1984b, 1985; Chu et al., 2002; Lei, 2009; Mandler, 1978; Meyer, Brandt, & Bluth, 1980; Newman, 2007; Roller, 1990; Salmani Nodoushan, 2010; Sharp, 2002; Singhal, 1998; Tian, 1990; Vahidi, 2006; Zhang, 2008) claimed that rhetorical structure played a crucial role in reading comprehension. Among the above mentioned factors, this study intends to investigate the impact of prior knowledge and rhetorical patterns on reading comprehension. Further, since some researchers (Brantmeier, 2001; Bugel & Buunk, 1996; Pae, 2004; Trong & Kennedy, 2006; Wardhaugh, 1993; Wei, 2009; Yazdanpanah, 2007; Young & Oxford, 1997) believe that gender is a key variable which influences reading comprehension, its influence on readers' comprehension will also be explored in the current study.

2.5.1. Prior Knowledge

Prior knowledge is quite simply what somebody already knows about a subject matter which will help him get new information. If one does not know anything about the topic of a text, one will find it difficult to process. Ausubel (1968, p. vi) the educational psychologist believed that the single most critical factor affecting learning is what the reader knows about the text. Kintsch (1988, 1998) pointed out that prior knowledge or topic-relevance played an important role in successful text comprehension. Since readers must use their background knowledge to combine meanings of individual sentences into a coherent representation of situations, it is often called the situation model. This situation model is the integration of the text base and the reader's prior knowledge. Steffensen et al. (1979) in their study demonstrated that familiarity with the topic helped second- language readers to construct meaning. Coady (1979) also suggested that in depth background knowledge may compensate for other deficiencies the readers may have. Carrell and

Eisterhold (1983) claimed that the reading problems of L2 readers may stem from their insufficient background knowledge or from not knowing the writer's cultural background, as against not knowing individual lexical items. In Bernhardt's (1991) model about the L2 reading process, it is illustrated that at the preliminary stages of L2 language acquisition, prior knowledge overrules linguistic knowledge. Based on this model, at the more advanced stages of acquisition influences from text content are superseded by language proficiency.

Research on the influences of prior knowledge on first language reading has received considerable attention in the literature (e.g., Anderson et al., 1978; Marr & Gormley, 1982; McKenzie & Danielson, 2003; McKeown et al., 1992; Pearson, Hanson, & Gordon, 1979; Stevens, 1980). Droop and Verhoeven (1998) stated that scholars investigated extensively the relationship between prior knowledge and text comprehension in native-language reading. In this area, results have consistently revealed that having prior knowledge of a text can facilitate reading comprehension, in both adults and children. Recent research (McKenzie & Danielson, 2003) further suggests that when the content is familiar to children, they read more fluently, and comprehend at a much higher level.

Some research studies have examined the effects of prior knowledge on second language readers. Most of the participants in these studies, however, were adults (Bartlett, 1932; Kintsch & Greene, 1978; Steffensen et al., 1979). Anderson and Pearson (1984) claimed that readers who possess rich background knowledge about the content of a reading text often understand the text better than their classmates with limited background

knowledge. Since all the information necessary for comprehending a text is not present in the text, the role of prior knowledge of the reader in reading comprehension becomes crucial (Hirsch, 2006a). Alderson (2000, p. 43) believed that even across texts on the same general subject matter, which had identical structure and syntax and very similar vocabulary, the version which was more familiar was recalled better. The prior knowledge effect is thus very strong.

The role of prior knowledge on reading comprehension has captured the attention of many researchers. Kant (1963) maintained that new information, new concepts, and new ideas are meaningful only when they can be related to something the individual already knows. Many researchers (Afflerbach, 1990; Anderson & Pearson, 1984; Meneghetti et al., 2006) have established that text comprehension is a complex cognitive ability involving the capacity to combine text information with the background knowledge of the reader and resulting in the elaboration of a mental representation. The earliest systematic work on the role of prior knowledge has been done by Bartlett (1932) who proposed that the organization of a reader's past experience directly influences comprehension and retention of materials in a passage. He found that readers used their prior knowledge to assimilate the text. Since Bartlett (1932), a large number of researches have contributed to extension of our knowledge about the role of prior knowledge upon comprehension. These studies (Brown, 1982; Callender, 2008; Erickson & Molloy, 1983; Langer, 1984; Tierney, 1983; Winograd, 1985) have indicated similar effects in which subjects better comprehended or remembered texts that were more familiar. A vast amount of literature supports the position that content schemata play a key role in text comprehension.

Brown (1982) managed an engineering reading test consisting of three reading passages. The subjects were 116 college students at UCLA. Results showed that engineering students outscored the non-engineering students on items including both specific engineering knowledge and general engineering content. Erickson and Molloy (1983) administered a similar study based on a reading test that was also given to a group of 83 college students. They confirmed Brown's finding that engineers significantly performed better than non-engineers with reference to engineering content, in both specific and general engineering reading. Tierney (1983) corroborated this connection between topic familiarity and comprehension as well. He discovered that when readers were familiar with the topic, they were better able to recall information and think critically. Winograd's (1985) study supported Tierney's (1983) study which showed that there was a strong effect of topic specific knowledge on reading comprehension. Langer (1984) investigated the effect of pre-reading activities on text-specific prior knowledge and text comprehension. The subjects were 161 sixth-grade students selected from a middle class suburban school system on Long Island, New York. They were randomly assigned to experimental and control groups. Various pre-reading activities were treatments. Results indicated that the pre-reading activities significantly evoked prior knowledge in treatment groups and this in turn improved their performance on moderately difficult comprehension questions. In a recent study, Callender (2008) examined the effects of prior knowledge relevance and organization on text comprehension. Using think aloud protocols and free and cued recall tasks, she assessed the subjects' reading comprehension. Eighty (80) undergraduate students were involved in the experiment. The results of the mixed model ANOVA showed that the readers were able to use prior knowledge to improve comprehension of unfamiliar texts.

Most researchers (Abu-Rabia, 1996; Chen, 1993; Floyd & Carrell, 1987; Johnson, 1981, 1982; Malik, 1995; Osman, 1990; Rosowsky, 2000; Steffensen & Joag-Dev, 1984) have investigated cultural influences on test takers' reading performance. Johnson (1981) compared the comprehension of Iranians and Americans based on culturally-biased folklore stories. His findings showed that the cultural difference of the stories, rather than the level of syntactic and semantic complexity, affected to a greater extent the ESL students' comprehension.

Johnson (1982) also examined the impact of the cultural origin of prose on the text comprehension of ESL Iranian intermediate and advanced students at the university level. Once more, the findings showed that the cultural origin of the stories had a greater influence on subjects' reading comprehension than the syntactic or semantic complexity of the text. Steffensen and Joag-Dev (1984) did a study using two descriptions of a wedding, both written in English. One was an American wedding description, whereas the other was a description of an Indian wedding. Both Indian and American students were asked to recall the descriptions. The findings indicated that readers comprehended the texts about their own cultures more accurately than the others. Floyd and Carrell (1987) studied a sample of 34 intermediate-level ESL students attending a college-level English program. The experimental group received two training sessions on cultural prior knowledge. Pre- and post- culture-related reading tests were used as instruments to measure any potential change in reading ability for the treatment and control groups. Results of the study showed that the experimental group outperformed significantly compared to those in the control group on texts containing pertinent cultural information. Osman (1990) in her study attempted to investigate the comprehension performance of two contrasted cultural

groups, Malay and Chinese. The subjects were 60 students of a secondary school in Malaysia. Thirty of them were Malays and thirty Chinese. They were asked to read one Malay culture-based text and one Chinese culture-based text. Using the three-way ANOVA and ANCOVA, she analyzed the data; the main findings of the study indicated that prior knowledge in terms of cultural schemata consideration aided the ESL readers in text comprehension. Chen (1993) supported Langer's (1984) study by investigating the influences of previewing and providing prior knowledge. The experimental design was conducted for 243 students. They were randomly assigned to three experimental groups and one control group. Short-answer, multiple choice tests, and an attitude survey were used as the instruments. Each experimental group took reading comprehension test under three different conditions: previewing, providing background knowledge, or both; in control condition, students took the test without any kind of support. Each student was asked to read two stories and complete pre-tests, short-answer and multiple-choice comprehension post-tests, and an attitude survey. The findings on the measures of text comprehension showed that the pre-reading activities had a strong effect on Taiwanese college students in the freshman English reading classroom.

Malik (1995) examined the effect of culturally familiar and unfamiliar texts on reading comprehension of proficient second-language readers and found that cultural content schemata significantly influenced the text comprehension process. Additionally, the findings made a strong argument that the reading of unfamiliar text involved less integration compared to familiar text. Abu-Rabia (1996) investigated the effect of cultural knowledge of familiar and unfamiliar information on 83 Israeli high school students' comprehension. The participants were examined with texts including three Jewish and

three non-Jewish stories. Results showed that students comprehended the culturally familiar stories critically better than the unfamiliar ones. The research findings confirmed Osman (1990) and Malik's (1995) studies. In another study, Rosowsky (2000) studied Asian bilingual students studying in the UK. The findings also revealed that "cultural bias" influenced subjects' reading comprehension.

Review of past studies shows that the importance of prior knowledge in reading comprehension is unquestionably relevant. Similar to the study undertaken by Steffensen and Joag-Dev (1984), in recent years, some researchers (Chen, 2008; El-daly, 2010; Erten & Razi, 2009; Florencio, 2004; Jalilfar & Assi, 2008; Keshavarz et al., 2007; Razi, 2004) found that comprehension is greatly facilitated if the topics in the passages are similar in some way to their native cultures.

Florencio (2004) conducted a study examining the role of background knowledge in the form of cultural schemata on the text comprehension of EFL Brazilian college students and American college students. The reading comprehension measures were multiple choice test and cloze tests. Through analysis of variance (ANOVA) with repeated measure, the effects of independent variables on dependent variable were examined. The results indicated that prior background knowledge had a significant impact on both groups' performances on the measure of reading comprehension. Razi (2004) explored the effect of cultural schema on reading activities for text comprehension. In the experiment, the subjects selected from a university in Turkey were divided into four groups through a 2x2 true-experimental research design. While the original story was given to the first group, the second group received the nativized

version. To explore the influence of reading activities on the comprehension of nativized and original stories, the third group read the original text with reading activities whereas the fourth group read the nativized story with the same activities. Razi measured the subjects' reading comprehension through true/false/not given test, scrambled action, and open-ended pen and paper test. The ANOVA findings of the experiment suggested that the groups receiving a nativized version of the story outperformed the other two groups who received the original story. So, the results indicated that cultural schema appears to have a significant impact on the subjects' comprehension of short stories.

Keshavarz et al. (2007) investigated the effects of background knowledge and linguistic simplification on text comprehension and recall. The subjects were 240 male Iranian EFL students studying in Razi University. Each subject's reading comprehension was tested with two types of texts through multiple choice tests. One text was an extract from the biography of an Islamic religious leader; it was believed to be familiar to the Muslim subjects. Another text was an extract from the biography of a non-Islamic religious figure that was believed to be unfamiliar for the subjects. The findings indicated that there was a significant correlation between familiarity with text content and subjects' reading comprehension test scores ($p < .000$). Chen (2008) investigated the influence of background knowledge and previewing texts on comprehension recall of 20 third to fifth grade ELLs (English Language Learners) whose first language was Mandarin. The participants read two culturally familiar and culturally unfamiliar texts and answered 8 four-item multiple-choice tests and two short-answer questions. Using a repeated measure analysis of variance (ANOVA) for data analysis, the results indicated that the type of book (familiar/unfamiliar) had a statistically significant interaction with the

preview intervention (preview/no preview). The participants' reading comprehension scores were significantly higher when they were provided a previewing text before reading a culturally unfamiliar text. Jalilfar and Assi (2008) lend support to Razi (2004). They attempted to examine the effect of cultural nativization in text comprehension of target language short stories in Iranian EFL learners. For this, three American short stories were nativized into the reader's own culture. Using multiple-choice tests, 60 EFL students who studied at Azad University in Ahvaz participated in the study. The findings obtained through independent *t*-test clearly indicated that cultural nativization had a facilitative effect on readers' comprehension of the stories.

A study by Erten and Razi (2009) supported Razi's (2004) and Jalilfar and Assi's (2008) studies that a reader's prior knowledge affects comprehension and remembrance of a passage. In their experiment, they investigated whether cultural familiarity affects comprehension in 44 advanced-level students in Turkey. Subjects were divided into four groups. An original short story without any activities was provided for the first group, while the second group was provided with the original short story with some activities. The nativized version of the text without any activities was provided for the third group, whereas the fourth group was provided with the nativized version with activities. Recall test and open-ended short-answer test were used to assess comprehension. The analysis of variance (ANOVA) showed a better comprehension of nativized stories. A recent study by El-daly (2010) gave further proof that a reader's prior knowledge affects comprehension and remembrance of the passage. In this experiment, the researcher investigated the effects of culturally familiar and culturally non-familiar materials on Egyptian university students' reading comprehension. By using of true/false questions, vocabulary,

interpretation, and understanding questions, the subjects' comprehension was measured. T-test was applied to determine the significant difference between means. The findings of the study showed that the subjects performed better in Egyptian short story. The results provided evidence that participants' cultural background knowledge and their familiarity with the Egyptian themes had a positive influence on the subjects' performance.

In a more recent study, Tabatabaei and Shakeri (2013) investigated the effect of familiar and unfamiliar content on Iranian intermediate EFL learners' performance. It also intended to compare the effects of gender on the learners' performance. 30 males and 30 females were selected from Islamic Azad University Najafabad Branch. The multiple-choice cloze test and C-test were used to assess their comprehension. The findings indicated that the subjects had more successful performance on two tests with familiar content. Moreover, the results showed that gender had no significant effect on the subjects' performance on two tests. Although some researchers such as Huang (1999) believed that cultural knowledge may either aid or impede reading comprehension, the findings of most studies indicated that cultural knowledge can help readers comprehend the texts being read.

In an effort to extend the body of research on the role of prior knowledge, several researchers have also examined the effects of topic or content familiarity of the materials in reading strategies used (Cakir, 2008; Chang, 2006; Rajabi, 2009).

Chang (2006) examined the effects of content familiarity and linguistic difficulty on the students' reading strategies. The participants were forty American college third-

year non-native readers of Chinese. They were asked to read two different passages. The subjects' comprehension was tested through 'think aloud and recall' protocols. Two-way ANOVA test was used to determine differences among the four treatment groups. The results suggested that subjects predominantly engaged in local-level processing with the exception of two types of global-level processing: monitoring one's comprehension and generation of inferences. While topic familiarity and linguistic difficulty motivated monitoring efforts, topic familiarity primarily had a facilitative effect on inferring events. The study by Cakir (2008) also offered the firmest support for the influence of prior knowledge on readers' reading strategy use. Cakir studied whether readers used different processing strategies for different texts. Participants were eleven sixth grade primary school students in Turkey. Each subject completed a free-recall process and a think-aloud process by reading an expository text and a narrative text in Turkish. The results indicated that readers' comprehension strategies changed according to the text being processed. The children could monitor their comprehension process more effectively when processing text about which they had strong prior knowledge. To date, a recent study related to the influence of prior knowledge on reading strategies was done by Rajabi (2009) in Iran. He examined the impact of rural and urban orientations on top-down and bottom-up reading models of the Iranian EFL students. The results of two-way ANOVA test showed that the urban students not only used top-down strategy including activating background knowledge, and focusing on the author's message, but they showed great reliance on the bottom-up model, while rural subjects used texts and the application of bottom-up processing. Their reliance was on the main content of the text. They also did not incorporate the knowledge of the world as well as their prior knowledge in answering reading comprehension questions.

The findings of the above studies offer a rich source of information on how readers comprehend text in relation to their prior knowledge. Yet, since children from non-English speaking countries are dependent on schools to impart content schemata, and according to Swaffar (1988), “prior familiarity with subject matter enhances language recognition, concept recall, and inferential reasoning”, it is essential to note that the above studies were not designed to examine the effect of familiar and unfamiliar expository texts which are used in school textbooks on student comprehension and recall. Most past studies (Chen, 2008; El-daly, 2010; Erten & Razi, 2009; Florencio, 2004; Jalilfar & Assi, 2008; Keshavarz et al., 2007; Razi, 2004) have been conducted to examine the role of culturally different texts on readers’ reading comprehension. So, one criticism which has been directed towards the studies which have used culturally different passages is that they are not representative samples of texts used in classroom situations. The high school textbooks’ authors have avoided cultural materials and tried to be neutral in terms of culture. According to Khajavi and Abbasian (2011), ELT text books in use in Iranian high schools have not been successful in familiarizing students with cultural understanding of other countries. “In addition, in high school textbooks no national identity and history of Iran has been taken into account” (Khajavi & Abbasian, 2011, p. 184). Abdollahi-Guilani et al. (2011, p. 25) also believed that, “Iranian textbooks are mainly void of cultural points”. As Ketabi and Talebinejad (2009) and Aliakbari (2003) stated, cultural aspects of language learning have not received sufficient attention in the textbooks and this can be attributed to the fact that some authors believed that cultural matters should not be transferred through the textbooks. So, since the current ELT text books being taught in Iranian high schools do not make students familiar with other countries and their culture and the focus of the texts has been scientific subjects (Khajavi & Abbasian, 2011), the

current study attempted to explore the effect of culturally neutral text on reading comprehension of high school students.

Moreover, the studies mentioned above have not investigated the interaction effect of prior knowledge, rhetorical pattern, and gender on reading comprehension of EFL students.

Marzano (2004) emphasized the importance of background knowledge and noted that scarce background knowledge causes lower achievement in learners. This idea is supported by Willingham (2007) who claimed that one gets a rich understanding of a text by relating what one is reading to other materials that one already knows. It is obvious that readers will find it easier to read texts in areas they are familiar with, for example those they have studied, than those which they have not, even if their knowledge is more general than, or different from, the exact content of the text (Alderson, 2000). So, according to Shin (2002), it is clear that the prior knowledge that readers bring to the reading process will influence the way they process and comprehend text. As a result, by activating or providing sufficient background knowledge, the reading task can be made more meaningful, comfortable and also comprehensible for their students.

2.5.2. Rhetorical Patterns

The investigation of text structure role on reading comprehension is not a new idea. Bartlett (1932) had subjects read the American Indian folktale, 'The War of Ghosts'. He noticed that when they were required to retell the story which contained certain incoherent sections, subjects would restructure it to establish coherence. They would

shorten the text, eliminate names and titles and generalize the information to comply with their own expectations. Although Bartlett's (1932) study is more than fifty years old, many modern researchers have attempted to extend it by conducting more experiments. One of the most persistent findings in the text structure literature which many researchers have attempted to investigate is the role of rhetorical patterns on reading comprehension. Understanding the rhetorical relations of texts is thought to be at the heart of the comprehension process of the text and of the writers' intention in the text (Alavi, 2001).

Mandler (1978) showed that when the text content was kept constant but rhetorical structure varied, first language readers found the text harder to understand. Carrell (1981) replicated Mandler's study with second language readers. Her results showed that when stories violating the formal story schema were processed by learners of English as a second language, both the quality of recall and the temporal sequences of recall were affected.

Johnson (1981, p. 169) noted that, "organization of ideas in a passage influences text comprehension more than its language complexity". A study by Freebody (1980 cited in Johnson, 1983, p. 25) demonstrated that, "the order in which participants read texts impacted their comprehension". Urquhart (1984) also examined the effects of chronological and spatial ordering in text. His study indicated that texts with consistent spatial organization were easier to understand and recall. Carrell (1985) provided empirical evidence that the rhetorical organization of a text interacted with the ESL reader's formal schemata to affect text comprehension. Her study manifested that teaching various aspects of text structure such as the patterns of comparison, causation,

problem/solution, and collection of description indeed enhanced ESL reading comprehension. Similarly, a study by Dee-Lucas and Larkin (1990 cited in Maxwell, 1994, p. 68) reported that, “the change of rhetorical organization influenced the degree of readers’ text comprehension”. Singhal (1998, p. 4) confirmed that, “differences in text structure can lead to differences in reading”.

A series of studies conducted by Meyer and her colleagues (Meyer, 1985; Meyer & Freedle, 1984; Meyer et al., 1980) suggested that readers have schema (or rhetorical patterns) for different text types and may use them as templates for linking related information while reading. Meyer (1975, cited in Alderson, 2000, p. 67) distinguished five different types of expository text, representing different ways in which writers organize topics: listing, causation, problem/solution, comparison/contrast and description. She suggested that the organization of texts may make them easier to follow and more memorable than others. Research on the impact of rhetorical structure, sometimes referred to as a formal schema (e.g., Barnitz, 1986; Carrell, 1984b), supports the claim that familiarity with rhetorical patterns plays a role in recall (Chu, Swaffar, & Charney, 2002). Yarbrough (1892, cited in Alderson, 2000) states that when texts are manipulated into good and bad rhetorical organization, comprehension is affected by poor rhetorical organization.

A review of relevant literature reveals that many researchers have examined the impact of rhetorical patterns on text comprehension (Abdollah Zadeh, 2006; Carrell, 1984a, 1984b, 1985, 1987, 1992; Chu et al., 2002; Ferdosipour & Delavar, 2011; Foo, 1989; Goh, 1990; Hayashi, 2004; Lee & Riley, 1990; Lei, 2009; Mauranen, 1992; Meyer,

Brandt, & Bluth, 1980; Roller, 1990; Salmani-Nodoushan, 2010; Sharp, 2002, 2003; Souici, 2010; Talbot et al., 1991; Tian, 1990; Vahidi, 2006; Zhang, 2008). All these studies except Hayashi (2004) and Souici (2010) offer the support for the above idea that rhetorical patterns play a role in recall.

Meyer, Brandt, and Bluth, (1980) investigated ninth-grade students' use of a reading strategy which focuses on following the organizational structure of text through immediate and delayed recall protocols in order to determine what is important to remember. Texts read were well organized with problem/solution or comparison/contrast structure. The results of ANOVA test indicated that the reading strategy appeared to be a particularly effective rhetorical mnemonic. Their study also suggested that the subjects who did not employ the reading strategy simply tried to list collections of descriptions from the passage without interrelating them. In contrast, those employing the reading strategy compared viewpoints or related solutions to components of the problem, and consequently, developed a rich retrieval network.

According to Meyer, Brandt, and Bluth, (1980, p. 74):

specifying the structure of text provides several benefits for conducting reading research. Firstly, aspects of text structure provide significant dimensions along which passages may be evaluated as to their similarities and differences. Secondly, specifying the text structure allows the researcher to identify the amount and type of information which readers remember from text. Finally, it allows identification of variations which arise between text and a reader's understanding of the text.

Carrell (1984a) reported the results of a study of rhetorical organization of different types of expository prose on 80 intermediate ESL readers of Spanish, Arabic and Oriental students. Their reading comprehension was measured through immediate and delayed recall protocols. The ANOVA results confirmed that certain more highly structured English rhetorical patterns of comparison, causation, and problem-solution are more facilitative of recall for non-native readers rather than the collection of description. Foo (1989), Goh (1990) and Talbot et al. (1991) reduplicated Carrell's work using the exact same texts. Their findings indicated that the rhetorical pattern of the texts had a facilitative influence on reading comprehension as measured by recall protocol. Tian (1990) also replicated Carrell's (1984a) study in Singapore, but introducing the additional variable of home language group (Chinese, Malay, or Tamil). As in Carrell's study, differences in rhetorical structure affected the readers' recall. Their native language, however, did not seem to trigger a different recall pattern for different rhetorical structures. Tian conjectured that the homogeneity of the language environment in schools in Singapore leveled and neutralized the home language effects. Carrell (1984, cited in Singhal, 1998) in her study also indicated that Arabs recalled best from comparison structures in expository texts rather than problem-solution structures and collections of descriptions, and remembered least from causation structures. In comparison to Arabs, Asians, however, remembered best from expository texts with either problem-solution or causation structures, and they recalled least from either comparison structures or collections of descriptions. Other researchers (Vahidi, 2006; Salmani nodoushan, 2010; Ferdosipour & delavar, 2011) reported contradictory findings. Because of contradictory findings on recall of causation and description texts with different cultural populations, this study has focused on these two text types (causation and description).

In another study, Carrell (1987) investigated the role of both content and form simultaneously. She found evidence when both the content and rhetorical form was familiar to the subjects, they remembered more information. When only content or only form is unfamiliar, unfamiliar content causes more difficulty. Her study involved two groups of ESL students. Each student was asked to read two texts, one text's content was Muslim-oriented and the other one was Catholic-oriented, and each text was presented in either a well organized (familiar) rhetorical pattern or an altered (unfamiliar) rhetorical pattern. While the subjects read each text, they were asked to answer a series of multiple-choice comprehension questions and recall the text in writing. Using the General Linear Models procedure, she analyzed the results of the recall protocols and scores on the comprehension questions. She found that the schemata affected the ESL readers' comprehension and recall. This conclusion is supported by Roller (1990), who reported that when the subject matter is moderately unfamiliar to the reader, text structure is more important.

Lee and Riley (1990) demonstrated that L2 reading could be improved through the presentation, before reading, of a framework indicating the rhetorical organization. They examined the effect of two expository texts: collection of descriptions and a problem/solution under three conditions (no framework, minimal framework, and expanded framework) on inexperienced FL readers. The findings indicated that providing an expanded rhetorical framework before reading is an effective text adjunct for the recall of expository prose for inexperienced readers in a foreign language. They also found that the degree of effect depended on the type of discourse structure. For problem-solution text, providing readers with a rhetorical framework as a text adjunct had no significant

effect on overall recall; for the collection of descriptions, however, those readers provided with an expanded rhetorical framework recalled significantly more than those under the other two conditions. It was suggested that the more loosely organized the passage, the more pre-reading adjunct would facilitate comprehension.

