

Cohesive Readability of Expository Texts and Reading Comprehension Performance: Iranian EFL Students of Different Proficiency Levels in Focus

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Abstract

The present study is an attempt to investigate the relationship between cohesive readability of expository texts and reading comprehension in EFL students with different proficiency levels. One hundred students formed the participant of this study. They were undergraduate students majoring in English at University of Isfahan. To collect the relevant data, participants were divided into three groups of low proficient, intermediate and high proficient based on their scores on an OPT proficiency test. A series of expository reading comprehension tests were prepared and their cohesive readability was measured through related programs. They were divided into two groups of authentic and manipulated texts, with the cohesive readability of manipulated texts reduced. The participants answered the related tests in one session. As a result of data analysis, the findings indicated that manipulation, i.e. cohesive readability reduction has a direct impact on the students' performance in reading expository texts. It was further revealed that text manipulation, i.e. reduction of cohesive readability, was more influential on the intermediate group, i.e. positive relationship between the students' proficiency level and their reading comprehension of expository texts with different cohesive readability levels.

Keywords: cohesion, expository text, readability, reading comprehension, language proficiency

Reading comprehension is one of the main objectives of teaching English in EFL context and it is the most tested construct in language teaching. The importance of reading comprehension is underscored in today's "information age" in which the ability to read easily and well has become a survival skill: reading "has been considered one of the skills required of all language learners" (Chastain, 1988, p. 2). It is both a source of information and a pleasurable activity, the one which serves as a vehicle for communication of present and past civilizations, and which many students have an opportunity to use (Rivers, 1968; Chastain, 1971). Chastain states that "one of the basic and complementary skills which need to be acquired in foreign language learning is reading"(p. 6). Anderson (2001) even goes beyond this and claims that "reading is all that is needed by learners of English as a foreign language (EFL)". In fact, there is a direct relationship between learning a new language and reading, as Bugel and Bunk (1990) express that "where there is little reading, there will be little learning" (p.17).

Many different research projects have been conducted which investigated the relationship between reading comprehension and other areas like semantics, pragmatics, syntax.... Discourse analysis is among such major areas with findings that can be greatly contributive to enhance reading comprehension level among EFL students. Cohesion and coherence in a text are one of the major topics in discourse analysis which attract many researchers. Investigating cohesiveness of a text is not a new idea but in association with text structure and moreover an extra variable like readability can be an interesting topic for research. In the present study the researcher seeks to investigate the relationship between cohesive readability of expository text and reading

comprehension among Iranian university students majoring in English at different proficiency levels.

This study

Understanding and learning from written material is of paramount importance to academic success. Reading comprehension is the process of acquiring information. The characteristics of the meaning of a text as well as the processes involved in deriving this meaning are critical in determining readability. The concept of readability of a text is not new; there are many different contributive factors which make a text readable. Several of its facets have been examined and tested over the past fifty years such as text variables. Research has shown that readability can vary in accordance with certain specific text variables and it can either speed or slow reading rates of the text in print (Taylor, 1990). Readability is of considerable practical significance to educators and publishers of educational materials.

The overwhelming majority of research has focused upon the readability of the text in print. These studies have examined typographic variables. But more importantly are the contributive factors to discourse structure of a text. Cohesion and coherence are two important textual elements which are influential on reading a text and understanding it (Halliday and Hasan 1976; Halliday 2000). Considering reading as a crucial source of language input both in academic and non-academic settings, the present study is particularly intended to bring in focus the Iranian EFL learners encountering cohesive readability of expository texts, and its impact on their comprehension at different proficiency levels. More precisely, the study seeks answers to the following research questions:

1. Is there any significant relationship between cohesive readability of expository texts and Iranian EFL Learners' reading comprehension?
2. At which level of language proficiency is learners' reading comprehension more affected by the text's cohesive readability?

Method

Participants

The population from which the participants were selected included 100 male and female English majors at University of Isfahan. They were selected from among sophomore and senior students studying English language, literature and translation. They had already passed a number of courses in reading comprehension. Thus, they were supposed to be familiar with textual elements of English language. They were informed that they were subjects to a research project and they would receive a report of the results.

Materials

In order to answer the posed research questions, two sets of materials were utilized to collect the required data: a language proficiency test (OPT) and six reading comprehension texts. OPT was used as a tool for categorizing participants to different proficiency levels; namely, low proficient, intermediate and high proficient. The OPT embodied 100 multiple choice items on various grammatical points.