In another study, Carrell (1992) of information recalled, but a qualitative analysis revealed that there was significantly more reported that research has revealed not only critical effects of differences in rhetorical pattern but students' awareness of structural pattern, especially in expository text, also affects the reading comprehension process. She also investigated whether there were differences in quantitative and qualitative analysis of reading recall protocols as a function of different text structures (i.e., comparison/contrast versus collection of description). Results of her study indicated that there were no differences between the two types of text structures in the quantity top-level idea units recalled from the comparison/contrast passage.

Chu et al. (2002) explored whether culture-specific rhetorical conventions impacted the reading recall of Chinese EFL students attending college at two grade levels. Their study's findings showed that different rhetorical conventions had a significant overall role on Chinese students' text comprehension in both immediate and delayed recall. ANOVA and ANCOVA were employed to analyze the data. Close analysis of questionnaire data also implied that factors such as topic interest and topic familiarity moderated the effect of rhetorical convention. In another study, Calisir and Gurel (2003) gave more support to Chu et al. (2002). They examined the effect of text structure and prior knowledge on reading comprehension of 30 university students, using three types of

texts (traditional linear text, hierarchical hypertext, and mixed hypertext) differing in structure. Their findings showed that knowledgeable subjects performed better in linear condition than non-knowledgeable subjects. Moreover, non-knowledgeable subjects scored higher in the mixed condition than non-knowledgeable subjects in linear condition. The results indicated that there was a two way interaction effect between text structure and prior knowledge at $p < .05$. The results indicated that prior knowledge helped knowledgeable subjects to understand and conceptualize the text structure.

Sharp's (2002) study is notable because it was conducted with the largest number of participants. Sharp studied the effect of four rhetorically different passages with identical content on 490 Hong Kong Chinese school children. Through cloze procedure and recall protocols their reading comprehension was measured. The results of study indicated a clear difference in comprehension between the text types and suggested that pedagogical support to increase awareness of rhetorical patterns would be beneficial. More interestingly, the results of cloze scoring showed that a text with descriptive structure was found to be significantly easier for all participants. This result did not support Meyer and Freedle (1984), Carrell (1984a), Foo (1989), and Goh's (1990) studies.

Hayashi (2004) examined the relationship between recall and text structures for five types of texts: collection of description, causation, problem/solution, comparison, and an additional "oriental" text structure, ki-shoo-ten-ketsu. The participants were Japanese, Chinese, and Korean ESL students with intermediate or above English proficiency attending a university intensive English language program. Results showed that, unlike previous studies, rhetorical differences in text did not have a significant effect on recall.

In more recent studies, Abdollah Zadeh (2006), Newman (2007), Zhang (2008), Lei (2009), and Souici (2010) attempted to examine the effects of rhetorical patterns on EFL students. Abdollah Zadeh (2006) studied 160 Iranian undergraduates to find how they approached three text types (narrative, expository, and argumentative) in which propositional relations have been explicit or implicit. Through matching type questions and multiple choice questions, their comprehension was measured. The findings of Repeated Measures ANOVA indicated the influence of the type of text and text structure on learners' comprehension. Moreover, the results revealed the contributory impact of markers in text comprehension. Newman (2007) compared the influence of explicit instruction of expository text structure on three intervention classrooms with a control group using a mixed qualitative and quantitative design. The findings indicated that the subjects receiving the intervention performed better in their ability to comprehend expository text. The results also showed that explicit instruction incorporating graphic organizer can improve the students' performance in expository text comprehension.

In Zhang's (2008) study, the subjects were divided into three groups. Three version of a text with identical content, but different rhetorical pattern were given to them. The researcher asked each group to read and recall the text. As expected, the recall protocol and cloze test analysis showed that subjects performed better with problem-solution and comparison-contrast structure (highly structured schema) than with description structure (loosely controlled schema). This study supported Meyer and Freedle (1984) and Carrell's (1984a) work.

Lei (2009) examined the effect of two different expository formats on Taiwanese L2 readers' strategy use during their L2 English reading (collection of description and problem/solution). By collecting the data from think-aloud, the findings of *t*-test presented that the participants' use of global strategies were different significantly for the two expository formats, problem-solving and collection. The results showed that subjects used reading strategies to a greater extent when reading collection texts than when reading problem-solving texts. In more recent research, two studies (Qadi, 2010; Souici, 2010) have been done to explore the role of rhetorical pattern on students' reading comprehension. Qadi (2010) examined the influences of four rhetorical patterns on the recall of L2 students of reading from two educational levels. Through an immediate recall task and a delayed recall task, the results suggested that the three rhetorical patterns-comparison, problem/solution, and causation which are the more organized types of discourse, facilitated the recall of the students who used the organizational strategy more than collection of descriptions which is the less organized type. Souici (2010) conducted research on the role of rhetorical functions to overcome chemistry Master students difficulties when reading scientific English. The study's sample was selected from the University of Constantine. The results obtained from questionnaire and comprehension questions showed that the role of rhetorical functions, which is basically related to EST (English for Science and Technology), cannot be guaranteed without taking into account students' level in General English. In other words, it is the students' poor level in General English that creates obstacles and difficulties when reading scientific English. Souici's (2010) findings supported Hayashi's (2004) study.

In reviewing the effect of rhetorical patterns on reading comprehension, with the exception of Vahidi (2006), Salmani Nodoushan (2010), and Ferdosipour and Delavar (2011), relatively no research has been undertaken regarding the effect of rhetorical patterns on Iranian EFL students' reading comprehension. All researchers selected the sample from university levels.

Vahidi (2006) had investigated reading comprehension from the discourse point of view. She examined discourse knowledge of paragraph structure and the comprehension of academic/expository text. It is assumed that it is the interaction between textual competence, including textual cohesion or rhetorical organization, and the text that can lead to discourse comprehension. She collected the data through two tasks: multiple choice tests for testing the ability of subjects in comprehending academic texts and five questions to measure the subjects' knowledge of their rhetorical awareness. Her findings through applying the *t*-test indicated that there was a relationship between knowledge of text integration and text comprehension. Salmani Nodoushan (2010) conducted an experiment to examine whether explicit instruction of descriptive and causative text structure positively influenced L3 reading recall. His data collection instrument was immediate recall protocol. The quantitative results revealed that explicit instruction had a positive impact on students' L3 reading comprehension. The results also demonstrated that the subjects outperformed on descriptive text than causative text. Ferdosipour and Delavar (2011) explored the effects of rhetorical patterns on reading comprehension of 300 state run university students. Three groups of subjects were involved in the study. They asked each group to recall the text and finish a multiple-choice test. The results of

the study indicated better recall of the text with highly structured schema than the one with loosely controlled schema.

Taken together, the findings of Vahidi's (2006), Salmani Nodoushan's (2010), Ferdosipour and Delavar (2011), and the other studies mentioned above can be used as sources of information in investigating how rhetorical patterns influence Iranian high school students' reading comprehension.

2.5.3. Gender Differences

Gender is one of the important reader variables which mark a sociocultural distinction between males and females on the basis of traits and behavior that are conventionally regarded as characteristics of and appropriate to the two groups of people. Brantmeier (2001) claimed that gender is a critical variable associated with individual differences in reading comprehension of second language. Dornyei (2005) asserted that gender is a critical variable that influences every aspect of the language learning process. Some researchers (Brantmeier, 2003; Daughy & Long, 2005) stated that few studies have explored gender differences in reading comprehension and second language acquisition. Wardhaugh (1993) noted that reading failure among boys was more than among girls in schools, but Wardhaugh believed that this failure was not due to the fact that boys are inherently less well-equipped to learn to read; the boys' poor performance might be socio-cultural in origin than genetic reasons in comparison to girls.

In recent years, several studies (e.g., Al-Shumaimeri, 2005; Brantmeier, 2001, 2003, 2004a, 2004b; Bügel & Buunk, 1996; Deary, Strand, & Fernandes, 2007; Doolittle

& Welch, 1989; Hyde & Linn, 1988; Mau & Cheng, 2000; Keshavarz & Ashtarian, 2008; O'Reilly & McNamara, 2007; Pae, 2004; Rosén, 2001; Wei, 2009; Young & Oxford, 1997; Yongqi, 2002) had investigated gender differences in second/foreign language reading comprehension and reached different conclusions. Among these gender differences studies, some of them are favoring males (Al-Shumaimeri, 2005; O'Reilly & McNamara, 2007) and others are favoring females (Brantmeier, 2002, 2004a, 2004b; Deary et al., 2007; Keshavarz & Ashtarian, 2008; Young & Oxford, 1997). Generally speaking, most of the above mentioned studies revealed that females perform better than males in L2 reading comprehension. Trong and Kennedy (2006) reported that more studies showed that girls outperformed boys in reading achievement scale scores in all 35 countries that participated in PIRLS 2001. They also believed that girls and boys differ in their participation in literacy activities and subsequent student attitudes toward reading.

Bügel and Buunk (1996) studied gender differences in L2 reading comprehension. They investigated gender differences on a national foreign language exam in the Netherlands. Quantitative analysis of the findings showed that female students outscored significantly on the reading comprehension tests for essays on text topics such as midwives, a sad story, and a housewife's dilemma. Males outscored higher on the multiple choice tests for essays about laser thermometers, volcanoes, cars, and football players. They reached this conclusion that the text topic is a key factor in explaining gender-based differences in ESL reading comprehension. Young and Oxford (1997) found no differences for comprehension by gender in prior knowledge of all three text topics. Forty-nine native English-speaking men and women processed two Spanish texts and one English text using local and global strategies. With respect to recall scores, there were no

significant differences by gender for all three texts in the familiarity rating with text topics. Pae (2004) examined the impact of gender on reading comprehension of EFL Korean learners. The overall findings revealed females performed better on items classified as Mood/Impression/Tone, while males performed better on items classified as Logical Inference regardless of item content.

Brantmeier (2003) examined the effects of certain individual differences such as topic familiarity, enjoyment and interest on the reading comprehension of male and female learners through written recall and multiple choice questions. The data were analyzed through two-way ANOVA test. Results of her study showed that passage content and readers' gender significantly affected their performance on the recall comprehension task at the intermediate level. Males achieved significantly higher scores on the recall task for the text with boxing field, whereas females scored higher on the recall task for the text with housewife field. The findings suggested that not only linguistic factors may increase the L2 reading burden, but other variables such as gender, passage content, and topic familiarity may influence L2 reading comprehension. Brantmeier's (2003) findings supported Bügel and Buunk's (1996) study.

In another study by Brantmeier (2004a), it was found that females compared to males performed better on overall recall and achieved higher scores on the multiple-choice questions on one of the two given authentic violence oriented texts. The overall findings of her study indicated that females may have an advantage over males in the free written recall procedure. Brantmeier (2004b) also investigated the effect of topic familiarity levels on 68 second language (L2) readers. She examined the comprehension of university level

male and female students with two different authentic violence-oriented texts. Two comprehension assessment tasks were used in her study: written recall protocol and multiple choice questions. Through two-way analysis of variance, the overall finding of her study represented that while advanced level male and female readers are equally familiar with violence-oriented content of the target culture, females scored higher than male counterparts on L2 comprehension tasks for texts involving male-to-female violence. The findings also showed that females may perform better in the free written recall procedure over males.

Al-Shumaimeri (2005) explored whether there were any differences between reading comprehension of EFL Saudi male and female students at tertiary level. The purpose of the study was to investigate the gender differences between male and female students in reading comprehension performance of gender-neutral texts. Text comprehension of 132 male and female students was measured through 10 multiple-choice questions. Quantitative analysis of the findings revealed that males performed significantly better than their female counterparts in tests. O'Reilly and McNamara (2007) examined gender differences of 1,651 male and female high school students on measures of cognitive ability and science achievement. Their findings revealed that the males' scores were higher than females' on measures of science knowledge, state science test, and passage comprehension.

Deary et al. (2007) found some gender differences in educational attainment. Girls outperformed boys on overall academic subjects (courses). There were also important gender differences in all academic subject (courses) scores, except for Physics.

Girls outperformed in every topic except Physics. Keshavarz and Ashtarian (2008) investigated the relationship between the reading comprehension of three types of text (history, essay, and short story) and the gender of Iranian EFL learners at university level. Eighty (80) participants attempted to answer 24 multiple-choice questions made of selected texts. The chief quantitative finding of their study indeed showed that there was a difference between male and female EFL learners in reading comprehension ability with females being better able to comprehend English passages.

Zhau (2008) studied the effect of gender on 26 male and 55 female Chinese EFL students' reading comprehension. Two instruments were used in Zhau's study to measure subjects' 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 secondary level in China. The results of the study indicated that there was a great relationship between gender differences and reading comprehension that could, in some cases, affect test outcomes.

Many researchers (Bacon, 1992; Bacon & Fineman, 1992; Gallagher, Levin, & Cahalan, 2002; Halpern & LaMay, 2000; Hsu, 2006; Hung, 2001; Knight & Padrón, 1986; Kuo, 2002; Yazdanpanah, 2007) have also investigated gender differences in reading strategy used in reading comprehension. Most of them have reported a greater use of reading strategy by females.

The frequency and types of reading strategies used by third-year males and females in senior high school were examined by Hung (2001). The findings showed that females were better than males in reading comprehension ability, but there was no significant difference between them in terms of overall strategy used. Besides, there was no significant difference between males and females when they read narrative and expository materials separately. The findings of Kuo's (2002) study on proficiency and gender differences in reading strategies used toward the reading comprehension tests of the Basic Competence Test (BCT) supported Hung's (2001) results. Kuo's (2002) findings also showed that no significant difference was found between male and female junior high school students in reading strategy used.

Knight and Padrón (1986) in their study showed that female students are more likely to use a variety of cognitive strategies. An evidence for this idea is Hsu's (2006) study. Hsu (2006) examined the English reading strategy use of 41 male and female four-year technical college students in Taiwan. The results of the quantitative analysis of data indicated that females used cognitive strategies and social/effective strategy more often than males did.

Halpern and LaMay (2000) and Gallagher et al. (2002) investigated the cognitive abilities of males and females. Their study on cognitive abilities of males and females had indicated that males were more spatial while females were more verbal. Gallagher et al. (2002) studied the performance of male and female students to find out whether there was any difference between males and females on cognitive abilities. Their results showed that males and females used different solution strategies when performing complex cognitive

activities. In comparison of two objects at different orientations, they explored that men first construct an image of one object in their minds and then mentally rotate the object to compare it with the other object, while females tend to compare the traits of spatial objects.

In an attempt to complete the previous studies' findings, Bacon and Finnemann (1992), Schueller (1999) and Yazdanpanah (2007) investigated the gender differences in the use of top-down and bottom-up strategy for comprehending and recalling texts. Their findings indicated that females used more top-down strategy than males.

Bacon and Finnemann (1992), in their study reported that females utilized a large number of global/synthetic strategies significantly to a large extent than the males. In contrast, males utilized significant decoding/analytic strategies more than females. Their study also showed that males tended to use more bottom-up approach while top-down approach tended to be easier for female students in reading comprehension.

Schueller (1999) conducted an investigation to explore whether top-down and bottom-up reading strategy instruction influenced the comprehension of second-year university level male and female students in Germany. Two different literary texts were the instruments used. The results revealed that the degree of females' reading comprehension was higher. Interestingly enough, every female group outscored the male groups on comprehension regardless of strategy training.

Yazdanpanah (2007) examined the effect of test items on reading performance of 187 Iranian males and females with regard to demands on strategy used. The results of two-tailed independent *t*-test suggested that the performance of male and female students were different on different test items. Females outperformed at maneuvering from top to bottom and from bottom to top in their interaction with the reading passages. The result of the study also supported Oxford's (1994) findings that females qualitatively performed better in using strategies.

Review of previous literature in relation to reading comprehension shows that a considerable amount of work still needs to be done in this area of research since most of the previous studies used gender-oriented text. Besides, in Iran, the analysis of high school English textbooks had indicated a clear gender imbalance in texts in favor of males (Hosseini Fatemi, Pishghadam, & Heidarian, 2011). Hence, it seems that gender imbalance in textbook contents is a critical factor which must be considered. Regarding the problem of gender imbalance in high school English textbooks and the results of previous studies, the researcher intends to determine whether gender neutral texts also have an influence on reading comprehension among Iranian EFL students at high school level. It is hoped that the area in this current study can provide some of the answers to the vexed questions of reading comprehension.

Generally speaking, according to schema theory, reading comprehension involves the interaction between (the prior knowledge of) the reader and (the rhetorical pattern of) the text. Most previous studies (Al-shumaimeri, 2005; Brantmeier, 2004b; Callender, 2008; Chang, 2006; Keshavarz, et al., 2007; Tabatabaei & Shakerin, 2013) examined the

interaction effect of two variables on students' reading comprehension. However, no studies have been done to study the interaction effect of prior knowledge, rhetorical pattern, and gender on students' reading comprehension. The researcher examined these three variables simultaneously since the two way interaction effect between prior knowledge and gender may be modified by the rhetorical pattern. The result of this study can add new information to the schema theory.

CHAPTER III

METHODOLOGY

3.1. Introduction

The aim of this study is to examine the effects of rhetorical patterns and prior knowledge on reading comprehension of EFL students, as well as whether the effects differ by gender. This chapter describes the context of the study and the method by which the sample and its size was selected, as well as the research design. In addition, the materials and instrumentation used in this study are described, along with the data collection procedures, the scoring and the statistical methods for data analysis.

3.2. Context of the Study

In Iran, although boys and girls study in different schools, they follow the same courses and syllabuses in all schools. High school education is separated into two main branches, namely technical and general. In the technical branch, the students are particularly trained to be technicians for the labor market. The general branch is divided into three branches namely socio-economics, physics-mathematics, and experimental sciences. The students can choose the branch that they want.

The Iranian students have to study English for seven years. Learning English as a foreign language is a compulsory course at the start of the junior highschool (3 years) and continues up to the end of high school. High school level in Iran includes 4 years of studying (secondary is 3 years and pre-university is 1 year). Every academic year is

composed of two terms and the English language is taught in both terms. Teaching English in elementary school has been completely neglected.

In each level, there is one book for Teaching English as a Foreign Language (TEFL). The English book of two branches in high school is the same. In Iran, a text book which is written by experts is seen as an authority in that it is reliable and valid. This is also true for ELT textbooks used in Iranian high schools (Aliakbari, 2004). Dahmardeh (2009) states that the Ministry of Education in Iran produced all the textbooks for the schools and no alternatives are available.

The current study was conducted in the high schools of Savojbolagh County. Savojbolagh lies in the northwest of the Tehran Province in Iran. Its population is over 20 thousand. This county is a semi-urban, low-income area with a large immigrant population from different geographical areas of Iran. The researcher has chosen this county because most students there are seldom exposed to English language outside the EFL classroom and they depend on their English school textbooks.

3.3. Participants of the Study

The total target population of the 11th grade students majoring in experimental science in Savojbolagh County was 650. A sample was drawn from this population based on purposive sampling due to familiarity of this population with familiar text (*healthy eating*). The researcher selected 244 intermediate level participants from the target population to participate in the current study. Their average age was 17.38 years, ranging from 16 to 18 years of age. 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. This method of determining the sample size was needed to be representative of the target population. Therefore, since the population of female students was more than male students, the researcher selected 7 girls' high school (163 girls) and 4 boys' high school (81 boys) through following Morgan Randomization Table. Regarding the expert judgments (in Ministry of Education in Iran), the students with marks of 14 to 17 were intermediate and suitable for this study. Their reading ability was controlled by their English scores in the previous semester. Since previous semester English test was provided by the experts in the Ministry of Education, the English test for measuring students' reading ability was valid and reliable. In Iran, the test which is written by experts in the Ministry of Education is reliable and valid.

However, once more, in order to control for extraneous threats, 4 students who had prior knowledge of unfamiliar text and 8 students who did not complete all the tests were excluded in the data analysis. So, the subjects in this study ($N = 232$) consisted of females and males (females = 160 and males = 72). Two hundred and thirty two subjects were selected from the total of 650. All subjects were Iranian native speakers at third year of high school (11th grade). Their ages ranged from 16 to 18. They had almost similar educational background in English language learning. They had passed the same courses. All of them already had contact with English as a foreign language for five years, with an average of three hours of English classes per week. The participants represented the same level of proficiency.

This level is of particular interest for two reasons. First, according to Meyer et al. (1980), “reading programs at the upper elementary through high school levels stress the development of reading comprehension; a component of reading comprehension is skill in following the organization of a passage”. Second, these students should be prepared to attend pre-university level and a national university entrance exam. According to Noora (2008), at university level, students mostly study English for academic purposes (EAP) and therefore, reading is the most emphasized skill.

Table 3.1

Demographic Distribution of Participants in Independent Variables

Factor	Variable	Number	Percentage (%)
Prior Knowledge	Familiar	120	52 %
	Unfamiliar	112	48 %
	Total	232	100 %
Rhetorical Pattern	Description	123	53 %
	Causation	109	47 %
	Total	232	100 %
Gender	Females	160	69 %
	Males	72	31 %
	Total	232	100 %

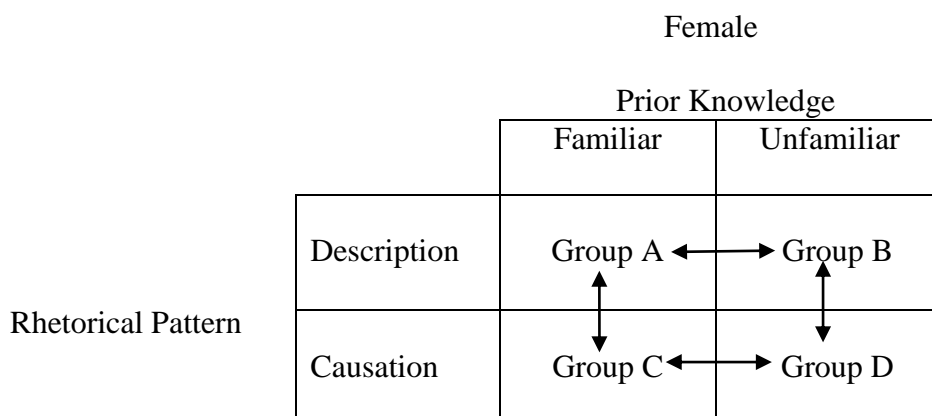
3.4. Design of the Study

A 2×2×2 between-groups factorial design was used in this study. Through the factorial design, I can control the threats to internal validity. It is possible that by using a factorial design I can assess not only the separate effect of each independent variable but also their joint effect. I studied 232 students using a between-group experimental design. The between-subject variables were prior knowledge (familiar and unfamiliar), rhetorical

patterns (description and causation), and gender (female and male). The dependent variable was reading comprehension which consisted of scores obtained from three measures: recall of idea units, importance level, and cloze test. In other words, the data were analyzed based on the three factors: by 2 (gender = females and males) \times 2 (rhetorical patterns = description and causation) \times 2 (prior knowledge = familiar and unfamiliar). The participants were randomly divided into eight groups (four groups of girls and four groups of boys). Each of the four groups received a treatment. For example, the first group received familiar text with a descriptive rhetorical pattern, while the second group received familiar text with a causative rhetorical pattern. The third group received an unfamiliar descriptive text, whereas the fourth group was provided with an unfamiliar causative text and then completed the reading comprehension tests (recall protocol and cloze test).

Table 3.2
 $2 \times 2 \times 2$ Factorial Design Matrixes

		Prior Knowledge	
		Familiar	Unfamiliar
Rhetorical Pattern	Description	Group A	Group B
	Causation	Group C	Group D



3.5. Materials and Instrumentations

In the literature review, previous studies (Jalilfar & Assi, 2008; Keshavarz et al., 2007) had investigated the effect of culturally different passages on students' reading comprehension. However, according to Abdollahi-Guilani et al (2011, p. 25), "Iranian text books are mainly void of cultural points". "ELT text books in use in Iranian high schools have not also been successful in familiarizing students with cultural understanding of other countries" (Khajavi & Abbasian, 2011, p. 184). "In addition, in high school textbooks no national identity and history of Iran has been taken into account" (Khajavi & Abbasian, 2011, p. 184). So, since the culturally different passages are not representative samples of texts used in classroom situations, the present study explored the impact of two culturally neutral texts on students' reading comprehension.

Two expository neutral texts were used in this experiment. One of them was familiar and the other one was unfamiliar to the participants. The familiar text used in this experiment with two rhetorical structures was chosen from Sharp's (2002) study (Appendix A). The content of this text was about *healthy eating*. Since the participants' 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 content of this text was familiar to the participants. This study relied on instructor judgment in determining the degree of content familiarity. The familiarity degree of this reading text was based on Stevens' (1980) definition, what one already knows about a subject. Furthermore, the reliability and validity of using this instrument had been established in Sharp's (2002) study.

The unfamiliar text was chosen from EnglishTestStore (ETS) (Appendix A). The base text was chosen which allowed two re-writing. The researcher created two versions of the unfamiliar text. One of them included a description structure and the other one included a causation (cause/effect) structure. According to Meyer and Freedle (1984), "a passage with a description structure specifies something about a topic or presents an attribute or setting for a topic". "The causation structure groups elements in a time sequence (before and after) and specifies a relationship whereby an earlier one causes a later one". Two native English speakers were asked to check the structure of both texts. The content of this text was about the *Sun God statue* in Cairo. The text was unfamiliar to the participants. Since some readers' prior knowledge about this unfamiliar text might affect the result of the study, the participants' knowledge was assessed using the Richgels' (1987) method (Appendix F). Three questions were asked of the participants. Anyone who scored more than 6 points was not suitable for the study.