Reading comprehension tests: Authentic passages (R1). A set of standardized reading comprehension tests was administrated in the present study. The first part of reading comprehension test consisted of three sets of reading comprehension passages which were chosen from standard reading comprehension tests of TOEFL. The nature of all these passages was expository. Each text, was followed by a number of multiple choice questions to assess the

reading comprehension ability of the participants. In choosing the texts some criteria were considered. First, it was tried to have texts with unfamiliar subject matters to eliminate the effect of background knowledge on the participants' performance. Second, the texts almost had the same level of difficulty, i.e. by applying related formulas, it was ascertained that they enjoyed similar levels of cohesiveness and difficulty. Coh-metrix program was applied in which readability of texts according to Flesh Reading Ease, and cohesiveness of texts was calculated.

Reading comprehension tests: Manipulated passages (R2). The second part of the test consisted of three more expository texts followed by multiple choice questions. These passages were manipulated by the researchers through eliminating some cohesive ties of the texts in order to decrease their cohesive readability. The passages were structurally modified to account for possible distortions as a result of the omission of cohesive ties. Again, Coh-metrix software program and Flesh Reading Ease were applied for computation of changes in the texts. The readability of texts was reduced as a consequence of reducing cohesiveness of texts.

Procedure

The whole procedure of collecting data was conducted in two sessions. In the first session, the participants answered the proficiency test. In the second session, they answered the six reading comprehension tests. All the tests had the same format, i.e. they were standard expository passages followed by multiple choice questions.

It is to be noted that OPT was used for dividing participants into different proficiency levels. Additionally, six reading comprehension texts were utilized to give us a measure of the students' performance on reading expository passages with different levels of cohesive readability.

Results and discussion

In order to investigate the aforementioned research questions, Paired samples t test and Kruskal-Wallis Test were conducted.

Regarding the first null hypothesis (p.6), i.e. there is no significant relationship between cohesive readability of expository texts and Iranian EFL students' reading comprehension, a Paired Samples t test was conducted to analyze the obtained data. In this analysis if μ_1 is considered as indicator of the mean of the obtained scores of reading comprehension of authentic texts and μ_2 as the mean score obtained from the manipulated texts, then μ_d would be $\mu_1 - \mu_2$. The following hypothesis is going to be tested: $H_0: \mu_d = 0$

H_0 or null hypothesis in the present study is that there is no significant relationship between cohesive readability of expository texts and Iranian EFL student's reading comprehension. It means that there is no difference between students' scores in answering authentic and manipulated texts. In other words, the mean difference (μ_d) of the sample is zero (H_0). The following table and chart present the results from the Paired-Samples t test:

Table 1. Paired Samples Statistics

	Mean	N	Std.deviation	Std. Error Mean
reading1	2.17	100	2.800	.280
reading2	18.3300	100	3.17202	.31720

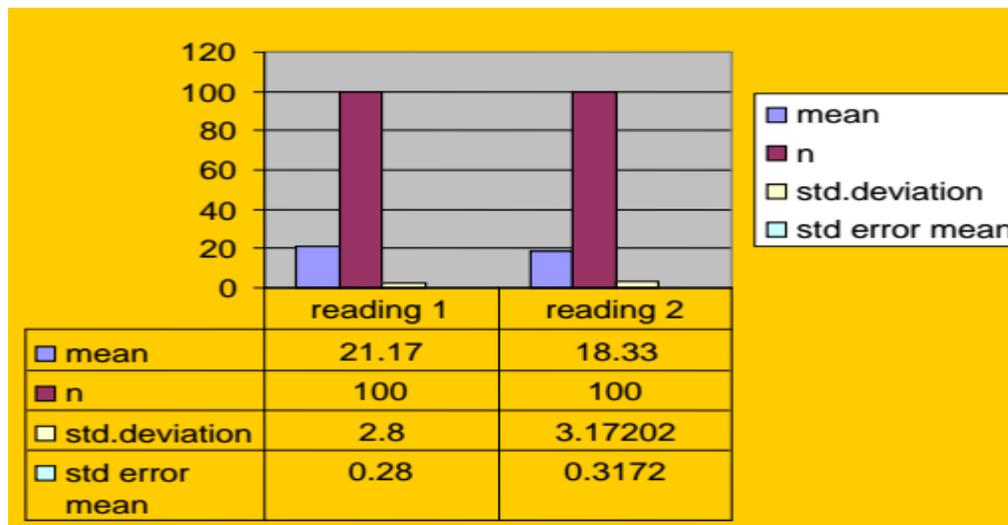


Figure 1. Paired samples statistics

Table 2. Paired Samples Correlations

	N	Correlation	Sig.
Pair 1 reading1 & reading2	100	.438	.000

Table 3. Paired Samples Test

	Paired differences					t	df	Sig. (2-tailed)
	mean	Std.deviation	Std.error mean	95% Confidence Interval of the Difference				
				lower	upper			
reading1 - reading2	2.84000	3.18050	.31805	2.20892	3.47108	8.929	99	.000