Consequently, such manipulation of the texts resulted in four test passages: content familiar/ description (F/D), content familiar/ causation (F/C), content unfamiliar/ description (UF/D), and content unfamiliar/ causation (UF/C).

Each of the two causation structures had discourse markers. Discourse markers were used explicitly to indicate causation between ideas such as: cause, as a result, because of, since, therefore, result in, and so forth. No signal words, however, were used in the descriptive texts. There was no clear relationship between the components in the descriptive texts. There was no evidence of hierarchical organization in the descriptive texts; therefore, the description texts were not as tightly organized as the causation texts.

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 number of words for each text ranged from 147 to 171 words. The slight difference in the length of the texts has not been considered to have any effect on readers' comprehension. Text length was similar to that in the reading comprehension testing conducted by other researches (Carrell, 1982; Hayashi, 2004; Sharp, 2002; Tang, 1989; Urquhart, 1984; Zhang, 2008). There were two paragraphs and 11 to 15 sentences in each text. The vocabulary and expressions were simple to ensure easy reading and comprehension. In this experiment, eight groups of high school EFL students read and recalled the texts. Flesch-Kincaid's readability formula (software) was applied to all texts. This formula has been used here to offer a further check since according to some researchers (Asker, 1999; Chall & Dale, 1995; Harrison, 1986) the formulae do have some validity. Further, three professional teachers who were asked to comment on the organization and the difficulty level of each text also confirmed that the texts exemplified the two rhetorical forms. Harrison (1979, cited in Alderson, 2000) claimed that the best measure of text difficulty is combined expert judgment, and when that is unavailable, readability formulae should be used.

Table3.3
A Summary of Characteristics of the Four Reading Texts

Feature	Familiar Text Description	Familiar Text Causation	Unfamiliar Text Description	Unfamiliar Text Causation
Number of Words	147	163	163	171
Number of Sentences	15	11	12	11
Number of paragraphs	2	2	2	2
Flesch-Kincaid Reading Ease Score	56	52	59	54
Flesch-Kincaid Grade Level	8	10	8	10
Number of idea units	25	26	24	26
Number of Missed Words in Cloze tests	25	28	29	30

3.5.1. Immediate Recall Protocol

Recall protocol method has been one of the most common methods employed in reading behavior and reading comprehension assessment (Appendix C). This method is also suitable for measuring reading comprehension of a large number of subjects. Many researchers (Berkemeyer, 1989; Bernhardt, 1983a, 1985, 1991; Bernhardt & Berkemeyer, 1988; Brisbois, 1992; Johnson, 1983; Lee, 1986) believed that one of the highly valid and effective L2 reading comprehension testing measures is recall protocol procedure that can provide both qualitative and quantitative information. 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”. Bernhardt (1983a, pp. 31-32) also presented the distinct advantages of the recall protocol procedure such as: (a) the recall protocol shows where a lack of grammatical skill intrudes on the student/text communication, (b) the recall protocol does not affect the reader’s comprehension of the text, (c) the recall procedure

emphasizes on the importance of comprehension. In this method, subjects cannot simply guess answers; they must make an attempt to comprehend the text. Johnson (1983) advised that, “recall procedure is the most straightforward assessment of the result of the text-reader interaction”. According to Berkemeyer (1989, p. 131), “recall protocol method does not allow students to guess their way through the text nor does it influence students’ understanding of the text”.

The fact that the reading process is a silent and private activity, methods such as think-aloud protocol, recall protocol or miscue analysis are used in many studies of reading (Caldwell & Leslie, 2010; Cakir, 2008; Callender, 2008; Chang, 2006; Lei, 2009). Protocol methods, unlike other testing methods, used in reading comprehension studies have intrigued many researchers (Ferdosipour & Delavar, 2011; Salmani Nodoushan, 2010; Sharp, 2002, Zhang, 2008)) because they indirectly reveal a reader’s cognitive process when reading (Zainal, 2008). The recall protocol is a truly integrative authentic-task measure, firmly grounded on constructive model of reading comprehension. Recall method is able to reveal the cognitive processes of the readers which other methods may not be able to. In contrast to testing methods such as multiple-choice or cloze, the recall protocol is not directed by the questions set by the researcher but rather is directed by the readers’ own understanding of the text. Recall protocol method enables researchers to investigate the levels of processes, such as making inferences, paraphrasing, summarizing, and using background knowledge. This method is said to be the best method to capture the higher level processes as it comes to consciousness while the reader is processing the text (Zainal, 2008).

In immediate-recall protocol, the researcher asks subjects to read a text, to put it to one side, and then to write down everything they can recall from the text in complete sentences, not just to list isolated words or ideas. This procedure provides a rich sample of their individual construction of the text. Maarof (1998) claimed that production difficulties in the L2 can be one disadvantage of the recall protocol. The subjects' written recall may be confounded by their production ability if they were required to produce it in the L2. To avoid this limitation, in most studies (Bernhardt, 1983a; Bernhardt & Berkemeyer, 1988; Maarof, 1998), the subjects were asked to recall in their native language so that their production ability could not interfere with their ability to demonstrate comprehension.

Since recall protocol method provides invaluable information related to the reader's comprehension problems, this study assessed reading comprehension of Iranian high school students by using this method.

3.5.2. Cloze Test

Cloze test was used as another instrument for the experiment (Appendix B). In Iran, cloze tests are quite vital in the educational life of Iranian test takers since they have been used by important exam boards of nation-wide high school tests as well as the Iranian National University Entrance Exam (INUEE) (Sharafi & Barati, 2011). When emphasis is on meaning rather than linguistic accuracy, cloze items seem to become more valid as a measure of reading comprehension (Kobayashi, 2002). Gooskens and van Bezooijen (2006), Bertram (2006), Daztjerdi and Talebinezhad (2006), and Zulu (2005, cited in Tabatabaei & Mirzaei, 2014), are among the most recent studies experimenting

with cloze tests for measuring comprehension. Moreover, as Hyland (2003:216) states, cloze tests are widely used in international large-scale standardized tests, such as TOEFL and IELTS, which are aimed at students who are going to study abroad. Cloze test is typically constructed by removing from selected texts every fifth word and the participants are asked to restore the word that has been missed. 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 originally deleted. One or two sentences are usually left intact at the beginning and end of the text to provide some degree of contextual support (Alderson, 2000, p. 207).

Cloze test was first developed by Taylor (1953, cited in Alderson, 2000) to measure text readability. According to Taylor, since cloze test involved real readers processing texts, for English native speakers it could provide a more accurate, reliable and valid measure of readability and reading comprehension. With non-native speakers, some researchers (Aitken, 1977; Streiff, 1978; Stubbs & Tucker, 1974) suggested that cloze test correlate well with measures of EFL proficiency. However, there is ample evidence (Eskey, 1973; Hewett, 1985; Schulz, 1984) which suggests that this technique can be used as an efficient and reliable tool for testing students' comprehension. In a study, Kintsch and Yarbrough (1982, cited in Alderson, 2000, p. 92) investigated the interaction between text and task variables. They found that test-takers performed better on topic and main idea questions for texts that were clearly organized according to a familiar rhetorical pattern than for texts with identical content but without such an organization. But performance on cloze tests was not affected by poor rhetorical structure.

One of the problems with cloze tests is that they need not only reading ability but also productive skill. If cloze tests are going to measure reading comprehension, examiners may well be justified in accepting a different policy concerning answers that are syntactically incorrect, but nevertheless show that the reader has understood the meaning (Kobayashi, 2002). Criticisms have been frequently made because surface, local linguistic forms, rather than more global forms may strongly affect on the completion of a cloze test. However, if cloze uses a *rational* rather than a fixed deletion pattern and if it allows contextually proper words rather than the exact replacement of the original word, then cloze correlates very highly with other L2 reading assessment procedures. Heightened validity has also been found with the use of techniques offered by Farhady and Keramati (1996) which used noun phrases as a way of calculating deletion rates.

The cloze construction type selected in the current study is similar to the one in Sharp (2002) and Zhang's (2008) study, based on Farhady and Keramati's design (1996). For further check, the four texts were put in Cloze Test Creator software. The results were equal. The basis of deletion rates in a text in Farhady and Keramati's design is noun phrases. They claim that such a design takes better account of the discoursal and linguistic structure of the language used. They also asserted that it is a vastly superior test of reading comprehension because of improved reliability and validity. In their design, the following rules were the basis of noun phrase calculation: conjoined noun phrases were treated as single units; complex noun phrases (NPs with embedded NPs) were regarded as single units and pronouns were ignored. Exact word scoring that requires the word put in to be the exact word used in the original text, was used in this study. Deletion rates for the text were: *familiar description* every 5th word, 25 deletions; *familiar*

causation every 5th word, 28 deletions; *unfamiliar description* every 5th word, 29 deletions; *unfamiliar causation* 5th word, 30 deletions (Appendix B).

So, in this research, participants were presented with a text from which every fifth word had been systematically deleted and replaced with blanks, and asked to replace these missing words. One point was given for each right exact word.

3.6. Pilot Study

The pilot study was designed to replicate the main study but using a smaller sample of participants and for the purpose of testing the instruments as well as becoming familiar with the procedures. The developed instruments were piloted with a total of 40 EFL high school students similar to the target population. Pilot study was conducted on November 20, 2010. The researcher conducted the pilot study to establish procedural reliability, instrument validity, and equivalence for test measurement to ensure valid and reliable data collection. The purposes of the pilot study were generally to test:

1. The difficulty of texts. The pilot study results indicated that the texts were not generally too difficult for third graders.
2. The time to finish the recall protocol and cloze test.
3. The procedures of dividing the texts into pausal units and providing importance level with each unit.
4. The procedure of scoring.

As a result of the experience and knowledge gained from the pilot study, I discovered that some slight changes needed to be made in each text type to improve it. I replaced some content words with easier words. However, the pilot study findings confirmed the practicality of the research design and procedures used in the main study.

3.7. Procedures and Data Collection

The experiment was conducted in the presence of the researcher and someone who was trained by the researcher in the classrooms in the morning. At the outset of the study, the participants were divided into eight groups. They were distributed equally in the groups based on their reading ability scores. In order to create homogenous groups among the participants' with L2 reading ability, members of the eight groups were carefully matched based on their English scores in the previous semester. They were then randomly assigned to the experimental conditions, and told that participation did not affect their course grade. However, in order to motivate the participants to answer the reading comprehension questions, the researcher gave each of them a pocket English story book.

Four different texts were distributed evenly among the participants. Each participant received a prior knowledge questionnaire and an envelope containing one reading expository text (F/D, F/C, UF/D or UF/C) which was written on yellow paper, a cloze test on the same text which was written on blue paper, and a white blank sheet where they could write their recall protocols. The order of the experimental tasks was as follows: 1) prior knowledge questions, 2) expository text reading, 3) text recall, and 4) cloze task.

The experiment started with the researcher reading the instructions aloud in Farsi while the students read them silently. They were given a brief introduction about the topic and then were asked to read the text and took notes if they wished in 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 in ten minutes. Since the participants wrote everything they remembered immediately after reading the text, it could not be a test of memory. Recall protocols intend to measure deeper understanding and since they are the product of reading there is an element of memory involved. The view held by Bernhardt (1991) and others is that comprehension and memory work together and recall provide a 'purer' form of assessment and circumvent the pitfalls of other forms of assessment. Alderson (2000) and Lee (1986) represent objections that the immediate recall protocol may be more of a test of memory rather than a measure of comprehension. These objections are minimized since in this procedure, the recall typically occurs immediately after reading.

They could also use their own words or those of the original text in Farsi, without consulting the text or their notes. Recall needed to be written in the first language; otherwise it became a test of writing. 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.

3.8. Data Analysis

Each of the four 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). According to Sharp (2002), since there is a certain amount of overlap in the text reconstructions, it is recommended to confirm them by both native and non-native English speaker judgments. Separately, the non-native English speaker and two English native speakers identified the total idea units for each text and then the researcher compared the results. The identical information in both familiar and unfamiliar texts versions was reduced to 24 from 26 idea units for the purpose of marking (Appendix C). An idea unit, also called a linguistic unit by Bransford and Franks (1971) and Carrell (1983c) and an information unit by Roller (1990), is defined as the minimal words necessary to express a thought or idea. Following the Johnson system (1970), the non-native English speaker and two native English speakers collaborated in dividing the texts into pausal units. Bernhardt (1991, p. 208) defined pausal unit as a unit that has a “pause on each end during normally paced oral reading”. The researcher followed the text segmentation of Johnson (1970), Zhang (2008) and Sharp (2002) to allow for number of idea units assessment of recall in this study. Johnson’s system (1970) is based on pausal units or breath groups. The development of a scoring template usually requires native speakers to read the passage aloud to themselves and to mark all those places in the text where they paused. Participants’ recall protocols are checked for the presence or absence of each pausal unit. I followed Johnson (1970) system because its application is simpler than the other system (Meyer, 1975), it allows quantitative and qualitative assessment of recall, and, it allows for faster collection of data and larger samples. Moreover, accounting importance level differences in recall was similar to Sharp’s (2002) and

Zhang's (2008) study in which the idea units were accounted for importance level within the text. Level three was accounted for main generalization, level two was accounted for supporting generalization, and level one was accounted for supporting detail (Appendix E). Participants' reading comprehension was measured by the number of idea units and importance level recalled. Since the participants were asked to write what they remembered in Farsi, the researcher and two non-native English speakers provide a Farsi-equivalent matrix and divided the idea units once more and translate them into Farsi language (Appendix D). The result of both the idea unit divisions (English and Farsi) in number was similar.

3.9. Scoring

As Alderson (2000) stated, "the number of 'idea units' recalled from the original text in the free recall is the students' comprehension score". So, the researcher measured the reading comprehension of participants by the number of idea units and importance level recalled. According to Bernhardt (1991: 200), generating recall data does not influence a reader's understanding of a text and a free recall measure provides a purer measure of comprehension, uncomplicated by linguistic performance and tester interference.

The researcher scored participants' recall protocols for the presence of each idea unit from the original text. One mark was given to each idea unit which the participants recalled. Furthermore, the importance level of each idea unit was rated within the text. Three marks were given to the main generalization ideas, two marks were given to supporting generalization ideas, and one mark was given to supporting detail ideas

(Appendix E). In this study, two experienced English teachers who were instructed by the researcher on how to score recall protocols of subjects scored the participants' protocols. Two scorers were trained to score before the actual scoring. The training focus was first on familiarizing the scorers with the experimental texts and the scoring procedures. They then practiced scoring sample recall protocols. These sample recall protocols were obtained from students who had taken part in the pilot study. Two scorers scored 20 out of 40 recall protocols from the pilot study using the templates that had the list of idea units. Then, the scorers scored the rest of the recall protocols on their own. After the scoring, any questions the scorers had were answered by the researcher. Recall protocols were scored for elaborations and distortions which were dissolved by discussion between the researcher and the two scorers. The 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 232 cloze tests were scored by two raters. Since cloze test requires exact words, two scorers were completely agreeable with each other. Every recall protocol was also analyzed by the two scorers. They arrived at the idea unit analysis of each text, and agreed on the final analysis. Numbers were substituted for participants' names so that the scorers were unaware of the identity of the participants and the experimental conditions. Inter-rater reliability was assessed by using the Pearson correlation coefficient. It was calculated by the number of actual agreements achieved over the maximum number of possible agreements. Inter-rater reliability for idea units recall was .90 and for importance level, it was .81. The reliability of the texts scoring for the two scorers was highly correlated

(Table 3.4 & Table 3.5). So, the final score for data analysis was the average of the two scores given by the two scorers.

Table 3.4
Inter-rater Reliability for two scorers for Idea Units Recall

		S 1 Idea units	S 2 Idea units
S1 Idea units	Pearson		
	Correlation	1	.907**
	Sig. (2-tailed)		0
	N	232	232
S 2 Idea units	Pearson		
	Correlation	.907**	1
	Sig. (2-tailed)	0	
	N	232	232

** . Correlation is significant at the .01 level (2-tailed)

NOTE: S: Scorer

Table 3.5
Inter-rater Reliability for two scorers for Importance Level Recall

		S1 Importance level	S 2 Importance level
S 1 Importance level	Pearson		
	Correlation	1	.814**
	Sig. (2-tailed)		0
	N	232	232
S 2 Importance level	Pearson		
	Correlation	.814**	1
	Sig. (2-tailed)	0	
	N	232	232

** . Correlation is significant at the .01 level (2-tailed).

NOTE: S: Scorer

Since the maximum possible raw scores for each test were different, the raw scores on recall protocol and cloze test were transformed into percentages. The number of idea units recalled was converted into a percentage of the number of idea units in the original text based on Zhang (2008). According to the following formulas, Zhang (2008)

obtained the idea units score of each recall protocol: (the idea units recalled by subjects / the total idea units in the recalled passage) $\times 100 =$ idea units score. The importance level score of each recall protocol was calculated based on another formula: (sum of the importance level of each recalled unit by subjects / sum of the importance level of all idea units in the recalled passage) $\times 100 =$ importance level score (Zhang, 2008). For calculating the percentage of cloze test scores, the researcher used the following formula: (sum of the correct written words/ sum of all deleted words) $\times 100 =$ cloze test score. After the administration of scoring, the data were collected and subjected to statistical analysis. The critical F value at $p < .05$ was considered significant in this study.

3.10. Statistical Analysis

In this study, the two versions of each text were scored, and the data obtained from participants' recall protocol and cloze test were input in the Statistical Package for the Social Sciences (SPSS) (Release 16.0) for analysis. The data were examined to determine if they were normally distributed and whether the variances were homogenous and then two basic statistic concepts --means and standard deviations-- were calculated. The researcher compared a group's performance under one experimental treatment with the other group's performance under another experimental treatment. To identify the extent of the impact of independent variables (prior knowledge, rhetorical patterns, and gender) on learners' reading comprehension, a three-way analysis of variance (ANOVA) was used for seven research questions for each measure (idea units recall, importance level recall, and cloze test). The critical F value at $p < .05$ and an effect size ($\eta^2 > 0.01$) were considered significant for the hypotheses being tested. In other words, a small p -value ($p < .05$) in combination with a large effect size ($\eta^2 > 0.01$) was considered

sufficient evidence to reject null hypotheses. However, since statistical significance does not address the question of the magnitude of the phenomenon, the researcher must look at the effect size in relation to statistical significance. The researcher used Cohen's (1988) guidelines (0.01 = small effect, 0.09 = moderate effect, and 0.14 = large effect) to show the effect size in this study.

CHAPTER IV

FINDINGS

4.1. Introduction

This study focused on the impact of prior knowledge, rhetorical pattern, and gender on reading comprehension scores of high school students in Savojbolagh County in Iran. After reviewing the literature regarding these independent variables, this chapter answers the seven research questions stated in Chapter 1.

The current study was conducted among 244 high school students through a $2 \times 2 \times 2$ factorial research design. The researcher chose the participants based on their English test scores in the previous semester which was provided by experts in the Ministry of Education in Iran. In terms of expert judgments (in Ministry of Education in Iran), the students with marks from 14 to 17 were intermediate students. Thus, the researcher chose intermediate students with scores from 14 to 17 and divided them into eight groups. The participants were distributed into eight homogeneous groups since there were students with marks from 14 to 17 in each group. Thus, all groups were homogenous based on their reading ability marks.

However, four students had prior knowledge of the unfamiliar text and 8 students did not complete all the tests. In the data analysis, they were excluded. So, the data obtained from 232 students were analyzed. Participants consisted of 160 females (69%)

and 72 males (31%) (chapter 3). Unequal sample sizes in the ANOVA test are not problematic since SPSS offers an adjustment for unequal sample sizes.

The researcher selected two gender and culturally neutral texts based on expert judgments (Chapter 3). The term ‘culturally neutral text’ is used in the Iranian context to refer to the texts which are not related to any target language’s culture. Khajavi and Abbasian (2011, p. 181) asserted that, “Iranian high school textbooks are mostly neutral in terms of target language’s culture and the focus of most texts have been scientific subjects”. Al-Shumaimeri (2005, pp. 3-4) also stated that, “the findings indicate that more research on FL text comprehension using gender-neutral text is needed since more previous studies (Brantmeier, 2002, 2003; Bügel & Buunk, 1996) used gender-oriented reading text”. So, I used two neutral texts (gender and culturally neutral) with two rhetorical patterns (description and causation) in this study since according to Bügel and Glas (1991) and Bügel (1993), a neutral text is free of text bias.

To measure the level of English text comprehension of participants, two instruments were used in this study: immediate recall protocol and cloze test. According to Sharp (2002, p. 116), “both cloze test and recall protocol were regarded the most suitable methods to measure reading comprehension”. These two methods have been widely applied in text comprehension investigations and both allow a large number of participants to be tested. Some researchers also asserted that both recall protocol (Berkemeyer, 1989; Brisbois, 1992) and cloze test (Hewett, 1985; Schulz, 1984) are efficient and reliable tools for testing students’ comprehension. Bernhardt (1991) stated that in order to generalize research results and find out a complete picture, a variety of assessment tasks was needed.

Magliano, Trabasso, and Graesser (1999) asserted that validating the results by using other comprehension measures is important. Therefore, since immediate recall protocol might not reflect all the participants' information in the present study, the researcher used cloze test as well. Both tests were tried out in the pilot study and revisions were made based on the pilot study results (Chapter 3).

The participants' cloze tests were scored by two scorers. The exact word scoring method was used for cloze test in this study (Appendix B). As the two scorers scored the participants' cloze test, the researcher compared their scores. Since one mark was given to each exact word and zero was given to each wrong word, the final score of both scorers were equal and they were completely agreeable with each other. Every recall protocol based on the number of idea units and the importance level of each idea unit recalled by subjects was then analyzed by the two scorers (Appendix C). As mentioned in Chapter 3, in order to score the participants' recall protocols, the researcher followed Zhang's (2008) and Sharp's (2002) scoring method. One mark was given to each idea unit which the participants recalled. The importance level of each idea unit was also scored as follows: three marks were given to main generalization ideas, two marks were given to supporting generalization ideas, and one mark was given to supporting details ideas (Appendix E). The scores by the two scorers were correlated with each other and the final score was the average of the two scores given by the two scorers (Chapter 3). Since the maximum possible points for the instruments were different, the raw score of each student on recall protocol and cloze test was converted into percentages (Chapter 3). The data were processed by the Statistical Package for the Social Sciences (SPSS) (Release 16.0) to answer the seven research questions and support the seven hypotheses (Chapter 1).

The data gathered in this study were subjected to quantitative analysis. The quantitative analysis aimed at collecting descriptive data for determining the effect of the scores on reading comprehension. Results of the statistical analyses for each of the research questions are presented in this chapter. As Tuckman (1994) stated, analyzing the data by using statistical tests allows the researcher to compare group mean scores to determine whether the differences are due to the treatment or merely the result of chance.

As described in Chapter 3, the specific statistical procedure for analyzing this research was a three-way analysis of variance (ANOVA). By using a three-way analysis of variance (ANOVA), the researcher was able to look not only at the effects of each independent variable but also the interaction effect in the combination of independent variables. Three-way analysis of variance (ANOVA) was used in order to test the impact of the three independent variables: prior knowledge (familiar and unfamiliar), rhetorical pattern (description and causation), and gender (males and females) on the dependent variable. The dependent variable in this study was reading comprehension scores as measured by the scores of the recall of idea units, importance level, and cloze test. A small *p*-value combined with a large *F*-statistic was considered sufficient evidence for answering the research questions. Additionally, a large effect size ($\eta^2 > 0.01$) provides sufficient evidence to reject the null hypothesis. A large *F*-statistic indicates that there is more difference between groups than within groups and *p*-value determines whether the differences are due to treatments or merely the result of chance. Therefore, a *p*-value of .05 or less is considered for statistical significance in this study.

4. 2. Assumptions of Factorial ANOVA

Since the analysis of variance (ANOVA) was employed in the current study, it was expected that the three assumptions of ANOVA analysis-- independence, normality, and homogeneity of variance-- were met based on the following observations. In this study, the sample size was large enough, the students in each group were homogenous based on their reading ability, and the scores of test variables were independent of each other. The normality of each dependent variable's probability distribution was explored through the SPSS analysis. As shown in Table 4.1, since the amount of significant level at 231 degrees of freedom for Kolmogorov-Smirnov is higher than the critical value of 0.05, it indicated that dependent variables--the scores of idea units, importance level, and cloze test--were normally distributed.

Table 4.1
Tests of Normality Distribution for Dependent Variables Based on Kolmogorov-Smirnov

		Idea Units	Importance Level	Cloze Test
N		232	232	232
Normal Parameters ^a	Mean	69.40	64.46	66.18
	Std. Deviation	12.59	13.82	13.94
Kolmogorov-Smirnov ^a		0.815	0.705	0.836
Sig. (2-tailed)		.520	.703	.487

a. Test distribution is Normal.

Once more, in order to establish the violation of normality distribution, I examined the skewness and kurtosis of the data. Skewness refers to the 'lean' of a distribution and kurtosis refers to how 'flat' a distribution is. In order to decide whether the variables are distributed normally, the skewness and kurtosis should be between -2

and +2. As displayed in Table 4.2, skewness and kurtosis for all three measures are between -2 and +2. Therefore, the dependent variables--the scores of idea units, importance level, and cloze test--were normally distributed.

Table 4.2
Tests of Normality Distribution for Dependent Variables Based on the Values of Skewness and Kurtosis

		Idea Units	Importance Level	Cloze Test
N	Valid	232	232	232
	Missing	0	0	0
Skewness		0.041	0.063	0.039
Std. Error of Skewness		0.160	0.160	0.160
Kurtosis		-0.671	-0.680	-0.948
Std. Error of Kurtosis		0.318	0.318	0.318

Further, Figures 4.1, 4.2, and 4.3 display graphically the normality of the dependent variables. A normal distribution is a symmetric bell-shaped curve defined by the two items: the mean and the variance. As presented in Figures 4.1, 4.2, and 4.3, the mean, the median, and the mode will coincide in the center. Further, the two halves on either side of the center are exactly symmetrical. So, the dependent variables--the scores of idea units, importance level, and cloze test--were normally distributed in the current study.

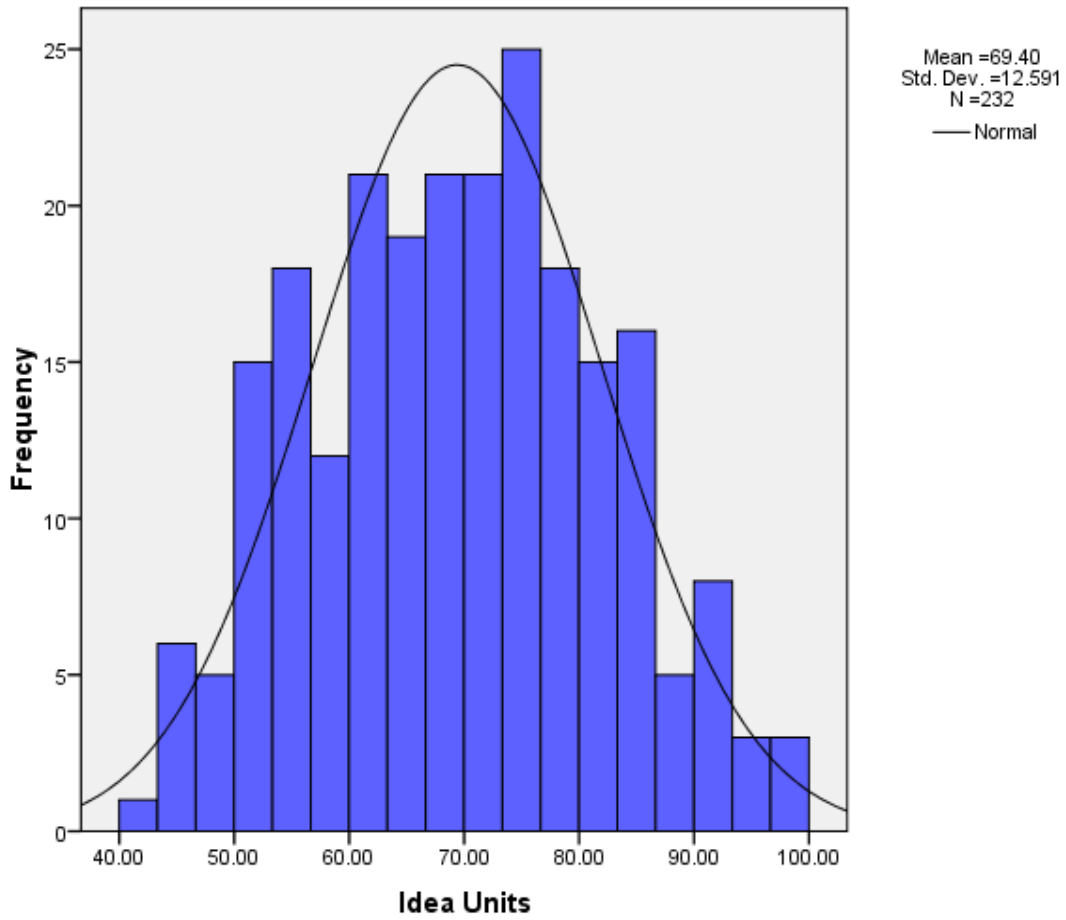


Figure 4.1. Normality distribution for the recall of idea units.

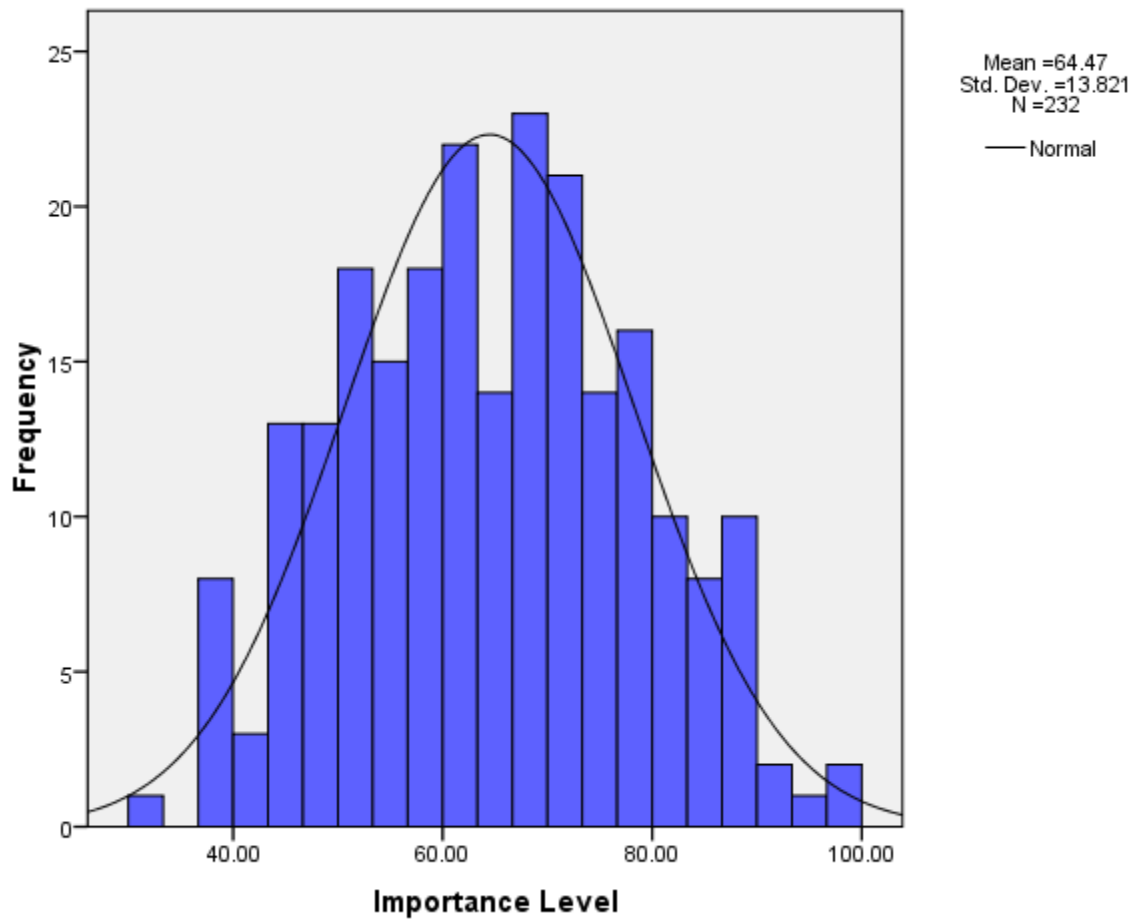


Figure 4.2. Normality distribution for importance level.

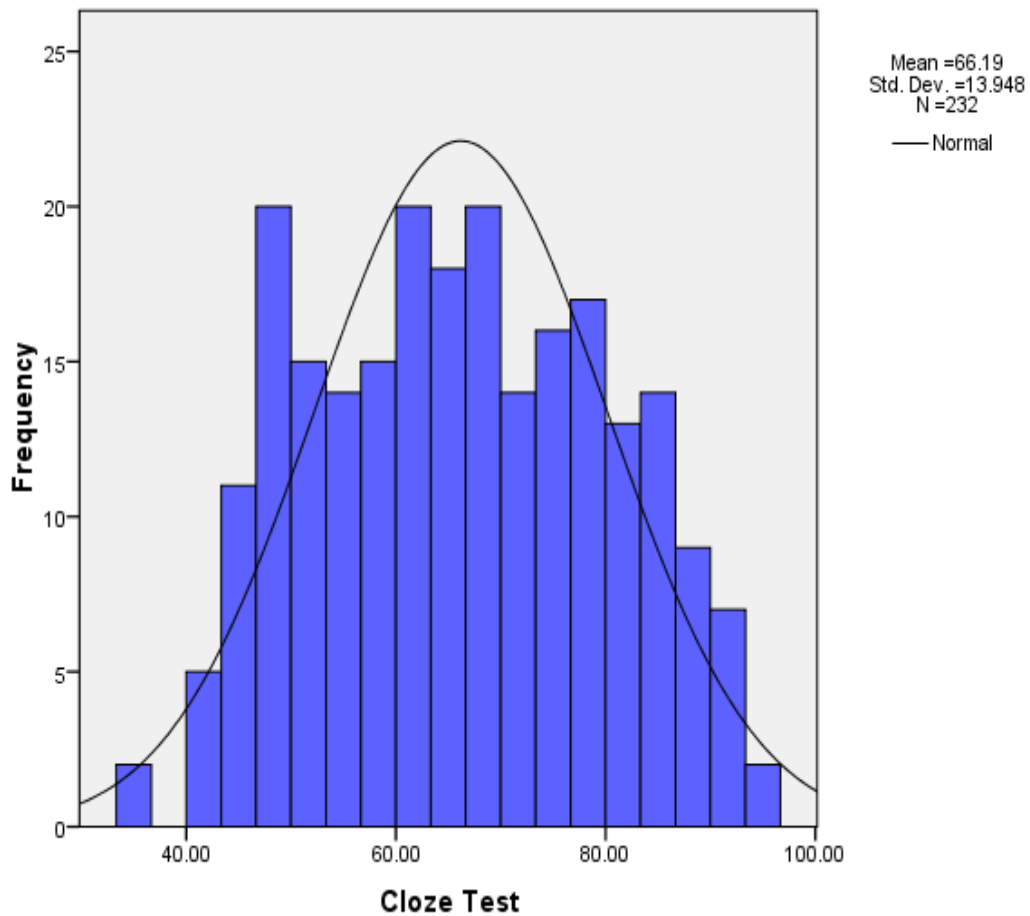


Figure 4.3. Normality distribution for cloze test scores.

The third assumption of analysis of variance (ANOVA) is the test of homogeneity of variances. In order to check whether the groups have approximately equal variance on the dependent variable, the researcher conducted Levene’s Test. Table 4.3 shows the results of the Levene’s Test for Equality of Variances. Based on Green and Salkind (2005), if the Levene’s Test for Equality of Variances is not significant ($p > .05$), the two or more variances are not significantly different, which means the variances are approximately equal. As can be seen in Table 4.3, the significance value for idea units was 0.857, for importance level, it was 0.997, and for cloze test, it was 0.946, which for the

three variables were greater than .05. Therefore, it is concluded that the variances were approximately equal and there is homogeneity of variances of the dependent variables across groups.

Table 4.3
Levene's test of Equality of Error Variances

Dependent variables	<i>F</i>	df 1	df 2	Sig.
Idea Units	0.468	7	224	.857
Importance Level	0.120	7	224	.997
Cloze Test	0.317	7	224	.946

* Significant at $p < .05$

4.3. Findings

For measuring the participants' reading comprehension, the researcher computed descriptive and inferential statistics. Each of the seven research questions was analyzed separately. The results of the descriptive statistical analysis including means and standard deviations for each measure were considered in this study. The overall summary of the results was also obtained from the three-way analysis of variance (ANOVA). In addition, the main and interaction effects between variables were displayed graphically.

Research Question 1: Does prior knowledge (familiar/unfamiliar) influence Iranian EFL students' reading comprehension?

In order to provide information on the first research question of whether prior knowledge had a significant effect on participants' reading comprehension test scores, the

researcher computed the mean of participants' responses to familiar and unfamiliar texts for each measure (recall of idea units, importance level, and cloze test). Then, the average responses of the two groups were compared. The researcher conducted a three-way analysis of variance (ANOVA), where prior knowledge was considered as an independent variable and the scores of idea units, importance level, and cloze test (the three measures of reading comprehension) as a dependent variable, respectively. The data were analyzed by the three-way analysis of variance (ANOVA) to establish whether a statistically significant difference did exist between the two groups' mean scores on the three kinds of recall scores.

1) As shown in Table 4.4, in terms of the recall of idea units, mean and standard deviation scores for the familiar text and unfamiliar text were $M = 76.00$ ($SD = 10.28$), $M = 62.32$ ($SD = 10.90$). The mean score of the reading familiar text is higher than the mean score of the reading unfamiliar text.

Table 4.4

Descriptive Statistics of Idea Units Recalled for each group

Prior Knowledge	Rhetorical Pattern	Gender	Mean	Std. Deviation	N*
Familiar	Description	Female	75.65	10.43	46
		Male	73.31	10.73	19
		Total	74.25	10.45	65
	Causation	Female	78.48	10.56	39
		Male	77.04	7.70	16
		Total	78.06	9.77	55
	Total	Female	76.41	10.60	85
		Male	75.01	9.52	35
		Total	76.00	10.28	120
Unfamiliar	Description	Female	58.07	10.98	40
		Male	62.34	10.11	18
		Total	59.39	10.81	58
	Causation	Female	63.17	9.59	35
		Male	69.68	10.11	19
		Total	65.46	10.17	54
	Total	Female	60.45	10.60	75
		Male	66.11	10.64	37
		Total	62.32	10.90	112
Total	Description	Female	66.94	13.49	86
		Male	67.97	11.69	37
		Total	67.25	12.94	123
	Causation	Female	71.24	12.65	74
		Male	73.04	9.70	35
		Total	71.82	11.77	109
	Total	Female	68.93	13.25	160
		Male	70.44	10.99	72
		Total	69.40	12.59	232

Note. N: number of participants

With respect to Table 4.4, I compared the reading comprehension mean scores of familiar and unfamiliar texts graphically. This descriptive analysis has been shown in

Figure 4.4. As can be seen in Figure 4.4, the students who read familiar text performed better than the students who read unfamiliar texts.

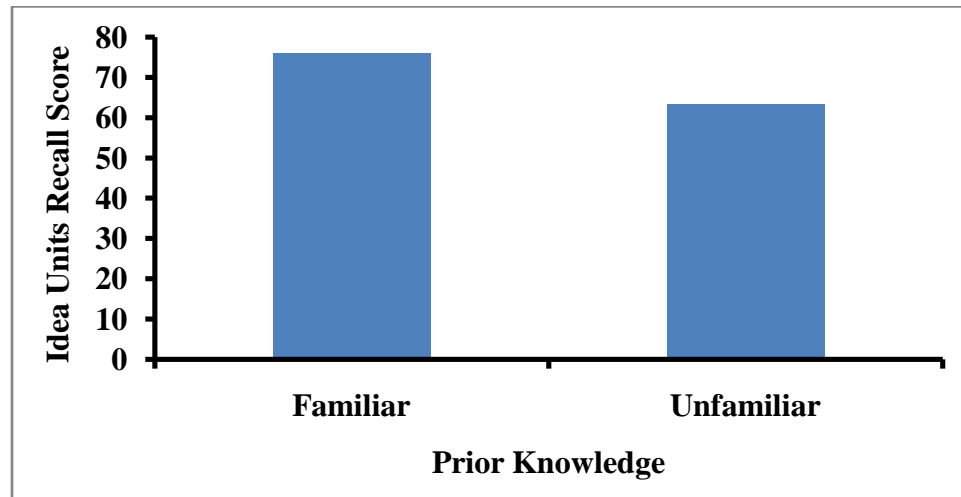


Figure 4.4. Mean comparisons of familiar and unfamiliar texts for the recall of idea units

As a follow up, the data were analyzed with a three-way analysis of variance (ANOVA). Table 4.5 shows the results of ANOVA that F value was statistically significant for idea units recall, $F(1, 224) = 73.32, p < .05, \eta^2 > 0.01$. The results of the between-groups effects (ANOVA) indicate significant differences in the performance of the participants in each group in their comprehension of familiar and unfamiliar text.

Table 4.5
Results of Three-Way ANOVA test for Idea Unit Recall Scores

Source of Variations	SS	df	MS	F	Sig.	η^2
Prior Knowledge (PK)	7921.336	1	7921.336	73.324	.000*	.248
Rhetorical Pattern (RP)	1292.985	1	1292.985	11.969	.001*	.050
Gender (G)	174.927	1	174.927	1.619	.205	.008
PK * RP	59.729	1	59.729	0.553	.458	.003
PK * G	606.187	1	606.187	5.611	.019*	.024
RP * G	8.531	1	8.531	0.079	.779	.001
PK * RP * G	24.016	1	24.016	0.222	.638	.001
Error	24199.018	224	108.031			
Total	1157562.708	232				

*Significant at $p < .05$

This provided support for hypothesis I which stated that, “prior knowledge (familiar/unfamiliar) influences Iranian EFL students’ reading comprehension test scores”. The results showed that the performance of the students reading familiar text was better than the students reading unfamiliar text.

2) As mentioned in chapter 3, each idea unit which is recalled by the participants was also rated for importance within the text. Hence, Table 4.6 illustrates a summary result for importance level score to add more support for the results of the recall of idea units. As shown in Table 4.6, the mean and standard deviation scores for familiar and unfamiliar texts were $M = 71.19$ ($SD = 11.66$), $M = 57.25$ ($SD = 12.26$). The mean score of the reading familiar text was higher than the reading unfamiliar text.

Table 4.6
Descriptive Statistics of Importance Level Recalled for each group

Prior Knowledge	Rhetorical Pattern	Gender	Mean	Std. Deviation	N
Familiar	description	female	69.88	11.21	46
		male	68.11	12.40	19
		Total	69.36	11.50	65
	Causation	female	73.93	11.76	39
		male	71.95	11.34	16
		Total	73.35	11.57	55
	Total	female	71.74	11.58	85
		male	69.86	11.91	35
		Total	71.19	11.66	120
Unfamiliar	description	female	52.98	11.98	40
		male	57.27	11.33	18
		Total	54.31	11.85	58
	causation	female	58.12	11.85	35
		male	64.64	11.38	19
		Total	60.41	12.00	54
	Total	female	55.38	12.12	75
		male	61.06	11.80	37
		Total	57.25	12.26	112
Total	description	female	62.02	14.29	86
		male	62.84	12.95	37
		Total	62.26	13.85	123
	causation	female	66.45	14.16	74
		male	67.98	11.79	35
		Total	66.94	13.41	109
	Total	female	64.07	14.36	160
		male	65.34	12.58	72
		Total	64.46	13.82	232

Regarding Table 4.6, the reading comprehension mean scores of familiar and unfamiliar texts on the importance level were compared graphically in Figure 4.5. This descriptive analysis revealed that the mean score for familiar text was higher than for unfamiliar text (Figure 4.5). In other words, the students who read familiar texts outperformed the students who read unfamiliar texts.

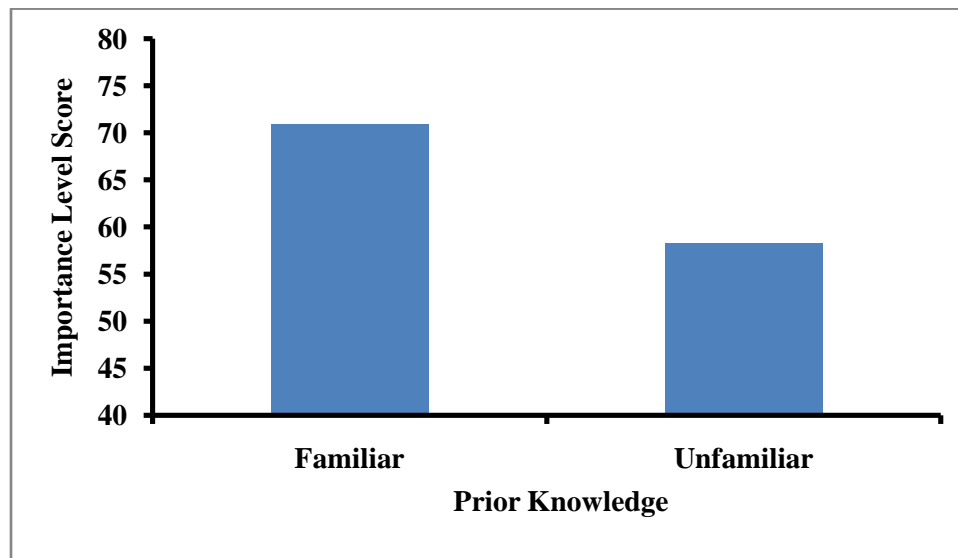


Figure 4.5. Mean comparisons of familiar and unfamiliar texts for importance level score.

The data were analyzed by a three-way ANOVA to establish whether a significant difference did exist between the two groups' mean scores on the importance level. Table 4.7 supported the above findings by displaying the ANOVA results. As shown in Table 4.7, the F value was statistically significant $F(1, 224) = 58.53, p < .05, \eta^2 > 0.01$. As can be seen, the two means differ significantly from each other.

Table 4.7

Results of Three-Way ANOVA test for Importance Level Score

Source of Variations	SS	df	MS	F	Sig.	η^2
Prior Knowledge (PK)	7974.857	1	7974.857	58.537	.000*	.207
Rhetorical Pattern (RP)	1282.484	1	1282.484	9.413	.002*	.040
Gender (G)	153.990	1	153.990	1.130	.289	.005
PK * RP	65.631	1	65.631	0.481	.488	.002
PK * G	654.312	1	654.312	4.802	.029*	.021
RP * G	12.426	1	12.426	0.091	.763	.000
PK * RP * G	18.475	1	18.475	0.135	.713	.001
Error	30516.763	224	136.235			
Total	1008312.812	232				

*Significant at $p < .05$

This confirmed hypothesis I which stated that prior knowledge (familiar/unfamiliar) influences Iranian EFL students' reading comprehension test scores. The results showed that students performed better on familiar texts than unfamiliar texts.

3) In order to validate the results of the recall protocol, the researcher also analyzed the results of students' performance in a cloze test (Table 4.8).

Table 4.8
Descriptive Statistics of Cloze Test for each group

Prior Knowledge	Rhetorical Pattern	Gender	Mean	Std. Deviation	N
Familiar	description	female	73.38	11.73	46
		Male	66.11	12.40	19
		Total	71.25	12.29	65
	causation	female	77.05	10.91	39
		Male	69.95	11.34	16
		Total	74.99	11.40	55
	Total	female	75.06	11.44	85
		Male	67.86	11.91	35
		Total	72.96	11.99	120
Unfamiliar	description	female	57.48	12.77	40
		Male	55.27	11.33	18
		Total	56.80	12.28	58
	causation	female	60.41	11.92	35
		Male	62.64	11.38	19
		Total	61.19	11.68	54
	Total	female	58.85	12.39	75
		Male	59.06	11.80	37
		Total	58.92	12.14	112
Total	description	female	65.98	14.54	86
		Male	60.84	12.95	37
		Total	64.43	14.22	123
	causation	female	69.18	14.08	74
		Male	65.98	11.79	35
		Total	68.15	13.41	109
	Total	female	67.46	14.37	160
		Male	63.34	12.58	72
		Total	66.18	13.94	232

Table 4.8 displays a summary result for the recall of words in the cloze test. As indicated in Table 4.8, the mean and standard deviation scores for the familiar and unfamiliar texts were $M = 72.96$ ($SD = 11.99$), $M = 58.92$ ($SD = 12.14$) respectively. This shows that the students who read familiar text outperformed students who read the unfamiliar text.

In light of Table 4.8, the researcher compared the reading comprehension mean scores of familiar and unfamiliar texts graphically in Figure 4.6. This descriptive analysis revealed that the performance of students who read familiar text was better than the students who read unfamiliar text on the cloze test (Figure 4.6).

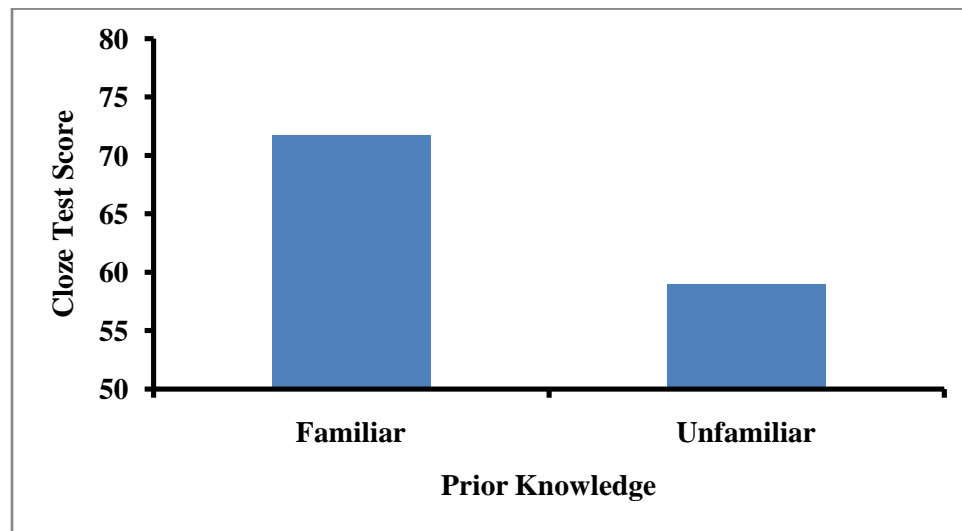


Figure 4.6. Mean comparisons of familiar and unfamiliar texts for cloze test.