Considering the first table (4-1), the mean score of the students' score on reading comprehension for authentic texts (reading 1) is 21.17 and for manipulated texts (reading 2) is 18.33. It can be concluded that reduction of cohesive readability of expository texts would result in a reduction in scores of reading comprehension of EFL learners. Although for proving this, data presented in the table 3 must be scrutinized.

This descriptive table shows the mean difference, confidence interval of the difference, t statistics, and the significance value. The first row offers the two tests (reading 1 and 2). The second column makes available the mean difference. The third column shows SD, confidence interval of difference is available under the fourth column and t statistic under the fifth column. At last, the most central criterion which shows the significance of the difference, significance value of the test, is given under the final column of the table. As was pointed out before, this test was conducted to identify possible relationship between cohesive readability of expository texts and

reading comprehension of EFL students. The mean difference between the two variables (equal to 2.84) has come out to be almost noticeably different, although it can never inform one about significance of this difference. Consequently, to see if cohesive readability had a considerable relationship with the reading ability of the students, confidence interval of difference and significance value of the test have been provided. Significance value of the test is small ($P/0.05$) consequently, the null hypothesis will be rejected (H_0) but it does not prove the claim that, the reduction of cohesive readability would result in reduction of comprehension scores.

Generally, because 95 percent confidence interval of μ_d (2.20892, 3.47108) only contains positive values, and significance value is less than alpha level of test ($0.00 \leq 0.05$) it can be concluded that the difference between the two tests is significant; thus reduction of the scores of the reading comprehension is clearly proved and the null hypothesis is rejected.

Altogether, reduction of cohesive readability of expository texts results in reduction of reading comprehension scores of the learners; in other words, the reading ability of the learners was significantly in relation with the cohesive readability level of expository texts.

The Second Null Hypothesis

The second null hypothesis maintains that There is no difference between the three proficiency group (low proficient, intermediate, high proficient) participants in terms of the effect of cohesive readability on their reading comprehension. In order to examine this hypothesis, Kruskal-Wallis test was conducted. As it was mentioned previously, before participants performing on reading comprehension tests, or more specifically two types of passages with different levels of cohesive readability, they took a placement test (OPT) to be grouped later according to their levels of proficiency. Their scores were then calculated and analyzed the result of which along with descriptive statistics appear in the tables below:

Table 4. *Descriptive Statistics of the Student's Scores (Mean and Standard Deviation)*

	n	Minimum	Maximum	Mean	Std.deviation
grade Valid	100	59	93	78.76	7.861
N (listwise)	100				