The data were analyzed by a three-way ANOVA to establish whether a significant difference did exist between the two groups' mean scores on the recall of words in the cloze test. As shown in Table 4.9, the F value was statistically significant, $F(1, 224) = 56.89$, $p < .05$, $\eta^2 > 0.01$. It can be interpreted that the two means differ significantly from each other.

Table 4.9
Results of Three-Way ANOVA test for Cloze Test scores

Source of Variations	SS	df	MS	F	Sig.	η^2
Prior Knowledge (PK)	8004.291	1	8004.291	56.891	.000*	.203
Rhetorical Pattern (RP)	1006.775	1	1006.775	7.155	.008*	.030
Gender (G)	658.166	1	658.166	4.678	.032*	.020
PK * RP	19.576	1	19.576	0.139	.709	.001
PK * G	662.762	1	662.762	4.710	.031*	.020
RP * G	57.869	1	57.869	0.411	.522	.002
PK * RP * G	63.603	1	63.603	0.452	.502	.002
Error	31515.674	224	140.695			
Total	1063200.482	232				

*Significant at $p < .05$

Once more, the results provided more support for hypothesis I which stated that, “prior knowledge (familiar/unfamiliar) influences Iranian EFL students’ reading comprehension test scores”. Overall, the results showed that the students reading familiar text had higher comprehension scores than the students reading unfamiliar text.

Therefore, hypothesis I was confirmed for the recall of idea units, importance level, and cloze test scores for Iranian EFL students. Regarding the results, there is powerful support for hypothesis I, with strong indications from the scores of idea units, importance level, and cloze test that prior knowledge affects reading comprehension. The results showed that the EFL high school students performed better on culturally neutral familiar texts than culturally neutral unfamiliar text. This finding adds more information to the schema theory which states that prior knowledge of the students in terms of culturally neutral text is also a key variable which affects their reading comprehension.

Research Question 2: Do rhetorical patterns (description/causation) influence Iranian EFL students' reading comprehension?

In this study, I answer research question two by comparing two rhetorically different texts (description and causation). In order to answer research question two, I computed the mean score of participants' responses to descriptive and causative texts for each reading comprehension measure (recall of idea units, importance level, and cloze test). Then, the average responses of the two groups were compared. By conducting the three-way ANOVA, the research question was then tested. Rhetorical pattern with two levels (description and causation) was considered as the independent variable and the scores of idea units, importance level, and cloze test as the dependent variables, respectively.

1) For the recall of idea units, Table 4.4 depicts mean and standard deviation scores for descriptive and causative text types with $M = 67.25$ ($SD = 12.94$) and $M = 71.82$ ($SD = 11.77$), respectively. As can be seen, the mean score of the reading causative text overrides that of the reading descriptive text.

With regard to Table 4.4, the researcher compared the reading comprehension mean scores of descriptive and causative text types graphically in Figure 4.7. This descriptive analysis also displayed that the students who read causative texts performed better than the students who read descriptive texts (Figure 4.7).

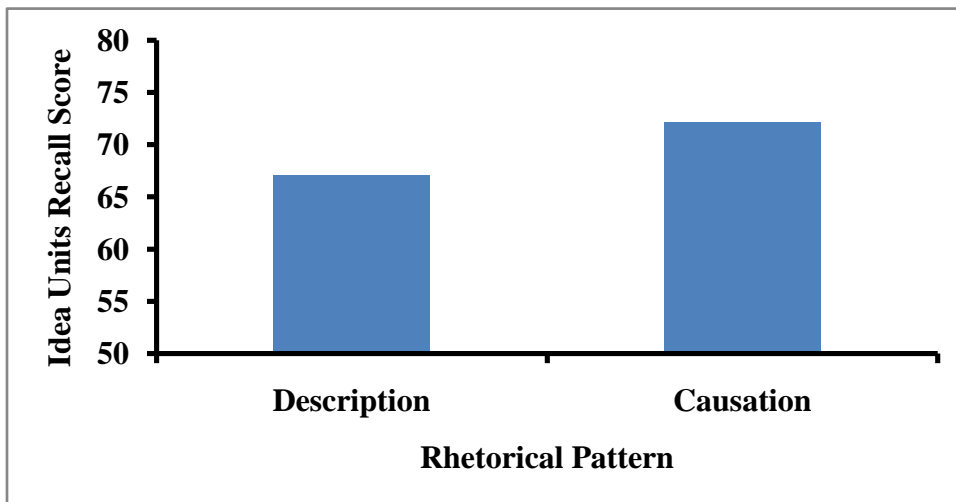


Figure 4.7. Mean comparisons of descriptive and causative text types for the recall of idea units.

As presented in Table 4.5, the result of the three-way ANOVA for the idea units scores showed a significant difference between the two groups, $F(1, 224) = 11.96, p < .05, \eta^2 > 0.01$. The ANOVA result revealed that there is a statistical difference between the mean of the two groups.

So, hypothesis II was supported for the recall of idea units which stated that, “rhetorical pattern (description/causation) influenced Iranian EFL students’ reading comprehension test scores”. The findings show that the students reading causative text outperformed the students reading the descriptive text.

2) In terms of importance level measure, Table 4.6 shows that mean and standard deviation scores for descriptive and causative text types were $M = 62.26 (SD = 13.85)$, and $M = 66.94 (SD = 13.41)$, respectively. As Table 4.6 indicates, the mean score for reading causative text is higher than for reading descriptive text.

I compared the participants' performance when they read descriptive and causative texts through Table 4.6. The results are represented graphically in Figure 4.8. As Figure 4.8 indicates, the mean score of the students who read causative text type is more than the mean score of the students who read descriptive text type as well. This result reveals that the performance of students in reading causative texts is better.

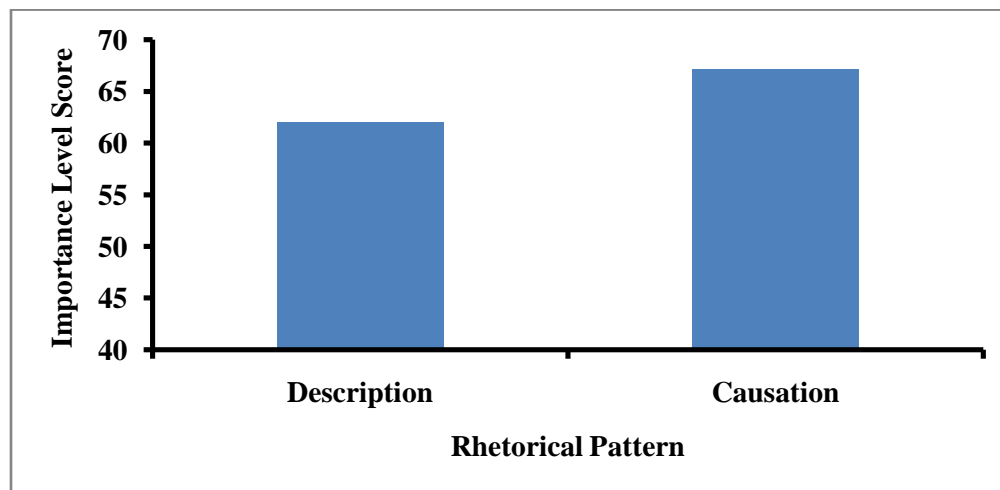


Figure 4.8. Mean comparisons of descriptive and causative text types for importance level score.

As illustrated in Table 4.7, the result of the three-way ANOVA for the importance level scores shows a statistically significant difference between the two groups $F(1, 224) = 9.41, p < .05, \eta^2 > 0.01$. This shows that the participants' score on descriptive and causative texts were significantly different.

This finding confirmed hypothesis II which stated that rhetorical patterns (description and causation) influence Iranian EFL students' reading comprehension test scores. In other words, the results showed that participants performed better on causative text than descriptive text.

3) For the recall of words in cloze test, as reported in Table 4.8, mean and standard deviation scores for descriptive and causative text types were $M= 64.43$ ($SD= 14.22$), and $M= 68.15$ ($SD = 13.41$) respectively. The group with the higher mean score performed better than the group with the lower mean score. In other words, the students who read causative text outperformed the students who read the descriptive text.

Regarding Table 4.8, the comparison between the reading comprehension mean scores of causative texts with descriptive texts on cloze test measure is displayed in Figure 4.9. This display analysis revealed that the mean scores of causative text type were higher than for the descriptive text type (Figure 4.9). As can be seen clearly, the performance of students who read causative texts is better than the performance of the students who read the descriptive texts.

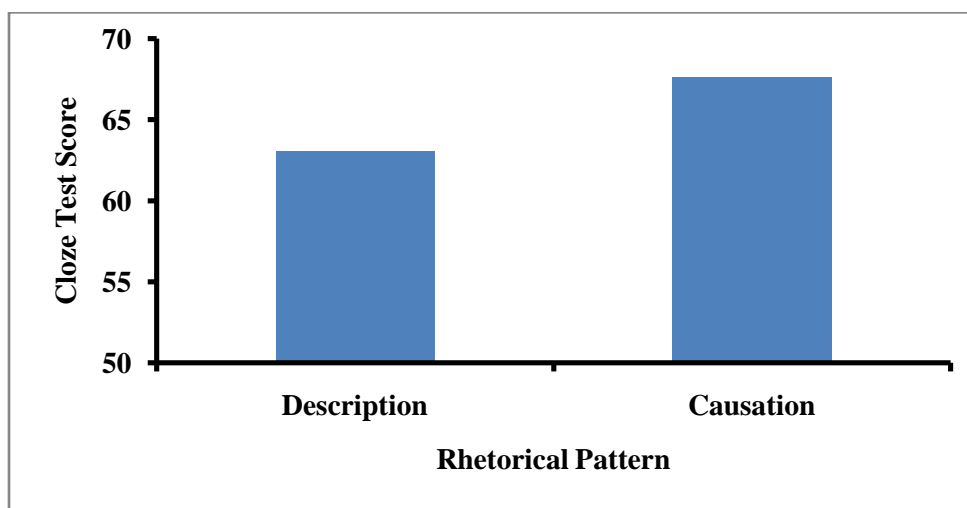


Figure 4.9. Mean comparisons of descriptive and causative text types for cloze test.

As shown in Table 4.9, the results of the three-way ANOVA test for the cloze test scores indicated a significant difference between the two groups $F(1, 224) = 7.15$, $p <$

.05, $\eta^2 > 0.01$. The groups' performances turned out to be significantly different on the two text types.

More firm support was therefore provided for hypothesis II from the cloze test scores, which stated that rhetorical pattern influenced Iranian EFL students' reading comprehension test scores. The findings revealed that the performance of the students reading causative text was better than that of students reading descriptive text. The results of research question two support previous studies and add more information to the schema theory which states that EFL students also comprehend tightly organized texts (causation) better than the loosely organized texts (description) at the high school level.

Research Question 3: Does gender influence Iranian EFL students' reading comprehension?

In order to answer research question three, the present study examined the effect of two gender neutral texts on high school male and female students. The researcher selected two gender neutral texts because such texts are free of gender bias (Bugel, 1993) and there is a need for more research on L2/FL reading comprehension employing gender-neutral text (Al-Shumaimeri, 2005). In order to see if gender had a significant effect on subjects' reading comprehension test scores, I compared the average responses of female and male students. Using a three-way analysis of variance (ANOVA) with gender as the independent variable and the scores of idea units, importance level, and cloze test as the dependent variables, I found out whether there is a significant effect for gender.

1) As illustrated in Table 4.4, mean scores for female and male groups were $M = 68.93$ ($SD= 13.25$), and $M = 70.44$ ($SD= 10.99$) respectively for the idea unit recall. This result shows a slight difference between female and male students' reading comprehension.

With respect to Table 4.4, the researcher compared the reading comprehension mean scores of female and male students graphically in Figure 4.10. This descriptive analysis revealed that there is no significant difference between mean score of female and male students (Figure 4.10).

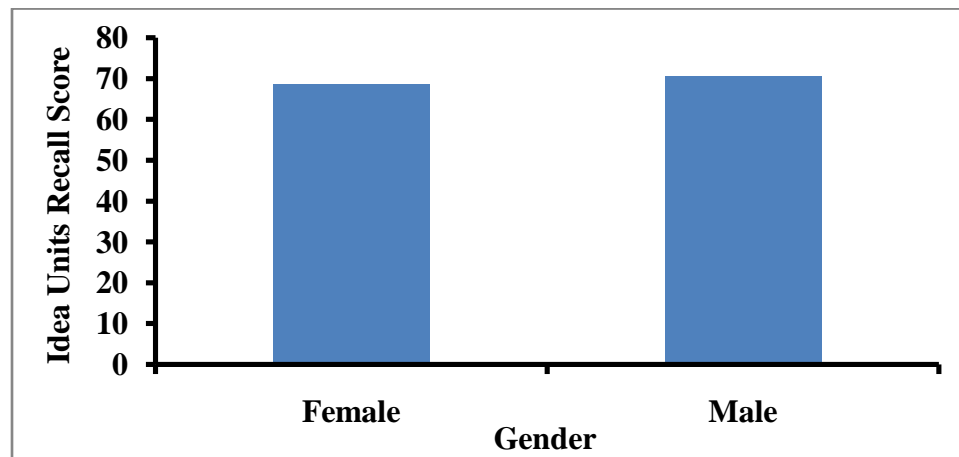


Figure 4.10. Mean comparisons of female and male students for the recall of idea units

The data were analyzed by a three-way ANOVA to establish whether a significant difference did exist between the two groups' mean scores on the recall of idea units. Table 4.5 supported the above findings by presenting the ANOVA results. As shown in Table 4.5, the F value was not statistically significant $F(1, 224) = 1.61, p > .05, \eta^2 <$

0.01. This represents that there is no statistically significant difference between female and male students in the recall of idea units.

Based on the ANOVA result, hypothesis III which stated that, “gender (male/female) influences Iranian EFL students’ reading comprehension test scores” is rejected. So, there is no significant difference between female and male students in reading comprehension test scores.

2) A summary result for importance level scores is illustrated in Table 4.6. The mean and standard deviation scores for female and male students were $M = 64.07$ ($SD = 14.36$), $M = 65.34$ ($SD = 12.58$), respectively. As can be seen, there is not any considerable difference between female and male students’ performance for the importance level score. With regard to Table 4.6, Figure 4.11 shows the mean score of female students in comparison to male students graphically. This descriptive analysis revealed that there is no significant difference between mean score of female and male students’ reading comprehension test scores (Figure 4.11).

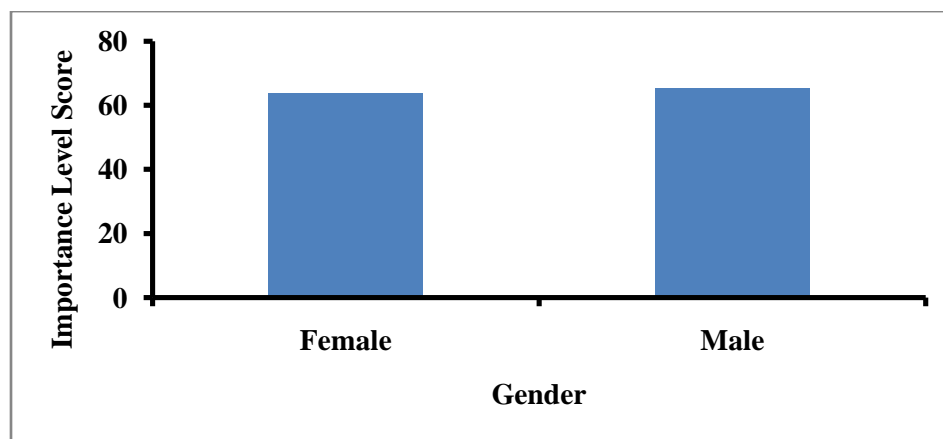


Figure 4.11. Mean comparisons of female and male students for importance level score

The data were analyzed by a three-way ANOVA to establish whether a statistically significant difference did exist between female and male students' mean scores on the importance level score. As Table 4.7 presents, the above findings were supported by the ANOVA results. The F value was not statistically significant $F(1, 224) = 1.13, p > .05, \eta^2 < 0.01$. It can be interpreted that the two mean scores do not differ significantly from each other.

This ANOVA result rejected hypothesis III which stated that gender (female/male) influences Iranian EFL students' reading comprehension test scores. The results presented no statistically significant difference between female and male students on reading comprehension test scores.

3) For the recall of words in the cloze test, Table 4.8 displays the mean and standard deviation scores for female and male students as $M = 67.46 (SD = 14.37)$, and $M = 63.34 (SD = 12.58)$ respectively. The group with the higher mean score performed significantly better than the group with the lower mean score. Therefore, females performed better than males on reading texts.

Regarding Table 4.8, the researcher compared the mean scores of females and males' reading comprehension in Figure 4.12. The results indicated that mean scores of female and male students were different. This displayed analysis revealed that the mean scores of females were higher than males based on the cloze test scores (Figure 4.12). In other words, females performed better than males on the cloze test.

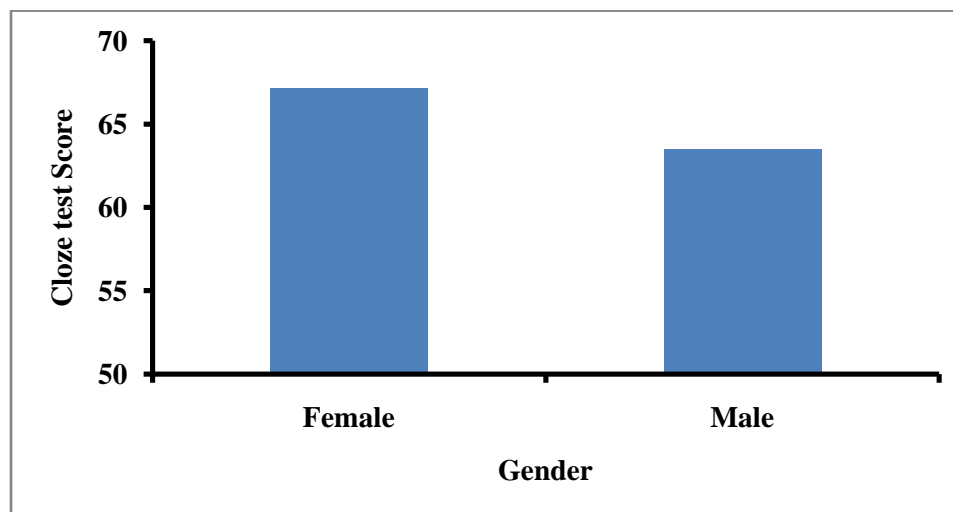


Figure 4.12. Mean comparisons of female and male students for cloze test.

Using a three-way ANOVA, the data were analyzed to establish whether a significant difference did exist between female and male students' mean scores on the cloze test. The ANOVA results displayed in Table 4.9 supported the above findings. As shown in Table 4.9, the F value was statistically significant $F(1, 224) = 4.67, p < .05, \eta^2 > 0.01$.

This confirmed hypothesis III which stated that gender (female/male) influences Iranian EFL students' reading comprehension test scores. The results showed that there was a statistically significant difference between female and male students on reading comprehension as determined by cloze test scores. Female students outperformed the male students on the cloze test measure at the high school level.

Since the two texts used in the current study were gender-neutral texts, the results of research question three for recall protocol test do not support the gender schema theory in which gender is a key variable which influences students' reading comprehension.

However, the results of the cloze test which support the theory may be due to gender-biased test rather than the difference in students' reading comprehension abilities.

Research Question 4: Is there a two-way interaction effect between prior knowledge and rhetorical pattern on Iranian EFL students' reading comprehension?

Interaction effect can be explained as 'looking for difference in differences'. In order to answer research question four, the researcher examined whether there is an interaction effect between prior knowledge and rhetorical pattern on the three kinds of recall scores, respectively.

1) For the recall of idea units, the researcher examined whether the effect of prior knowledge on reading comprehension depends on the different levels of rhetorical pattern. As shown in Table 4.4, the difference between familiar descriptive ($M = 74$) and familiar causative ($M = 78$) texts is about 4 points. The difference for unfamiliar descriptive ($M = 59$) and unfamiliar causative ($M = 65$) texts is 6 points. The difference of 6 is not so different from the difference of 4. The differences are not so apparent. This is not the mark of an interaction effect. So, the effect of prior knowledge is not different across different levels of rhetorical patterns.

Based on Table 4.4, Figure 4.13 clearly shows that there is no interaction effect between prior knowledge and rhetorical pattern in the recall of idea units. As shown in Figure 4.13, the mean score of familiar texts is shown to be superior in both descriptive

and causative texts. In other words, the performance of students in reading familiar text is better for both descriptive and causative texts.

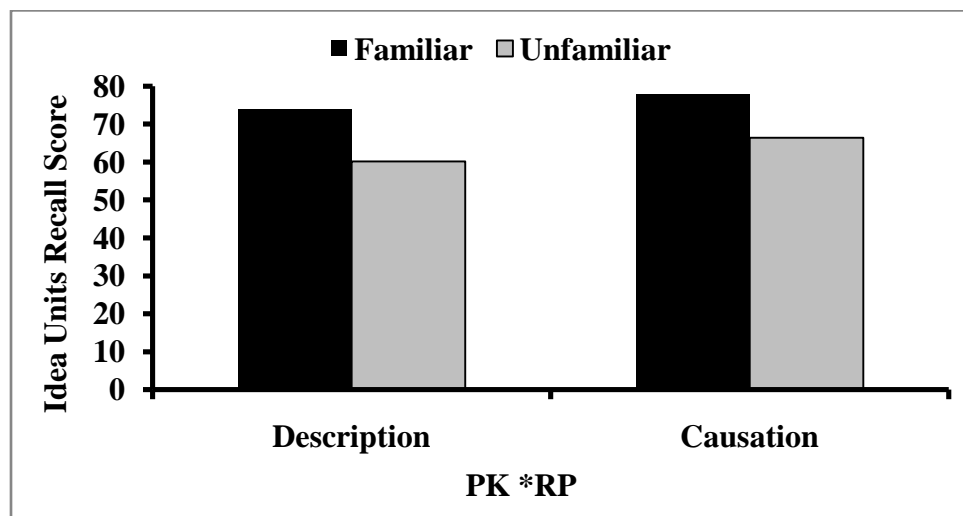


Figure 4.13. Mean comparisons of interaction effect of prior knowledge and rhetorical pattern for the recall of idea units.

The three-way ANOVA was conducted to test this hypothesis, using prior knowledge and rhetorical pattern as independent variables and the score of idea units as the dependent variable. As can be seen in Table 4.5, the F value was not statistically significant, $F(1, 224) = 0.55, p > .05, \eta^2 < 0.01$. So, this interaction effect was not found to be significant between prior knowledge and rhetorical pattern.

This result rejected hypothesis IV which stated that, “there is a two-way interaction effect between prior knowledge and rhetorical pattern on Iranian EFL students’ reading comprehension test scores”. Therefore, there is no interaction effect between prior knowledge and rhetorical pattern on the recall of idea units.

2) For the importance level score, Table 4.6 shows the mean scores of familiar descriptive ($M = 69$) and familiar causative ($M = 73$) texts. The difference of these two mean scores is about 4 points. Looking at the difference between unfamiliar descriptive ($M = 54$) and unfamiliar causative ($M = 60$) texts shows a difference of 6 points. The difference of 6 is not so different from 4. This difference shows the effect of prior knowledge on reading comprehension does not depend on the different levels of rhetorical patterns.

In terms of Table 4.6, Figure 4.14 clearly shows that there is no interaction effect between prior knowledge and rhetorical pattern for the importance level measure. As indicated in Figure 4.14, the students performed better on reading familiar texts in both descriptive and causative texts.

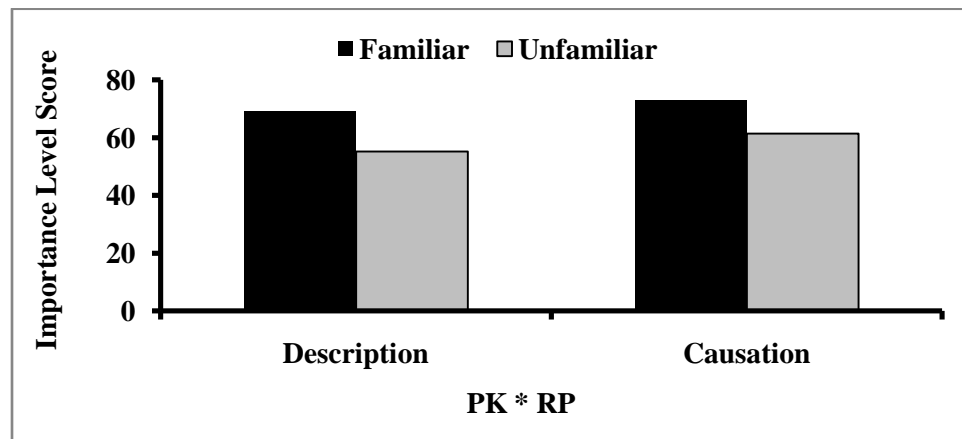


Figure 4.14. Mean comparisons of interaction effect of prior knowledge and rhetorical pattern for importance level score

Using a three-way ANOVA, the researcher examined hypothesis IV through importance level scores as dependent variable to determine whether a two-way interaction effect existed between prior knowledge and rhetorical pattern. As illustrated in

Table 4.7, the F value was not statistically significant $F(1, 224) = 0.48, p > .05, \eta^2 < 0.01$.

Once more, the results of testing the two-way interaction effect did not confirm hypothesis IV which stated that there is a two-way interaction effect between prior knowledge and rhetorical pattern on Iranian EFL students' reading comprehension test scores. So, it can be concluded that there is no interaction effect between prior knowledge and rhetorical pattern on importance level scores.

3) In terms of cloze test, Table 4.8 presents mean scores for familiar descriptive and familiar causative texts as $M = 71$ and $M = 75$ respectively. The difference in score is 4 only. The mean scores for unfamiliar descriptive and unfamiliar causative texts is $M = 57$ and $M = 61$. The difference is 4 only. As can be seen, the differences are not apparent. So, the effect of prior knowledge is not different across different levels of rhetorical pattern.

Looking at Table 4.8, Figure 4.15 obviously indicates that there is no interaction effect between prior knowledge and rhetorical pattern in the cloze test measure. Once more, the students outperformed on reading familiar texts in both descriptive and causative texts.

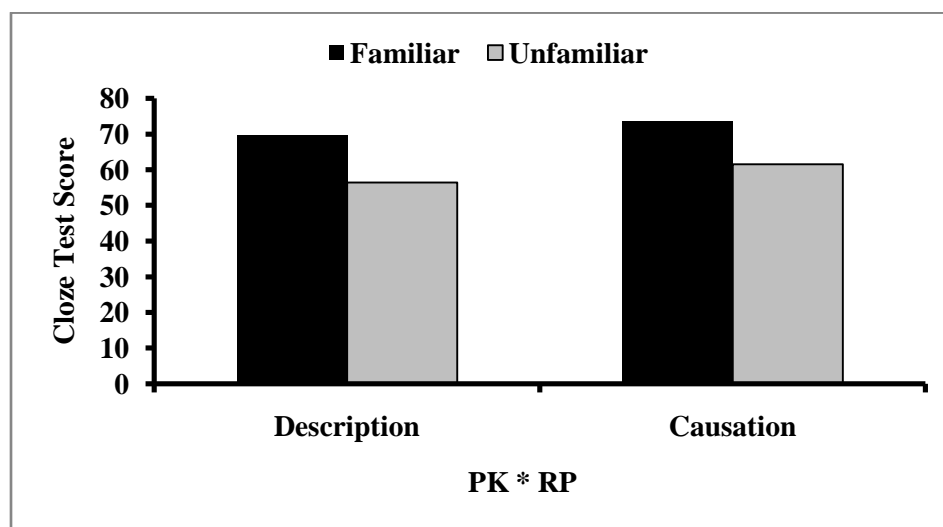


Figure 4.15. Mean comparisons of interaction effect of prior knowledge and rhetorical pattern for cloze test

To test the interaction effect between prior knowledge and rhetorical pattern, the analysis of variance (ANOVA) was utilized. Once more, in Table 4.9, the results of three-way ANOVA did not display a statistically significant interaction effect between prior knowledge and rhetorical pattern on cloze test scores. As shown in Table 4.9, the F value was not statistically significant $F(1, 224) = 0.13, p > .05, \eta^2 < 0.01$.

The ANOVA results rejected hypothesis IV. Thus, there is no interaction effect between prior knowledge and rhetorical pattern on the cloze test measure.

Therefore, hypothesis IV was not supported by the results obtained from the scores of the three recall measures (idea units, importance level, and cloze test). In other words, prior knowledge did not interact with rhetorical pattern to affect Iranian EFL students' reading comprehension test scores.

The result suggests that students do not use prior knowledge to compensate for difficulty in rhetorical pattern. Therefore, the results of research question four do not support the notion of schema theory in which reading comprehension involves a two-way interaction effect between the reader's background knowledge and the rhetorical pattern of the text.

Research Question 5: Is there a two way interaction effect between prior knowledge and gender on Iranian EFL students' reading comprehension?

In order to answer research question five, I compared the mean scores of female and male responses to familiar and unfamiliar texts. Using a three-way ANOVA, this research question was tested. Prior knowledge and gender were considered as independent variables and the scores of idea units, importance level, and cloze test as the dependent variables, respectively.

1) In the recall of idea units, as Table 4.4 shows, mean scores for familiar text read by female and male students were $M = 76$ and $M = 75$. The difference in mean score is 1. Looking at the mean scores for unfamiliar text read by females and males were $M = 60$ and $M = 66$, the point difference is 6. The difference between 6 and 1 is 5 points. This point is a significant mark for interaction effect. So, it can be interpreted that the effect of prior knowledge on text comprehension depends on the different levels of gender. In other words, female students performed slightly better on familiar texts, while male students performed better on unfamiliar texts. So, the performance of the high school students at third year on texts depends on their gender.

With respect to Table 4.4, Figure 4.16 clearly shows that there is a two-way interaction effect between prior knowledge and gender in the recall of idea units. As can be seen in Figure 4.16, female students performed better on reading familiar text while male students performed better on reading unfamiliar text.

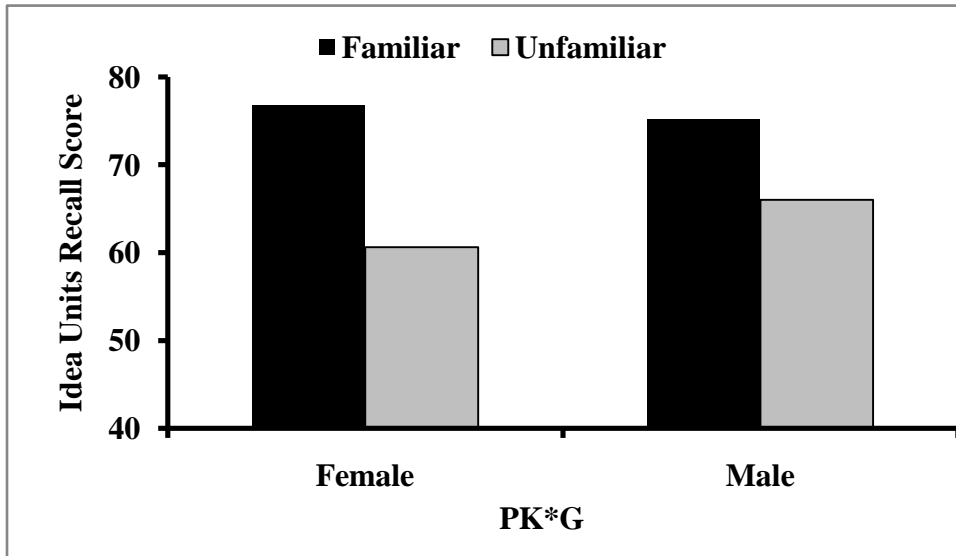


Figure 4.16. Mean comparisons of interaction effect of prior knowledge and gender for the recall of idea units

In Table 4.5, the results of the three-way ANOVA for the recall of idea unit scores also indicated that there was a statistically significant interaction effect between prior knowledge and gender $F(1, 224) = 5.61, p < .05, \eta^2 > 0.01$. This implies that male students took more advantage of prior knowledge to comprehend unfamiliar text whereas female students took more advantage of prior knowledge for familiar text.

Therefore, this provides support for hypothesis V which stated that there is a two-way interaction effect between prior knowledge and gender on Iranian EFL students'

reading comprehension test scores. In other words, the interaction between students' prior knowledge and their gender do, indeed, affect students' reading comprehension test scores.

2) For the importance level score, Table 4.6 presented mean scores for familiar texts read by female and male students as $M = 72$ and $M = 70$. The difference point is 2; regarding mean scores of unfamiliar texts for female and male students were $M = 55$ and $M = 61$ respectively. The difference in point is 7. The difference of 7 is larger than the difference of 2. This comparison shows that female students outperformed on familiar text, while male students outperformed on unfamiliar texts. So, the effect of prior knowledge is different across different levels of gender.

Regarding Table 4.6, as illustrated in Figure 4.17, 5 points difference is the mark of an interaction effect. So, there is a two-way interaction effect between prior knowledge and gender on the importance level.

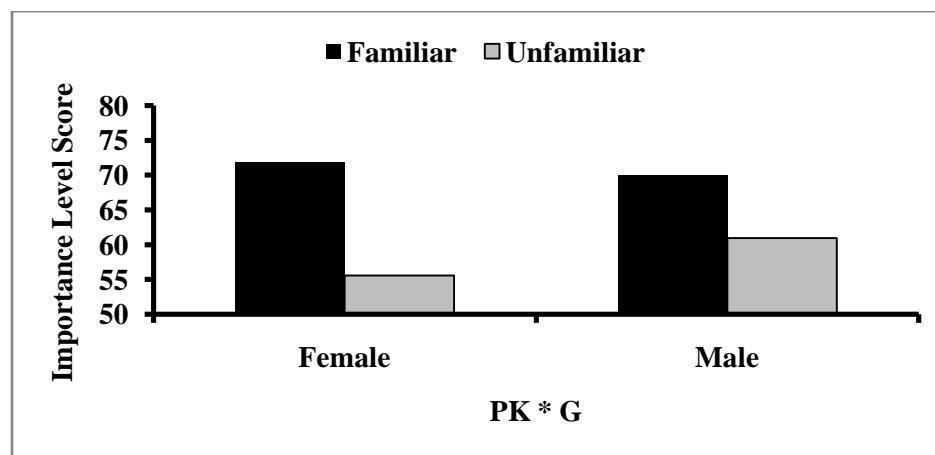


Figure 4.17. Mean comparisons of interaction effect of prior knowledge and gender for importance level score

As presented in Table 4.7, a three-way analysis of variance (ANOVA) indicated a significant interaction effect between prior knowledge and gender $F(1, 224) = 4.80, p < .05, \eta^2 > 0.01$. With regard to the significant differences observed in the ANOVA result, it is possible to claim that, indeed, male students performed better on the unfamiliar text while female students performed better on familiar text.

Therefore, hypothesis V which stated that there is a two-way interaction effect between prior knowledge and gender was confirmed for the recall of importance level.

3) The data from this study were used to determine whether there is an interaction effect between prior knowledge and gender for the cloze test scores. As Table 4.8 presents, mean scores for familiar texts read by female and male students were $M = 75$ and $M = 68$. The difference point is 7. On the other hand, mean scores for unfamiliar texts read by female and male students were $M = 59$ and $M = 59$. The difference point is 0. The difference point between 0 and 7 is 7. This point is a significant mark for interaction effect. So, the effect of prior knowledge on reading comprehension depends on the different levels of gender.

Looking at Table 4.8, the researcher compared the results graphically. Figure 4.18 is a graphic representation of this interaction effect for the cloze test scores. As can be seen, there is a two-way interaction effect between prior knowledge and gender. In other words, females scored higher on reading familiar texts than male students, while the performance of both female and male students is equal on reading unfamiliar texts.

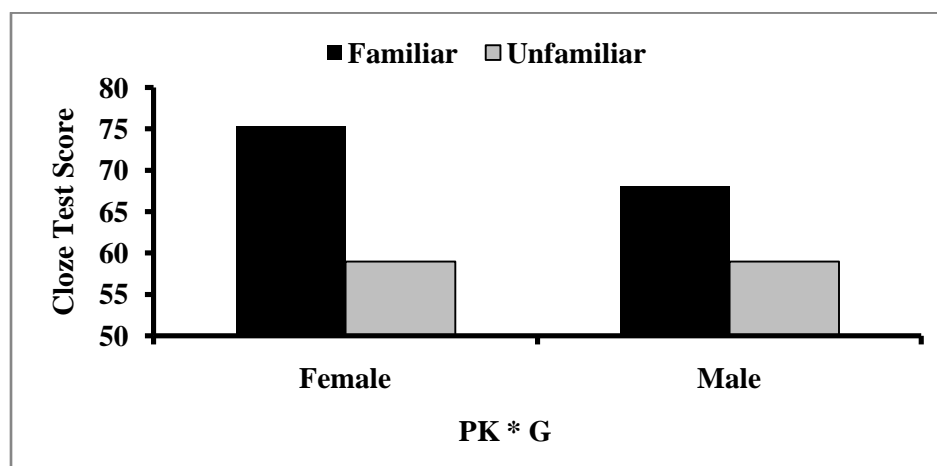


Figure 4.18. Mean comparisons of interaction effect of prior knowledge and gender for cloze test

As shown in Table 4.9, the results of the three-way ANOVA revealed a statistically significant effect for interaction effect between prior knowledge and gender for cloze test scores, $F(1, 224) = 4.71$, $p < .05$, $\eta^2 > 0.01$. This is a significant implication that female students outperformed on familiar text as compared to male students.

This gives more support for hypothesis V which stated that there is a two-way interaction effect between prior knowledge and gender on Iranian EFL students' reading comprehension.

All interaction effect tests were statistically significant. Hypothesis V was confirmed for the recall of idea units, importance level, and cloze test for Iranian EFL students. In other words, prior knowledge did interact with gender to affect Iranian EFL students' reading comprehension. Therefore, the researcher cannot say the prior knowledge is a key variable; it depends on the students' gender. The results of research

question five give more support to the schema theory in which the background knowledge of male and females is different from each other in terms of gender and culturally neutral text.

Research Question 6: Is there a two-way interaction effect between rhetorical pattern and gender on Iranian EFL students' reading comprehension?

In order to answer research question six, the researcher compared mean scores graphically and conducted a three-way analysis of variance (ANOVA) to determine whether a significant interaction effect existed between rhetorical pattern and gender's mean scores on each of the dependent variables (recall of idea units, importance level, and cloze test).

1) As Table 4.4 displays, in terms of the recall of idea units, the mean scores for female and male students who read descriptive texts were $M = 67$ and $M = 68$ respectively. The difference point is 1. Looking at the mean scores of female and male students who read causative texts as $M = 71$ and $M = 73$, the difference point is 2. The difference of 2 is not so different from the difference of 1. This comparison indicates that the effect of rhetorical pattern on reading comprehension does not depend on the different levels of gender.

With regard to Table 4.4, as obviously illustrated in Figure 4.19, there is no interaction effect between rhetorical pattern and gender for the recall of idea units. As can be seen, causative text is shown to be superior for both genders.

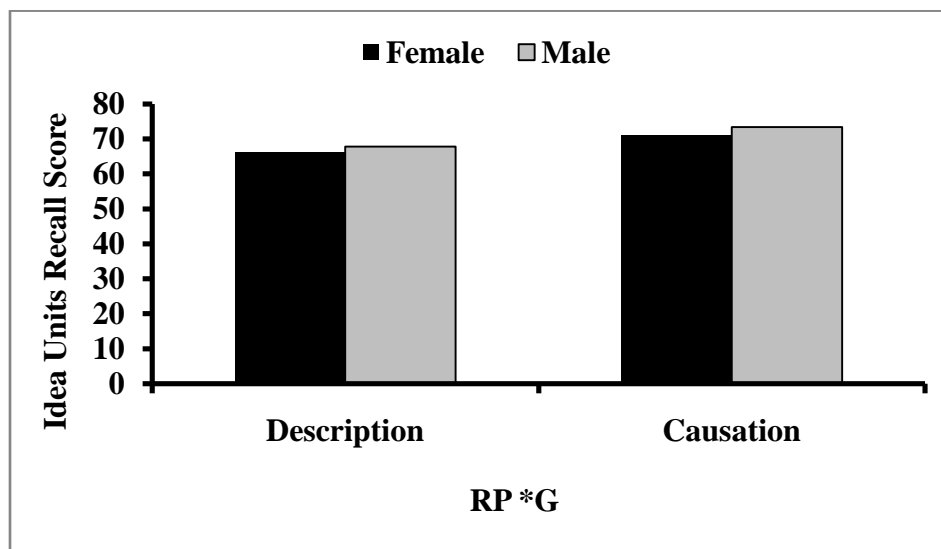


Figure 4.19. Mean comparisons of interaction effect of rhetorical pattern and gender for the recall of idea units.

Using a three-way ANOVA, the researcher supported the above findings. As indicated in Table 4.5, the results showed that there was not any statistically significant interaction effect between rhetorical pattern and gender $F(1, 224) = 0.07, p > .05, \eta^2 < 0.01$ for the recall of idea units.

This confirmed hypothesis VI which stated that there is no two-way interaction effect between rhetorical pattern and gender on Iranian EFL students' reading comprehension test scores.

2) In terms of importance level score, Table 4.6 demonstrated the mean scores of female and male students who read descriptive texts as $M = 62$ and $M = 63$ respectively. The difference point is 1. The female and male students' mean scores for causative texts were $M = 66$ and $M = 68$ respectively. The difference point is 2. The difference between

2 and 1 is 1 point. This difference mark is not significant for the effect of rhetorical pattern depending on the different levels of gender.

With regard to Table 4.6, Figure 4.20 compares the means graphically. Since males are superior to females for both text types, no interaction effect was found between rhetorical pattern and gender.

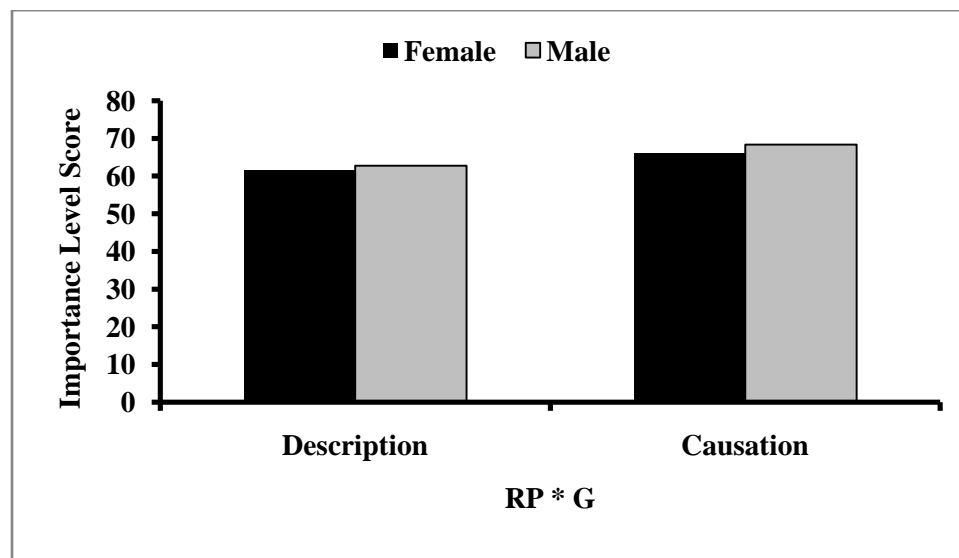


Figure 4.20. Mean comparisons of interaction effect of rhetorical pattern and gender for importance level score.

In order to support hypothesis VI, the researcher conducted a three-way analysis of variance (ANOVA). In Table 4.7, the analysis results revealed that there is no statistically significant interaction effect between rhetorical pattern and gender $F(1, 224) = 0.09, p > .05, \eta^2 < 0.01$.

This confirmed hypothesis VI which stated that there is no interaction effect between rhetorical pattern and gender on Iranian EFL students' reading comprehension test scores.

3) For the cloze test scores, Table 4.8 presents the mean scores of female and male students who read descriptive texts as $M = 66$ and $M = 61$. The difference point is 5. The mean scores of female and male students for causative texts were $M = 69$ and $M = 66$ respectively. The difference point is 3. The difference of 5 is not so different from the difference of 3. This comparison suggests that the effect of rhetorical pattern is not different across different levels of gender.

Looking at Table 4.8, Figure 4.21 clearly shows that there is not any significant mark for interaction effect between rhetorical pattern and gender for the cloze test. This figure shows that the performance of both male and female students is better in causative text types.

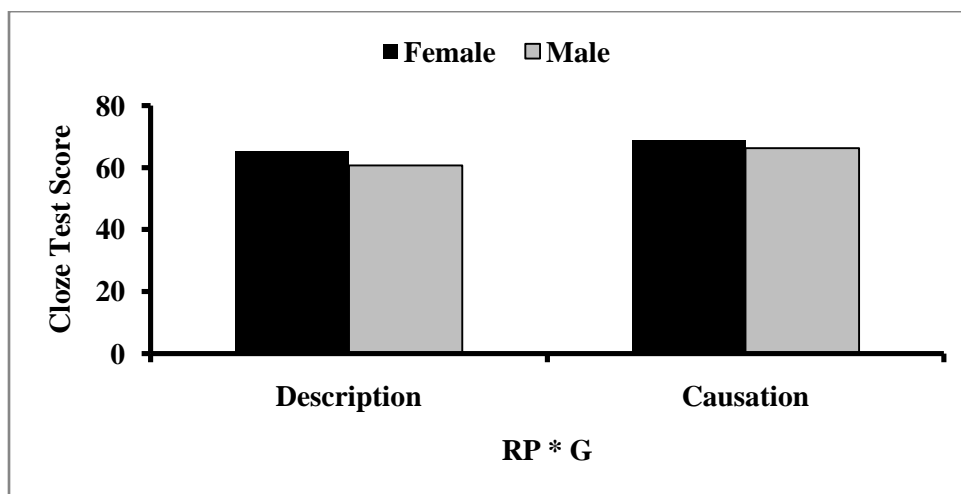


Figure 4.21. Mean comparisons of interaction effect of rhetorical pattern and gender for cloze test.

The above findings were supported through a three-way analysis of variance (ANOVA). Table 4.9 illustrates that there is no statistically significant interaction effect between rhetorical pattern and gender $F(1, 224) = 0.41, p > .05, \eta^2 < 0.01$ for cloze test scores.

Once more, hypothesis VI was supported through the results of the three-way ANOVA.

Therefore, hypothesis VI was confirmed for all measures (idea units, importance level, and cloze test). It can be concluded that female and male students make greater gains on causation texts regardless of their gender.

Research Question 7: Is there a three way interaction effect between prior knowledge, rhetorical pattern, and gender on Iranian EFL reading comprehension?

The basis for research question seven focused on the effects of the three independent variables on Iranian EFL students' reading comprehension through statistical analysis of quantitative data collected during the experiment, respectively. I computed the mean and standard deviation of scores and compared them graphically. Using a three-way analysis of variance (ANOVA), I determined whether there is a significant interaction effect among the three independent variables (prior knowledge, rhetorical pattern, and gender) on each of the dependent variable measures (idea units, importance level, and cloze test).

1) In terms of idea units recall, Table 4.4 displays the mean scores of female and male students who read familiar descriptive and causative texts as $M = 74$ and $M = 78$ respectively. The difference in point is 4. The mean scores for female and male students who read unfamiliar descriptive and causative texts were $M = 59$ and $M = 65$. The

difference point is 6. The difference of 6 is not so different from the difference of 4. So, there is no interaction effect among the three independent variables.

Regarding Table 4.4, Figure 4.22 obviously shows that 2 points is not a significant mark for interaction effect among prior knowledge, rhetorical pattern, and gender for the recall of idea units. As shown in Figure 4.22, the performance of male and female students on familiar text in both text types is better. So, no three-way interaction effect was found.

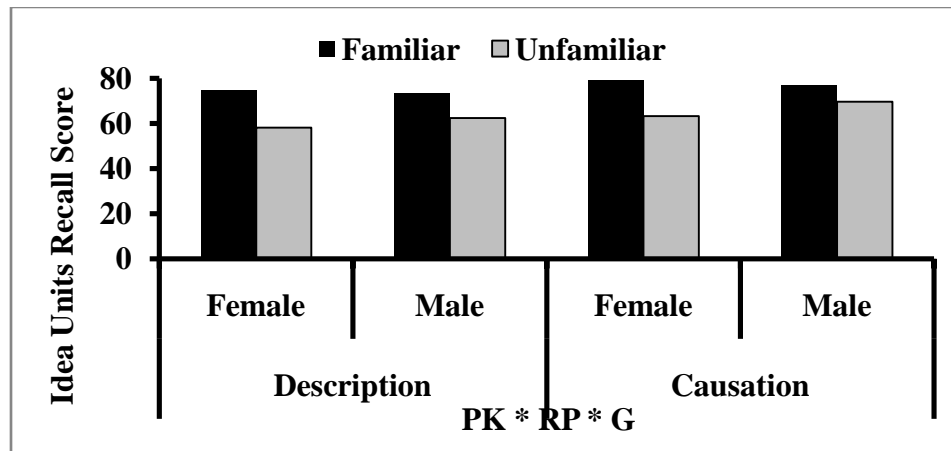


Figure 4.22. Mean comparisons of interaction effect of prior knowledge, rhetorical pattern, and gender for the recall of idea units.

In order to provide support for the above findings, the researcher conducted a three-way analysis of variance (ANOVA) to determine whether there is a statistically significant interaction effect among the three independent variables (prior knowledge, rhetorical pattern, and gender). As Table 4.5 shows, there is no significant interaction effect among the three independent variables, $F(1, 224) = 0.22, p > .05, \eta^2 < 0.01$. Three-way interaction was judged non-significant for recall of idea units.

This supported hypothesis VII which stated that there is no three-way interaction effect among prior knowledge, rhetorical pattern, and gender on Iranian EFL students' reading comprehension test scores.

2) For the importance level score, Table 4.6 presented the mean scores for female and male students who read familiar descriptive and causative texts as $M = 69$ and $M = 73$. The difference in point is 4. The mean scores for female and male students who read unfamiliar descriptive and causative texts were $M = 54$ and $M = 60$ respectively. The difference point is 6. The difference of 6 is not so different from the difference of 4. Therefore, there is no three-way interaction effect.

In terms of Table 4.6, Figure 4.23 clearly displays that 2 points difference is not a significant mark for interaction effect among prior knowledge, rhetorical pattern, and gender for the importance level recall.