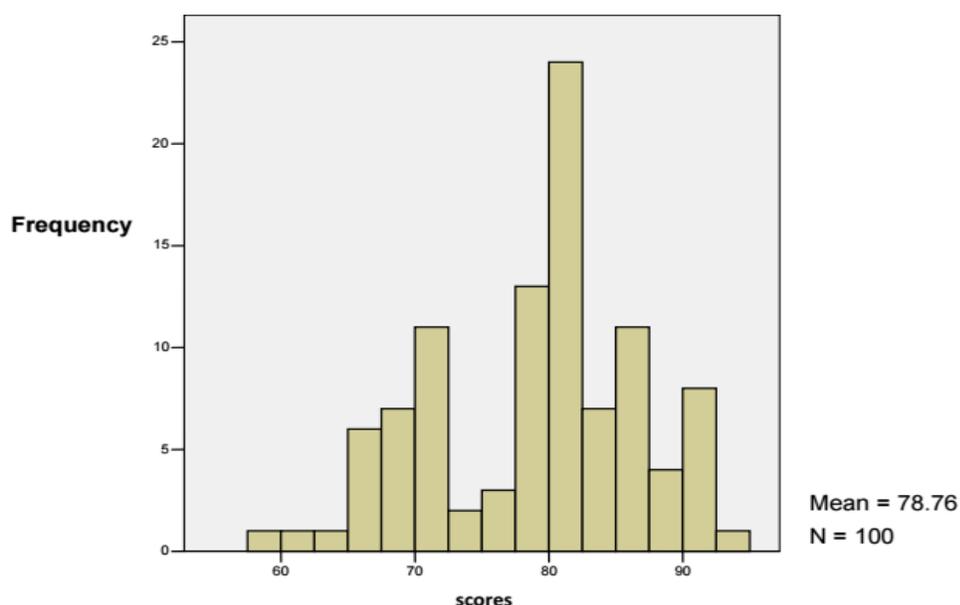


Figure 2. *Data histogram for students' scores*

Accordingly, students are divided into three levels of proficiency, low proficient, intermediate and high proficient. In fact based on the standard deviation and mean of the obtained scores this segmentation was conducted. Scores which were less than one standard deviation below the mean would form the low proficient group ($\text{score} < \text{score} < 87$); and high proficient are those whose scores are more than one standard deviation above the mean score ($\text{score} > 86$). Consequently, 14 students formed the low proficient group, 65 students fell in intermediate group and finally 21 students were considered as high proficient group. At the first place, we briefly review students' scores on reading comprehension tests for authentic passages to examine whether scores in three groups are the same or not. μ_1 , μ_2 , μ_3 are representatives of the mean of three groups for authentic texts. We are going to examine: $\mu_1 = \mu_2 = \mu_3$ But, first by Levene Test the variance equality of three groups is examined, which would be the prerequisite for further examinations (variance equality and normal distribution of data must be checked). The related results appear in the table below:

Table 5. *Test of Homogeneity of Variance for Three Proficiency Groups (Reading1)*

Levene statistic	Df1	Df2	Sig.
1.757	2	97	.178

The significance value is $\alpha > 0.05$, thus the hypothesis of variance equality is not rejected. Another assumption for application of variance analysis is the normal distribution of the samples. Because the number of subjects in lower intermediate and advanced groups is lower than 30; thus, calculation of normality test seems to be necessary. Results of normality test are presented below:

Table 6. *Shapiro –Wilk and K-S Lilliefors for Normality in low Proficient Group for Authentic Texts (Reading1) Tests of Normality*

	Kolmogorov-Smirnov			Shapiro-Wilk		
	statistic	Df	sig	statistic	df	Sig.
Reading1	.317	14	.000	.719	14	.001

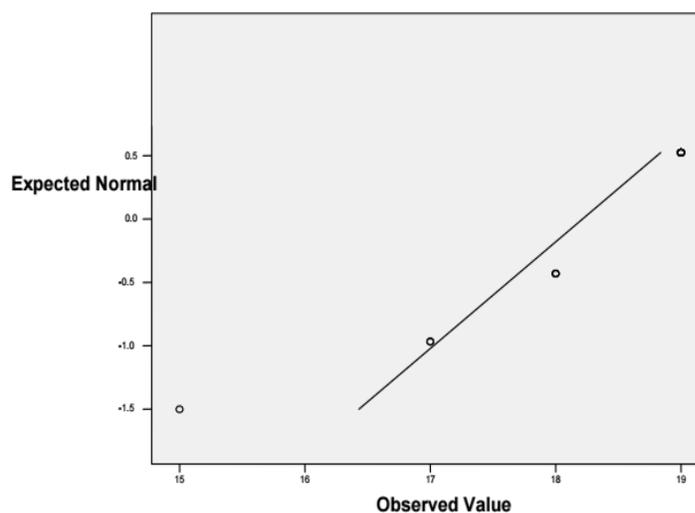
**Figure 3.** *Normal probability plot of reading 1, for low proficient group*

Table 7. *Shapiro-Wilk and K-S Lilliefors for Normality in High Proficient Group for Authentic Texts (Reading 1)*

	Kolmogorov-Smirnov			Shapiro-Wilk		
	statistic	Df	sig	statistic	df	Sig,
Reading1	.248	21	.002	.881	21	.015