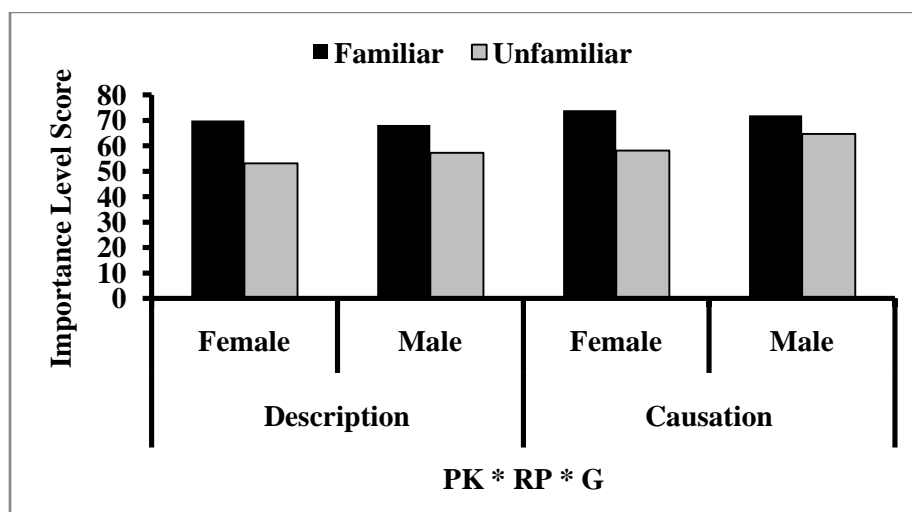


Figure 4.23. Mean comparisons of interaction effect of prior knowledge, rhetorical pattern, and gender for importance level score.

Using a three-way analysis of variance (ANOVA), Table 4.6 reveals that there is no interaction effect among the three independent variables (prior knowledge, rhetorical pattern, and gender). This result, $F(1, 224) = 0.13$, $p > .05$, $\eta^2 < 0.01$, confirmed hypothesis VII which stated that, “there is no three-way interaction effect among prior knowledge, rhetorical pattern, and gender on Iranian EFL students’ reading comprehension test scores” for the importance level score.

3) When consideration was given to the cloze test, Table 4.8 illustrated the mean scores of female and male students who read familiar descriptive and causative texts as $M = 71$ and $M = 75$ respectively. The difference in point is 4. The mean scores for female and male students who read unfamiliar descriptive and causative texts were $M = 57$ and $M = 61$. The difference point is 4. The difference of 4 for familiar text is not different from the difference of 4 for unfamiliar text. The results show there is no interaction effect.

With regard to Table 4.8, as Figure 4.24 displays graphically, point 0 difference is not a significant mark for interaction effect among the three independent variables (prior knowledge, rhetorical pattern, and gender) for the cloze test scores.

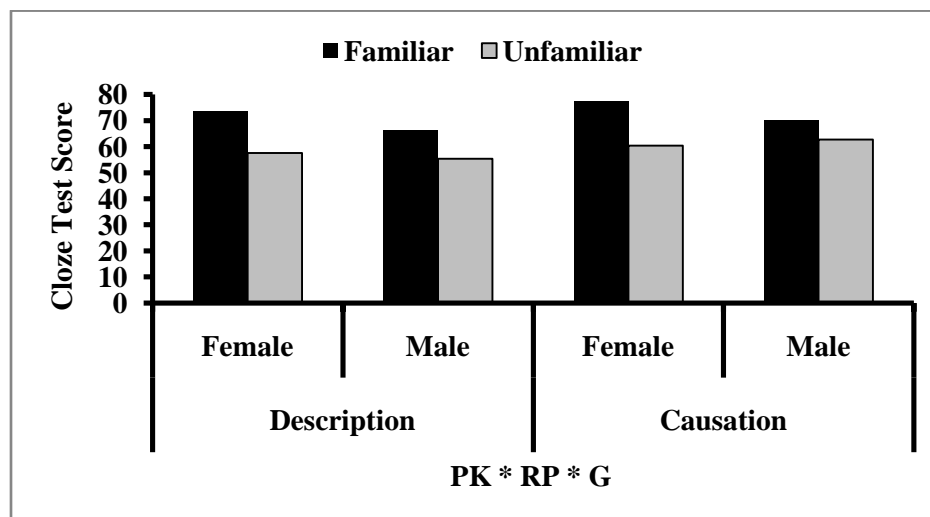


Figure 4.24. Mean comparisons of interaction effect of prior knowledge, rhetorical pattern, and gender for cloze test.

Conducting a three-way analysis of variance (ANOVA) showed that there is no interaction effect among the three independent variables (prior knowledge, rhetorical pattern, and gender). Table 4.9 represents the ANOVA results as $F(1, 224) = 0.45, p > .05, \eta^2 < 0.01$.

Once more, hypothesis VII which stated that, “there is no three-way interaction effect among prior knowledge, rhetorical pattern, and gender on Iranian EFL students’ reading comprehension test scores” is supported.

In sum, as Figures 4.22, 4.23, and 4.24 display, the two-way interaction effect between prior knowledge and gender is not qualified (modified) by the rhetorical pattern. So, hypothesis VII was confirmed by the result of all the reading comprehension measures. This means that no significant interaction effect could be found for the recall of idea units, importance level, and cloze test scores.

4.4. Summary of Findings

The summary of the findings is shown in Table 4.10. The results of this investigation indicated that prior knowledge and rhetorical pattern are key variables that influence students' reading comprehension test scores. Gender variable showed no significant difference in students' reading comprehension scores in the recall protocol measure. However, when consideration was given to the cloze test measure, there was a significant effect for females who performed better than the males. The findings of the current study showed no two-way interaction effect except for prior knowledge and gender. Regarding the interaction effect between prior knowledge and gender, there was a statistically significant effect at $p < .05$ for all three measures. In general, the overall results of the triple interaction effect (prior knowledge X rhetorical pattern X gender) indicated no statistically significant interaction effect for all the three types of scores (recall of idea units, importance level, and cloze test).

Table 4.10

Overall Summary of the Findings

	Independent variables	Dependent variables		
		Idea units	Importance level	Cloze test
Main Effect	Prior knowledge	F > UF ($p < .05$)	F > UF ($p < .05$)	F > UF ($p < .05$)
	Rhetorical pattern	C > D ($p < .05$)	C > D ($p < .05$)	C > D ($p < .05$)
	Gender	NS*	NS	F > M ($p < .05$)
Interaction Effect	Prior knowledge X Rhetorical pattern	NS	NS	NS
	Prior knowledge X Gender	$p < .05$	$p < .05$	$p < .05$
	Rhetorical pattern X Gender	NS	NS	NS
	Prior knowledge X Rhetorical pattern X Gender	NS	NS	NS

NOTE: *NS: Not Significant

CHAPTER V

DISCUSSION, CONCLUSION, IMPLICATIONS, AND RECOMMENDATIONS

5. 1. Introduction

This final chapter presents a summary and discusses the results of the current study. With reference to the theoretical framework which guided the study, the findings are discussed. These are followed by conclusions, implications, and recommendations for further research. The specific aims of the current study, stated in the form of seven research questions, were to investigate if prior knowledge, rhetorical pattern, and gender affected reading comprehension. Based on previous researches mentioned in Chapter 2, I predicted five alternative hypotheses and two null hypotheses. Using a three-way analysis of variance (ANOVA), I answered the seven research questions. Through answering the seven research questions, five hypotheses were supported and two hypotheses were rejected (Chapter 4).

Review of the literature shows that many previous studies (Cakir, 2008; Callender, 2008; Chang, 2006; Chen, 2008; El-daly, 2010; Erten & Razi, 2009; Jalilfar & Assi, 2008; Keshavarz et al., 2007) supported the schema theory view emphasizing the effect of prior knowledge on learning of important information from the text. With more consideration about the impact of prior knowledge in mind, the current study made an

attempt to broaden the understanding of the effect of prior knowledge in terms of culturally neutral text on FL reading comprehension.

Furthermore, the two other variables, rhetorical pattern which some researchers (Carrell, 1984a, 1984b, 1985, 1987, 1992; Chu et al., 2002; Hayashi, 2004; Lei, 2009; Salmani Nodoushan, 2010; Sharp, 2002, 2003; Souici, 2010; Zhang, 2008) had investigated, and gender which other researchers (Brantmeier, 2003; Doughty & Long, 2005) found to have an influence on reading comprehension, were also investigated for their influence on FL reading comprehension in this study. Since according to the schema theory, reading comprehension is an active process involving interaction between the text and the reader, the present study attempted to explore the impact of prior knowledge, rhetorical pattern, and gender on reading comprehension. Recall protocol (idea units, importance level) and cloze test were used as two measures for text comprehension.

The summary of findings indicated that prior knowledge and rhetorical pattern are two critical variables influencing EFL students' reading comprehension and females performed better on the cloze test measure than males. The interaction effect between prior knowledge and gender revealed that female students performed better on familiar texts while male students outperformed on unfamiliar texts. Overall, the results of triple interaction effect did not show any significant effect for the three independent variables (prior knowledge, rhetorical pattern, and gender).

5.2. Discussion of the Findings

Hypothesis I: Prior knowledge (familiar/unfamiliar) influences Iranian EFL students' reading comprehension.

The present study is an attempt to study the influence of prior knowledge on EFL students' reading comprehension. As predicted in the first hypothesis, the analysis of the results indicated a significant effect for prior knowledge. Unlike previous researches (e.g. Erten & Razi, 2009; El-daly, 2010) using university students as subjects and culturally familiar texts as instruments, in this study, I used high school students as subjects, culturally neutral texts, recall protocol, and cloze test as instruments. Nevertheless, what is important is that the findings of all the studies revealed that prior knowledge had a powerful positive effect on FL readers' text comprehension. Apparently, students were able to comprehend better when the text content was somewhat familiar to them. Furthermore, since according to Spiro and Taylor (1980), reading expository text is more difficult than narrative text for students, this understanding will be particularly critical in the context of expository texts comprehension. Snow (2002) stated that, "lack of knowledge needed to process contents of expository text is one reason for readers' difficulty regarding the expository text comprehension". The findings of this study give more support to this notion that readers with higher levels of prior knowledge comprehend and perform better on expository texts.

This finding contributes to the theoretical understanding of the schema theory that emphasizes the learners' prior knowledge in terms of culturally neutral text is an important component of the comprehension process at high school level. According to

the schema theoretic model, text comprehension is an interactive process between readers' schemata (knowledge already stored in memory) and the process of interpreting new information. This means that readers understand what they read more efficiently when they relate it to what they already know, and according to some researchers (Adams & Collins, 1979; Anderson & Pearson, 1984), a reader does play a very active role in text comprehension.

These finding accords with the results of a series of prior knowledge studies (Cakir, 2008; Chang, 2006; Rajabi, 2009; Shin, 2002; Swaffar, 1988) that were reviewed earlier in which they believed prior knowledge played an important role in text comprehension. These results are consistent with previous studies' findings (Marzano, 2004; Razi, 2004; Willingham, 2007) which state that when students have a prior knowledge of the passage, they demonstrate more comprehension. The findings also support the claims by Keshavarz et al. (2007), Callender (2008), and Jalilfar and Assi (2008) that a reader's prior knowledge affects comprehension and remembrance of a passage. Moreover, the findings of this study are in line with Erten and Razi (2009) and El-daly (2010) in which they asserted that if EFL students possessed sufficient background knowledge about the text, they will have greater comprehension.

Hypothesis II: Rhetorical patterns (description/causation) influence Iranian EFL students' reading comprehension.

As evidenced in previous studies (e.g., Salmani Nodoushan, 2010; Zhang, 2008), the researcher hypothesized that rhetorical pattern had a facilitative effect on L2 reading

comprehension. Contrary to previous researches that involved university students as subjects, the participants of the current study were high school students.

For the second hypothesis, I found that texts using rhetorical pattern of causation were significantly better recalled than those with description. The participants seemed to have relatively more trouble recalling with description rhetorical pattern. This result lends more support to Singer and Leon's (2007, p. 20) claim that "a tightly organized text facilitates the readers' text comprehension and their subsequent performance". Closer analysis of the findings revealed that the signal words used in the causative texts enabled the readers to follow the organization effectively and identify the main ideas of the texts as well as make predictions about what was to come next. The findings of the present study also supported this notion that, "the more coherently structured types of organization (comparison, causation, and problem/solution) tend to be facilitative of specific ideas recall than the texts with more loosely organized (collection of description)" (Carrell, 1984). This does partly parallel with Carrell's (1984) findings that Asians recall best with causation structure rather than with the description structure.

In general, the effect of rhetorical pattern on reading comprehension observed in this study is similar to Meyer and Freedle (1984), and Zhang (2008) in which it was indicated that subjects who received the text with highly structured rhetorical pattern (causation) comprehended significantly more than those who received the one with loosely controlled rhetorical pattern (description). The results of this study give support to the schema theory in that the readers seemed to have improved understanding of texts that have extra linkage. According to the schema theory, recall of information relayed by

the causative pattern, which has extra link of relationship, should be better than that of the descriptive pattern. Additionally, Meyer and Freedle (1979) stated that the causative type of rhetorical pattern offers 'extra linkage' over the descriptive type of rhetorical pattern. Their findings indicated that students who were exposed to the causative pattern recalled more than for the descriptive pattern. Therefore, it is plausible that causative texts activate the readers' appropriate schemata so that they can understand the new materials more efficiently.

The result is also similar to the studies of Sharp (2002), Vahidi (2006), Qadi (2010), and Salmani Nodoushan (2010) in which it was revealed that rhetorical differences did have a significant effect on recall. But in providing more support, it can be noted that the current findings appear to be slightly opposed to Sharp's (2002) and Salmani Nodoushan's (2010) studies. In Sharp's (2002) and Salmani Nodoushan's (2010) studies, the subjects recalled more from description structure than causation structure. This is opposed to this study. The results of the cloze test in Sharp's (2002) study showed that the description text was found to be significantly easier for all participants. This difference can be attributed to the learning and teaching style of Iranian students and teachers. The differences in teaching systems between Iran and Hong Kong, correspondingly, led to different findings. English is the medium in the class in Sharp's study (2002) while Farsi is the instruction language in this study except during the English class. In Salmani Nodoushan's (2010) study, he instructed university students about the expository discourse type description and causation. This explicit instruction increased their ability to identify and use the amount of information recalled. Furthermore, the difference in tests (immediate and delayed) and subjects' selection

between the current study and Salmani Nodoushan's (2010) may also have resulted in this discrepancy.

However, in this study, a significant effect was found for two rhetorically different texts as in accordance with Carrell (1985, 1987, 1992), Chu et al. (2002), Sharp's (2003) in that it revealed that rhetorical pattern indeed affects reading comprehension of EFL/ESL students.

On the other hand, the findings reported in this study are opposed to Hayashi's (2004) in which it was revealed that rhetorical differences did not have any significant effect on recall. This study also did not support Souici's (2010) findings that the role of rhetorical functions which was basically related to EST (English for Science and Technology) could not be guaranteed without taking into account students' level in general English. The difference in findings between the current study and Hayashi's (2004) may, in part, have arisen from combining Japanese, Chinese, and Korean subjects in Hayashi's study, with possibly unforeseen consequences. In addition, the small cell size for each group, perhaps led to different results. Moreover, the different findings between this study and Souici's (2010) may be due to the difference in participants' reading proficiency.

However, the findings of these two studies which were conducted by Hayashi (2004) and Souici (2010) showed that there is no statistically significant effect of rhetorical pattern in learners' reading comprehension and it will need the support of further research.

Hypothesis III: Gender influences Iranian EFL students' reading comprehension.

Based on previous studies (e.g., Al-Shumaimeri, 2005; Keshavarz & Ashtarian, 2008) investigating the influence of gender on foreign language reading comprehension at university level and reached different results, I hypothesized that gender is a key variable affecting high school students' reading comprehension process. Moreover, unlike the past researches (Brantmeier, 2003; Bugel & Buunk, 1996) who employed gender oriented texts, the current study examined the effect of gender neutral texts on high school male and female students through recall protocol and cloze test.

Surprisingly, the results for the third hypothesis did not reach a level of statistically significant difference between female and male students for the recall protocol test. Contrary to Brantmeier's (2001) claim that gender is a significant variable associated with individual differences in L2 text comprehension, I found no significant differences between female and male students on L2 recall protocol performance. Although the mean scores showed that male students slightly outperformed the female students for idea unit recall and importance level recall, the difference was not statistically significant. However, a partial significant effect was found only for the cloze test recall ($p < .05$). The overall results revealed that female students had an advantage over male students in the cloze test. This difference in result in the cloze test measure might be due to gender-biased test rather than a difference in participants' text comprehension abilities. As Wardhaugh (1993) asserted, "the poor performance of males may have socio-cultural reason than genetic". Perhaps, female students may be exposed

to the cloze test more than male students. Anderson et al. (1991) also believed that test items influenced test takers' responses and their interaction with the text.

Interestingly, this result supported Young and Oxford' (1997) study. Their studies showed no significant differences in gender for all three texts which were read by forty-nine native English-speaking men and women. The current study's findings also confirmed Zhau's (2008) study in which subjects' gender differences did not have any statistically significant effects on reading performance.

This result is not in accordance with Sharp's study (2002) which revealed that the girls' score was higher compared to the boys. Contrary to Sharp (2002), in this study, the male scores were slightly higher in comparison to females, but there were no substantial differences for idea units and importance level recall scores for either females or males. However, when consideration was given to the cloze test in this study, the results revealed a significant difference between female and male students. As mentioned before, this difference might be due to the difference in the teaching system between the two countries.

The results of this study are also not in line with Pae (2004). Pae's findings showed that females performed better on items classified as Mood/Impression/Tone, while male students outperformed on the item classified as Logical Inference. The difference in items classified for selection for females and males and the test item selection might have caused the different findings between the current study and Pae's (2004) study. This result is also opposed to Brantmeier's (2003). Her results showed that male students performed

better on a passage about boxing and females performed better on a passage about housewives. This different result might be due to difference in text selection. According to Doolittle and Welch (1989), male and female students may perform differently while reading gender-oriented texts. However, the two texts used in this study were not clearly gender-oriented. The familiar text was about healthy eating and the unfamiliar text was about a statue in Cairo. The familiarity or unfamiliarity of the content of texts might have been similar for both males and females. The texts which Brantmeier used in her study were related to the subjects' gender, but the texts used in this study were gender neutral.

The result of this study is also opposed to some previous studies (Al- Shumaimeri, 2005; Brantmeier, 2004a, 2004b; Bugel & Buunk, 1996; Deary et al., 2007; Keshavarz & Ashtarian, 2008; O'Reilly & McNamara, 2007; Wei, 2009) which suggested that there is a significant gender difference between males and females in reading comprehension of texts. Deary et al. (2007) investigated the role of gender in educational attainment. They found that girls performed better than boys on overall academic subjects (courses). Keshavarz and Ashtarian (2008) studied the relationship between reading comprehension for three types of texts (essay, history, and short story) and the gender of Iranian EFL learners; the chief finding of their study showed that there was a statistically significant difference between EFL males and females in reading comprehension ability with female students being better at comprehending English passages. It can be concluded that the difference in results between the current study and previous researches might be due to difference in subject selection, text content, and test items.

Hypothesis IV: There is a two-way interaction effect between prior knowledge and rhetorical patterns on Iranian EFL students' reading comprehension.

Based on the schema theory, Carrell (1984a) noted that reading comprehension involves interaction between readers' prior knowledge of the subject (content schema) and the rhetorical structure of text (formal schema). Moreover, in an investigation, Chu et al. (2002) studied the effects of topic familiarity and rhetorical convention on EFL college students using a questionnaire and a recall protocol test. Their findings showed that factors such as topic familiarity moderate the effect of rhetorical convention. Regarding the findings of Chu et al. (2002), I hypothesized that there is an interaction effect between prior knowledge and rhetorical pattern. Contrary to past research, the high school students were selected as subjects and recall protocol and cloze test were selected as instruments.

Through the ANOVA procedure, as illustrated in Table 4.9, the hypothesis four, that the effect of prior knowledge would be different across rhetorical pattern was analyzed for this interaction effect. Despite Carrell's (1984a) claim that reading comprehension involves interaction between readers' prior knowledge of the subject and the rhetorical structure of text, the results of this study indicated no significant interaction effect between prior knowledge and rhetorical pattern on FL recall performance. This failure to find an interaction between prior knowledge and rhetorical pattern suggests that readers do not use prior knowledge to compensate for difficulty in another knowledge (rhetorical pattern). This finding may be the result of the fact that Iranian students have no schemata of rhetorical patterns in their native language (Vahidi, 2006).

The results of this study support the experimental investigation conducted by Carrell (1987). She studied the simultaneous effect of content and formal schemata on high intermediate ESL students. Her findings showed that there was not any two-way interaction effect between content and formal schemata.

This result is contradictory to Chu et al. (2002) and Calisir and Gurel's (2003) findings which claimed that factors such as topic interest and topic familiarity moderated the effect of rhetorical convention. In the study conducted by Chu et al. (2002), Chinese students recalled more information from texts written in Chinese rhetorical convention than texts written in English rhetorical convention. In contrast, in the current study, since Iranian students have no schemata of rhetorical patterns in their native language (Vahidi, 2006), the findings showed no significant effect between prior knowledge and rhetorical pattern. In Iran, both students and teachers attach great importance to grammar at the sentence level. Furthermore, language teaching method during high school years is mostly grammar-based with no attention paid to language use (Rahimi, Riazi, & Saif, 2004). Vahidi (2006, p. 156) related contrastive rhetoric (CR) of Persian writing to reading and stated that, "since Iranian learners see text as a series of unconnected ideas rather than an integrated piece of language it can be one explanation for inability of Iranian learners to recognize particular organizational patterns in English".

Hypothesis V: There is a two-way interaction effect between prior knowledge and gender on Iranian EFL students' reading comprehension.

By reviewing literature (e.g., Brantmeier, 2003), I hypothesized that there is a two-way interaction effect between prior knowledge and gender. Since the texts' content selected by Brantmeier was gender-biased, I used two gender neutral texts in this study. A study on schemata by Bugel and Buunk (1996) revealed that males' performance was significantly higher than females on a neutral topic which indicated that male students have a higher level of text comprehension in comparison to female students. Moreover, in this study, the subjects' level is high school in contrast to Brantmeier's subjects who studied in university.

The findings of the current study give support to hypothesis five that gender differences in EFL reading comprehension are influenced by the text content. It indicated that there was a statistically significant interaction effect between prior knowledge and gender on all dependent measures: idea units, importance level, and cloze test, respectively. In general, this study suggested that the overall performance of female students reading familiar text was higher than the male students on recall of three dependent measures. In contrast, the overall performance of male students reading unfamiliar text was higher than for female students on the recall of idea units and importance level. On the cloze test measure, the mean score of female and male students for unfamiliar text was equal. Nevertheless, the performance of female students was better than the male students in reading familiar text. However, it can be concluded that text content did affect the performance of both female and male students in this study.

These results support the findings of Bügel and Buunk (1996) which stated that, “there is a significant interaction effect between prior knowledge and gender”. They suggested that gender difference in text topic contribute to female and male students’ performance in reading comprehension. They claimed that schema theory can explain why text content can affect the genders in giving different responses to different text comprehension questions. Their rationale is that since males and females tend to read different subjects, they have different interests which finally results in having different schemata. According to Brantmeier (2004), gender is an important factor influencing schemata in the process of making meaning from the text. Barntmeier (2003) also claimed that gender interacts with passage content on FL text 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 reading text and are motivated are more likely to comprehend 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 text topic and this text is more memorable for them. However, this is an assumption and further research is necessary in order to determine this. So, in this study, we can say that since females are more careful about eating healthy food and have greater experience, they are more familiar with the familiar text (*healthy eating*) and this text was more memorable for females than males. This result supports Bugel and Buunk’s (1996) notion in which, gender differences in FL text comprehension are influenced by the text topic.

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 use naturally different reading strategies (Thompson, 1987). Bacon (1992) found that boys used more translation strategies than girls. Zoubirshaw and Oxford (1995) suggested that there was a significant difference between boys and girls in using guessing and contextualization. Another explanation for the superiority of boy students in comprehending unfamiliar text is due to girls' FL anxiety. According to Wei (2009), girl students show higher anxiety than boy students. Another explanation for this difference can be related to the fact that males tend to read much more informative literature than females (Brantmeier, 2003; Bugle & Bunnk, 1996; O'Reilly & McNamara, 2007; Pae, 2004; Yongqi, 2002). Boys tend to prefer reading historical nonfiction (Bauerlein & Stotsky, 2005). Therefore, this interaction effect may be due to both males and females who are exposed to different reading topics in daily life. Furthermore, previous researches (Anderson, 1978; Carrell, 1987; Kang, 1992; Steffensen et al., 1979) have shown that due to differences in expertise, EFL students experience comprehension difficulty. Additionally, as Anderson and Lynch (2000) advocated, equipping the students with prior knowledge as well as systematic knowledge provides them with the necessary information to facilitate comprehension of unfamiliar topics as well.

The findings are in disagreement with Young and Oxford (1997), Barntmeier (2002), Pae (2004), 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 result may be due to the difference in subjects' and

assessment test's selection. Yazdanpanah's (2007) findings indicated that gender differences play a role in strategy used. She believed that in text comprehension tests, gender differences are influenced by what is tested more than the text topic. The different results between this study and Yazdanpanah's (2007) study may be due to differences in test items, text topics, and subjects' selection.

This result can be explained through the Gender Schema Theory which suggests that one's sexual self-concept influences how one structures items in 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 for the subject matter of a passage.

Hypothesis VI: There is no two-way interaction effect between rhetorical pattern and gender on Iranian EFL students' reading comprehension.

Sharp (2002) studied the interaction effect between rhetorical pattern and gender on Chinese students' reading comprehension. In contrast, in the current study, I selected Iranian high school students as subjects. The results of Sharp's study showed that there was no interaction effect between rhetorical pattern and gender. Based on Sharp's findings, I hypothesized that there is no two-way interaction effect between rhetorical pattern and gender on Iranian EFL students' reading comprehension test scores. What is critical is that the results of both studies showed that the effect of rhetorical pattern on students' reading comprehension does not depend on the differences in gender.

The findings for the sixth hypothesis indicate that there is no interaction effect between rhetorical pattern and gender on three kinds of scores (recall of idea units, importance level, and cloze test). Unfortunately, there is scarcely any study on the interaction effect between rhetorical pattern and gender. Nonetheless, Sharp (2002) argued that there is no interaction effect between rhetorical pattern and gender. The results of this research provided support for Sharp's notion that the effect of rhetorical pattern on reading comprehension does not depend on gender. This lack of interaction effect between rhetorical pattern and gender may be due to the fact that Iranian students have no schemata of rhetorical pattern in their native language (Vahidi, 2006).

Hypothesis VII: There is no three-way interaction effect between prior knowledge, rhetorical pattern, and gender on Iranian EFL students' reading comprehension.

Reviewing previous studies, many studies have been conducted to investigate the effect of some factors on reading comprehension (Chapter 2). But, as mentioned in Chapter 1, the impact of prior knowledge, rhetorical pattern, and gender on reading comprehension simultaneously have been neglected. I hypothesized that there is no three-way interaction effect between prior knowledge, rhetorical pattern, and gender on Iranian EFL students' reading comprehension test scores.

The summary result of the three-way analysis of variance (ANOVA) is reported in Table 4.10. Included in the Table is the summary of the interaction effect of prior knowledge, rhetorical pattern, and gender on the three measures of reading

comprehension. The three-way interaction was judged as having no significant effect for the recall of idea units, importance level, and cloze test. Overall, these results suggested that although prior knowledge and rhetorical pattern produced a main effect on recall protocol and cloze test, an interaction of prior knowledge, rhetorical pattern, and gender was not significant for the recall of idea units, importance level, and cloze test. The results of this study can be summarized as all three independent variables play some roles in the way Iranian students read, comprehend, and recall texts. However, no significant effect was found for all independent variables in the three-way interaction effect.

5.3. Conclusion

This study was guided based on seven research questions and related hypotheses. This study aimed to find out whether Iranian EFL high school students were affected by prior knowledge, rhetorical pattern, and gender when reading in English. The research literature seemed to give support to the use of familiar text and highly structured texts (causation) with EFL readers because reading such texts would help them to comprehend efficiently what they were reading. However, few researches had been done to investigate the three independent variables (prior knowledge, rhetorical pattern, and gender) simultaneously on Iranian high school students. For conducting this study, the researcher asked eight groups of subjects to read four reading texts (F/D, F/C, UF/D, and UF/C), respectively. Their reading comprehension scores obtained from recall protocol and cloze test were compared to each other through three-way analysis of variance (ANOVA). The seven research questions were answered based on the comparison of the data.

The result of the first research question was in line with previous works in that it demonstrated that prior knowledge did influence text comprehension. Further support was therefore given for providing non-native readers of English with information regarding prior knowledge to improve reading comprehension. It was concluded that using familiar texts allowed students to activate their schemata to comprehend and remember what they had read.

Another possible conclusion is that the rhetorical pattern did influence the FL text comprehension process. Regarding new insights, the result revealed that there is a relationship between comprehension and text structure, such that high-structured texts (causation) were more likely to facilitate comprehension than low-structured texts (description). Therefore, the results confirmed the second hypothesis in which rhetorical pattern effect was found for Iranian high school students' reading comprehension. The results overall showed that rhetorical pattern offers a guarantee for Iranian high school students that their comprehension will improve.

With regard to the results of this study, although there was a gender difference for cloze test measure, gender was not a key variable in Iranian EFL high school students' reading comprehension for recall of idea units and importance level. Presumably, it can be concluded that this difference in the cloze test measure could be due to the type of test. One interesting conclusion in the current study was that the two-way interaction effect indicated that the prior knowledge and gender had a two-way interaction effect. Female students performed better on familiar texts, while male students

performed better on unfamiliar texts. However, no interaction effect was found for prior knowledge and rhetorical pattern and also for rhetorical pattern and gender.

Interestingly, when these three independent variables (prior knowledge, rhetorical pattern, and gender) were put together, no three-way interaction effect was found for any of the reading comprehension measures (idea unit recall, importance level recall, and cloze test). However, since the conclusions of the present study are tentative, it seems that further research should be conducted to support the findings of this study.

5.4. Pedagogical Implications of the Study

At the outset, the central aim of the present study is to contribute to the better understanding of the impact of prior knowledge, rhetorical pattern, 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 teachers of reading can adjust their teaching to assist EFL readers, to increase efficiency of their text comprehension through equipping them with the required prior knowledge or schemata before they embark on reading a passage.

EFL teachers can significantly increase their students' chances for success in reading English passages if they provide prior knowledge for specific passage content. According to Carrell and Eisterhold (1988), if readers' schema were accessed or expanded repeatedly, their text comprehension would be increased. Familiar texts seem to enhance readers' recall. If the unfamiliar content of a text has a negative effect on

reading comprehension, then English teachers must consider this fact as a scale in the selection of reading passages and also in assessing the text comprehension process. Giving readers relevant information about an unfamiliar text seems to facilitate comprehension. As Stevens (1982, p. 328) asserted, “a reading teacher might be viewed as a teacher of relevant information as well as a reading skill teacher”. Analogously, EFL readers' comprehension, retention, and recall would most likely benefit if the text content of reading passages were made more familiar.

Equipping teachers of reading with knowledge of schema theory is especially important for teachers who recommend texts for reading instruction. The present findings may also have some implications for the application of schema theory to EFL reading comprehension. However, although readers may know how to read a foreign language well, they cannot read in that language with good comprehension if they lack sufficient levels of prior knowledge about the content or subject matter of the text. In other words, if students know absolutely nothing about the text content, it would be recommended for the teacher to develop some pre-reading activities that will assist them in building background knowledge.

According to the schema theory, our prior knowledge and its relation to the passage that is being read, establishes the ease or complexity of comprehending that special text. Since according to the schema theory, EFL students from different countries have different prior knowledge (schemata), and the authors do not usually provide the content schemata which are needed for text comprehension, it is recommended that EFL teachers equip their students with some information about the text before the students

begin to read it. EFL reading teachers should also present material that would enhance students' knowledge of the topic before engaging in an assignment. This would assist students in building new schema by making connections between old and new information. According to Carrell (1983a), providing readers with some pre-reading activities improves their comprehension considerably.

EFL reading teachers also need be cognizant of the rhetorical pattern of texts and should teach their students to recognize and use the top-level organization of text to facilitate comprehension and recall (Carrell, 1985). Thus, since the present data indicated that students performed better on causative texts than descriptive texts, it is recommended that rhetorical patterns should be highlighted in instruction reading by teachers in their classrooms. As already mentioned, in Iran there is no schemata of rhetorical patterns in the native language (Vahidi, 2006) and the dominant English teaching method in most of the language classes is based on grammar-translation method (Noora, 2008). So, the results of the study can help reading teachers to improve their students' reading comprehension by emphasizing on instruction in rhetorical patterns. However, it can be concluded that female and male students will often outperform on causative texts. Thus, teachers and test makers should be encouraged to consider these results when selecting texts in the comprehensive assessment procedures. The difference observed in the recall of the two different rhetorical texts (descriptive and causative) can help book designers on how they should sequence them in the reading books. Causative texts that were found to be significantly easier for recall can be placed before descriptive texts in reading text books. According to Carrell (1984a, p. 465), "if teachers of reading devote reading instruction to the identification of different rhetorical structures, they can facilitate ESL

reading comprehension, retention, and recall for their students". Researches (Dymock, 2005; Meyer & Poon, 2001; Newman, 2007; Russell, 2005; Taylor, 1980) have also indicated that readers' text comprehension improves while they receive instruction on how expository texts are organized.

Furthermore, teachers and test makers should apply a diverse set of tools to evaluate comprehension. In this study, female and male readers scored almost the same on written recall, but females performed better on cloze test for texts which were similar for both gender. So, teachers and test makers should regard this when assessing comprehension or making tests and should know that the cloze test may be a gender-biased assessing instrument. They should also take into consideration the fact that more practice needs to be done when working with male students. Therefore, as Alderson (2000) claimed, test makers cannot change the readers' gender, but they can be careful not to bias their tests towards either gender.

The findings of this study, generally, can benefit EFL reading teachers in order to adapt effective methods in teaching reading comprehension. They must do more than just provide students with linguistic knowledge. It can also be beneficial to textbook designers and course designers in determining the better needed techniques to achieve the objectives. Thus, it is the responsibility on the part of FL teachers of reading to be cautious about the influence of these variables on text comprehension of their students.

Furthermore, the findings indicated that topic familiarity affects 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. Generally speaking, it is possible to state that at least teachers who are equipped with the knowledge of gender variations in reading comprehension are more likely to be successful in dealing with those differences when they appear in their reading comprehension classes. As Alderson (2000) and Poole (2005) state, teachers cannot change the gender of the students, but they should be careful to avoid using texts that could be biased towards either gender. They could also be much more reasonable in evaluating their students' reading ability. Teachers should not only point new information for the existing information, they have to additionally add the gaps if subject matter is actually non-existent information. According to Wei (2009), teachers can provide successful learning situations if they are aware of students' differences. Only in this way they can handle the class efficiently and achieve the teaching goals.

5.5. Limitations of the Study

This study has several limitations in spite of the meaningful implication for practical teaching and learning. The findings of the current study cannot be generalized to every text type since text types used in this study are not representative of all possible text types.

Another limitation is the sample size which is not large enough. The present data therefore, may not be large enough for statistically significant generalization. The third is

the between-subjects design, since the results may be different with 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. Fifth, in the present study, subjects were asked to recall and complete cloze test immediately after reading texts. The subjects were not asked to recall later. The results might be different with delayed reading comprehension tests.

Sixth, this study was not designed to measure subjects' comprehension based on different reading abilities. Seventh, the influence of some factors, such as participants' attitude, anxiety, motivation and interest on reading comprehension have not been investigated by the researcher. The last one relates to the use of the immediate free recall protocols which are believed by some foster only students' local comprehension because their comprehension processes tend to focus on the details of the text rather than on the main ideas. In terms of test economy, they have also been criticized for their tendency to measure primarily bottom-up comprehension and for their scoring procedures being too time-consuming. It would not be as time-consuming as has been suggested if an appropriate scoring template is developed. The process of developing scoring templates might be less difficult for the teachers or scorers if the appropriate training is provided. However, according to Sharp (2008), Johnson (1970) scoring system allows for faster collection of data and large samples.

5.6. Suggestions for Further Research

Since learning and recalling information from reading materials is a critical task in EFL schools, there are some suggestions for further research on the impact of prior knowledge, rhetorical pattern, and gender on second language reading. First, the texts for the current study were two expository texts on *healthy eating* and *God statue in Cairo* which were not related to subjects' culture. The use of different cultural texts at high school level might have a diverse impact on second/foreign language reading.

Second, the use of different rhetorical text types and longer texts would allow for examining the impact of rhetorical pattern on FL reading comprehension.

Third, comparison among different aged readers would improve the ability to generalize the study on the impact of the three independent variables on FL reading comprehension. This study could also be replicated with other students at other levels and other foreign languages.

Fourth, in this study, the participants read the texts and wrote what they remembered. Further studies could be employed with listening to the texts and writing what they remembered. Additionally, this study should be replicated with other reading comprehension tests, for example, multiple choice questions, true/false/not given, matching questions, or open-ended questions.

Lastly, the researcher used Johnson's (1970) system for scoring the participants recall protocols. It is recommended that in further studies, researchers employ other

scoring systems such as Meyer's (1985) system. Moreover, further research should be done to determine the effectiveness of instruction in using rhetorical patterns to guide reading on increasing remembrance and recall of information.

As a consequence, this experimental study examined the impact of prior knowledge, rhetorical pattern, and gender on foreign language reading comprehension of high school students. The quantitative results demonstrated that prior knowledge and rhetorical pattern are two key variables for maximizing students' comprehension of expository text in EFL reading comprehension. I hope that the findings of this study can potentially help EFL students become more proficient readers and provide useful and insightful information for EFL reading teachers. Additionally, this is an important topic that needs further research to provide valuable insights so that the readers' outcome in the reading process can be enhanced.

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Appendix A

Texts used in the experiment

Familiar text (Description)

Our bodies need a variety of foods to stay healthy. We may avoid bad health if we eat a variety of foods.

Protein is needed for children to grow healthily. Fiber provides a substance that helps prevent constipation. Vitamins can be obtained from fruit and vegetables. Protein is also important for good health. Energy levels will be reduced by a lack of carbohydrates. Vegetable fats are better for our health than animal fats. We should try to eat more vegetable fats. Carbohydrates can be found in foods such as bread, rice and potatoes. Protein can be found in eggs, fish and meat. Lack of vitamins can cause diseases such as rickets and scurvy. Eating vegetable fats rather than animal fats will reduce the risk of heart problems, particularly when we get older. We should avoid eating fast food. Fiber can be found in cereals, vegetables and fruit.

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.

Adapted from Sharp (2002)

Unfamiliar Text (Description)

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. 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. 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 destroying the ancient statue. The stone is being destroyed faster by the poisonous gases in the air. The statue is being damaged by extremes of temperature. Although the air is very cold at night, during the day the stone of statue become very hot under the strong sun. Other natural forces, such as extreme sandstorms, also attack the statue. A combination of salt, air pollution, sun, sand and wind may destroy the huge statue.

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.

Adopted from EnglishTestStore (ETS) and EnglishPDF

Appendix B

Cloze Test based on 5th word deletion

Familiar text (Description)

Our bodies need a variety of foods to stay healthy. We may avoid bad 1. _____ (health) if we eat a 2. _____ (variety) of foods.

Protein is 3. _____ (needed) for children to grow 4. _____ (healthily). Fibre provides a substance 5. _____ (that) helps prevent constipation. Vitamins 6. _____ (can) be obtained from fruit 7. _____ (and) vegetables. Protein is also 8. _____ (important) for good health. Energy 9. _____ (levels) will be reduced by 10. _____ (a) lack of carbohydrates. Vegetable 11. _____ (fats) are better for our 12. _____ (health) than animal fats. We 13. _____ (should) try to eat more 14. _____ (vegetable) fats. Carbohydrates can be 15. _____ (found) in foods such as 16. _____ (bread), rice and potatoes. Protein 17. _____ (can) be found in eggs, 18. _____ (fish) and meat. Lack of 19. _____ (vitamins) can cause diseases such 20. _____ (as) rickets and scurvy. Eating 21. _____ (vegetable) fats rather than animal 22. _____ (fats) will reduce the risk 23. _____ (of) heart attacks, particularly when 24. _____ (we) get older. We should 25. _____ (avoid) eating fast food. Fibre can be found in cereals, vegetables and fruit.

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 (Description)

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

5. _____ (There) are serious problems for 6. _____ (the) statue. There are no 7. _____ (proper) drains and water pipe 8. _____ (in) the neighborhood and the 9. _____ (underground) passages round it. Too 10. _____ (much) water has been running 11. _____ (into) the stone statue for 12. _____ (several) years. 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 destroying the 18. _____ (ancient) statue. The stone is 19. _____ (being) destroyed faster by the 20. _____ (poisonous) gases in the air. 21. _____ (The) statue is being damaged 22. _____ (by) extremes of temperature. Although 23. _____ (the) air is very cold 24. _____ (at) night, during the day 25. _____ (the) stone of statue become 26. _____ (very) hot under the strong 27. _____ (sun). Other natural forces, such 28. _____ (as) extreme sandstorms, also attack 29. _____ (the) statue. A combination of salt, air pollution, sun, sand and wind may destroy the huge statue.

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 (Description)

Level of importance	Pausal / Idea Unit	Recall Total
3	Our bodies need a variety of foods to stay healthy.	
2	We may avoid bad health	
2	if we eat a variety of foods.	
3	Protein is needed for children to grow healthily.	
3	Fiber is a substance that helps prevent constipation.	
2	Vitamins are obtained from fruit	
1	and vegetables.*	
3	Protein is also important for good health.	
3	Energy levels will be reduced by a lack of carbohydrates.	
3	Vegetable fats are better for our health than animal fats.	
2	We should try to eat more vegetable fats.	
2	Carbohydrates can be found in foods	
1	such as bread	
1	Rice	
1	and potatoes.	
1	Protein can be found in eggs,	
1	Fish	
1	and meat.	
3	Lack of vitamins can cause diseases such as rickets and scurvy.	
3	Eating vegetable fats rather than animal fats will reduce the risk of heart problems,	
1	particularly when we get older.	
1	We should avoid eating fast food.	
2	Fiber can be found in cereals,	
1	vegetables *	
1	and fruit.	

Adapted from Sharp (2002)

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 (Description)

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	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.	
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 destroying the ancient statue.	
3	The stone is being destroyed faster by the poisonous gases in the air.	
3	The statue is being damaged by extremes of temperature.	
2	Although the air is very cold at night,	
1	during the day	
2	the stone of statue become very hot under the strong sun.	
3	Other natural forces,	
2	such as extreme sandstorms,	
2	also attack the statue.	
1	A combination of salt,	
1	air pollution,	
1	sun,	
1	sand	
2	and wind may destroy the huge statue.	

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 D

Farsi- Equivalent Tables of Idea Units

Familiar Text (Description)

Recall Total	Pausal / Idea Unit	Level of importance
	بدنمان براي سلامتي به غذاهاي متنوعي نياز دارد.	3
	مي توانيم از بيماري ها دوري كنيم	2
	اگر غذاهاي متنوع بخوريم.	2
	پروتئين براي سلامتي كودكان ضروري است.	3
	فيبر ماده اي است كه از بيوست جلوگیری مي كند.	3
	ويتامين ها در ميوه ها يافت مي شود	2
	و در سبزيجات*.	1
	پروتئين هم براي سلامتي مهم است.	3
	در اثر كمبود كربوهيدرات ها ميزان انرژي بدن کاهش مي يابد.	3
	چربي گياهي براي سلامتي بهتر از چربي حيواني است.	3
	ما بايد سعي كنيم بيشتر چربي گياهي استفاده كنيم.	2
	كربوهيدرات ها در غذاهايي يافت مي شود	2
	مانند نان،	1
	برنج،	1
	و سيب زميني.	1
	پروتئين در تخم مرغ يافت ميشود،	1
	ماهي،	1
	و گوشت.	1
	كمبود ويتامين مي تواند باعث بيماري هايي مانند نرمي استخوان و اسكوربورت شود.	3
	خوردن بيشتر چربي هاي گياهي نسبت به چربي هاي حيواني خطر حمله ي قلبي را کاهش مي دهد،	3
	مخصوصاً زماني كه سن ما زياد مي شود.	1
	ما بايد از خوردن فست فودها خودداري كنيم.	1
	فيبر در غلات يافت مي شود،	2
	در سبزيجات*.	1
	و ميوه ها.	1

Familiar Text (Causation)

Recall Total	Pausal / Idea Unit	Level of importance
	بدنمان براي سلامتي به غذاهاي متنوعي نياز دارد.	3
	رژيم غذايي نامناسب مي تواند باعث بيماري شود.	3
	اگر بدنمان با غذاهايي که شامل مواد مناسب هستند تغذيه شود	2
	کمتر بيمار خواهيم شد.	2
	کمبود ويتامين مي تواند باعث بيماري هايي مانند نرمي استخوان و اسکوربورت شود.	3
	ميوه ها و سبزيجات براي جلوگیری از اين بيماري ها ضروري هستند.	2
	کمبود پروتئين هم مي تواند منجر به بيماري شود،	3
	اما مي توان از اين بيماري دوري کرد با خوردن تخم مرغ،	2
	ماهي،	1
	و گوشت.	1
	اگر ما بتوانيم به مقدار زياد کربوهيدرات بخوريم	3
	انرژي مورد نياز بدنمان تأمين خواهد شد.	2
	کربوهيدرات ها در غذاهايي يافت مي شود مانند سيب زميني،	2
	نان	1
	و برنج.	1
	کمبود فيبر از غذاهايي مانند غلات،	3
	نان،	1
	سبزيجات	1
	و ميوه ها	1
	مي تواند باعث مشکلاتي مانند يبوست شود.	2
	اگر به جاي مصرف چربي گياهي بيشتراز چربي حيواني استفاده کنيم،	3
	خطر حمله ي قلبي به دنبال خواهد داشت،	2
	مخصوصاً زماني که سن مان زياد مي شود.	1
	غذاهاي آماده سالم نيستند	1
	چون چربي حيواني بالايي دارند.	1
	ما بايد آنها را کمتر مصرف کنيم.	1

Unfamiliar Text (Description)

Recall Total	Pausal/Idea Unit	Level of importance
	يك مجسمه ي سنگي بزرگ در قاهره وجود دارد.	3
	اين مجسمه ي خدای خورشيد بدن يك شير را دارد	2
	و صورت يك انسان.	2
	مشكلات جدي براي اين مجسمه وجود دارد.	3
	هيچ گونه ابگذر و لوله ي ابي	2
	و هم چنين جوي هاي زير زميني در مجاورت ان قرار ندارد.	2
	سال هاست كه اب زيادي روي مجسمه ي سنگي ميريزد.	3
	تكه هاي كوچك نمك روي سنك باقي مانده	2
	و به ان اسيب رسانده اند.	2
	الودگي هواي ناشي از افزايش ترافيك در قاهره	3
	هم باعث نابودي اين مجسمه ي باستانی مي شود.	2
	وجود گازهاي سمی در هوا باعث مي شود سنگ سريعتر نابود شود.	3
	تغييرات ناگهانی دما مجسمه را خراب مي کند.	3
	هر چند هوا شب ها بسيار سرد است،	2
	در طول روز	1
	سنگ مجسمه زير نور تند خورشيد خيلي داغ مي شود.	2
	نيروهاي طبيعي ديگر،	3
	مانند طوفان هاي شن شديد	2
	هم به مجسمه حمله مي کنند.	2
	ترکيبی از نمك،	1
	الودگي هوا،	1
	نور خورشيد،	1
	شن	1
	و باد ممکن است مجسمه ي بزرگ را از بين ببرند.	2

Unfamiliar Text (Causation)

Recall Total	Pausal/Idea Unit	Level of importance
	يك مجسمه ي بزرگ در قاهره وجود دارد.	3
	اين مجسمه ي خدائي خورشيد بدن يك شير را دارد	2
	و صورت يك انسان.	2
	مشكلات جدي براي اين مجسمه وجود دارد.	3
	چون هيچ ابگذر مناسب و لوله ي ابي	2
	و هم چنين جوي هاي زير زميني در مجاورت ان وجود ندارد ،	2
	سال هاست كه اب زيادي روي مجسمه مي ريزد.	3
	در نتيجه،	1
	تكه هاي كوچك نمك روي سنك باقي مانده	2
	و به ان اسيب زده اند.	2
	الودگي هواي ناشي از افزايش ترافيك در قاهره	3
	هم باعث مي شود كه مجسمه ي باستاني رو به نابودي برود.	2
	هواي پر از گازهاي سمّي هم	3
	باعث مي شود سنگ سريع تر نابود شود.	2
	به علت تغييرات ناگهاني دما مجسمه در حال خراب شدن است.	3
	هر چند هوا شب ها بسيار سرد است،	2
	نور شديد خورشيد باعث داغ شدن مجسمه ي سنگي در طول روز مي شود.	2
	نيروهاي طبيعي ديگر ،	3
	مانند طوفان هاي شني شديد هم،	2
	به مجسمه حمله مي كنند.	2
	بنابراين،	1
	تركيبي از نمك،	1
	الودگي هوا،	1
	نور خورشيد،	1
	شن	1
	و باد ممكن است مجسمه ي بزرگ را از بين ببرند.	2

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 =

Adapted 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

Farsi- Equivalent Prior Knowledge Awareness Test

دانش آموز عزیز،

لطفاً به سوالات زیر با دقت پاسخ دهید.

1. راجع به موضوع (مجسمه خدای خورشید) چقدر اطلاعات دارید؟
الف) زیاد (ب) کمی (ج) خیلی کم (د) اصلاً
2. چه تعداد ایده می‌توانید راجع به موضوع (مجسمه خدای خورشید) بنویسید؟
الف) بیش از 4 تا (ب) 3 تا 4 (ج) 1 تا 2 (د) هیچ ایده ای
3. راجع به موضوع (مجسمه خدای خورشید) چقدر می‌توانید مطلب بنویسید؟
الف) يك مطلب طولاني (ب) يك مطلب کوتاه (ج) يك مطلب خیلی کوتاه (د) هیچ مطلبی

دانش آموز عزیز،

لطفاً به سوالات زیر با دقت پاسخ دهید.

1. راجع به موضوع (عادات غذایی) چقدر اطلاعات دارید؟
الف) زیاد (ب) کمی (ج) خیلی کم (د) اصلاً
2. چه تعداد ایده می‌توانید راجع به موضوع (عادات غذایی) بنویسید؟
الف) بیش از 4 تا (ب) 3 تا 4 (ج) 1 تا 2 (د) هیچ ایده ای
3. راجع به موضوع (عادات غذایی) چقدر می‌توانید مطلب بنویسید؟
الف) يك مطلب طولاني (ب) يك مطلب کوتاه (ج) يك مطلب خیلی کوتاه (د) هیچ مطلبی