a.L illiefors Significance Correction

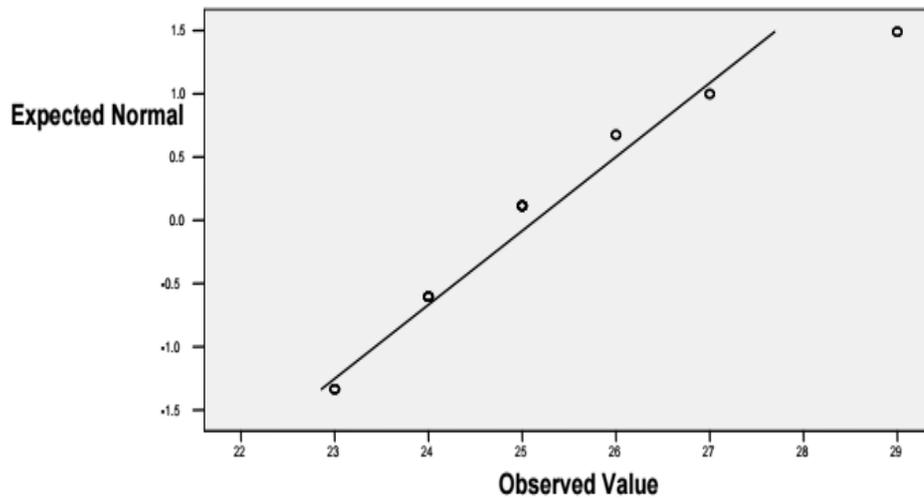


Figure 4. *Normal probability plot for Reading 1 (high proficient group)*

In both above tables the significance value is not as big as needed, thus normality of obtained data is rejected. Moreover two graphs (3, 4) would also prove that normality was not observed for the obtained data. Thus, due to the lack of normal distribution of the data, instead of one way ANOVA, its nonparametric equivalent formula, Kruskal-Wallis Test, would be applied. The obtained results are presented in the following table:

Table 8. *Kruskal-Wallis Test(Ranks)*

Group	n	Mean rank
reereading1	14	16.25
low	65	45.52
intermediate	21	88.76
high	100	
Total		

Table 9. *Test Statistics*

	Reading 1
Chi-Square	58.834
df	.2
Asymp. Sig.	.000

a. Kruskal Wallis Test

b. Grouping Variable: group

Significance value in Kruskal-Wallis Test is low(0.00); thus, equality of scores of three groups on authentic texts is rejected. Accordingly, high proficient, intermediate, and low proficient groups are ranked based on their mean scores for authentic texts. In the second phase of examination of second null hypothesis, we are going to compare the obtained mean scores of three groups of students on reading comprehension tests for manipulated texts i.e. texts with lower levels of cohesive readability (reading 2). Similar to what has gone before, prior to conducting variance analysis, we have to check out the prerequisites and assumptions which are necessary to be available for this kind of analysis. These assumptions are variance equality and normal distribution of the samples. Table 9, 10 and 11 show the results of such tests:

Table 10. *Test of Homogeneity of Variance for Three Proficiency Groups(Reading2)*

Levene statistic	Df1	Df2	Sig.
.448	2	97	.640

Table 11. *Shapiro-Wilk and K-S Lilliefors Test of Normality for Low Proficient Group on Manipulated Texts (Reading 2)*

	Kolmogorov-Smirnov			Shapiro-Wilk		
	statistic	Df	sig	statistic	df	Sig,
Reading2	.242	14	.026	.835	14	.014

a. Lilliefors Significance Correction

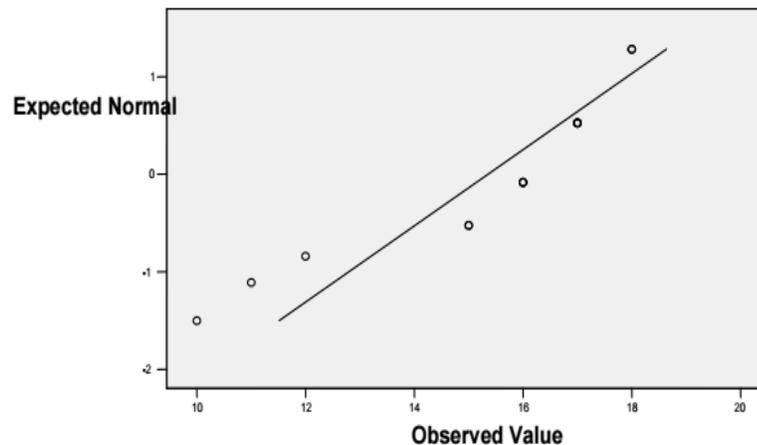


Figure 5. *Normal probability plot for low proficient group on manipulated texts (reading 2)*

Table 12. *Shapiro-Wilk and K-S Lilliefors Test of Normality for High Proficient Group on Manipulated Texts (Reading 2)*

	Kolmogorov-Smirnov			Shapiro-Wilk		
	statistic	Df	sig	statistic	df	Sig,
Reading2	.198	21	.031	.904	21	.042

a. Lilliefors Significance Correction

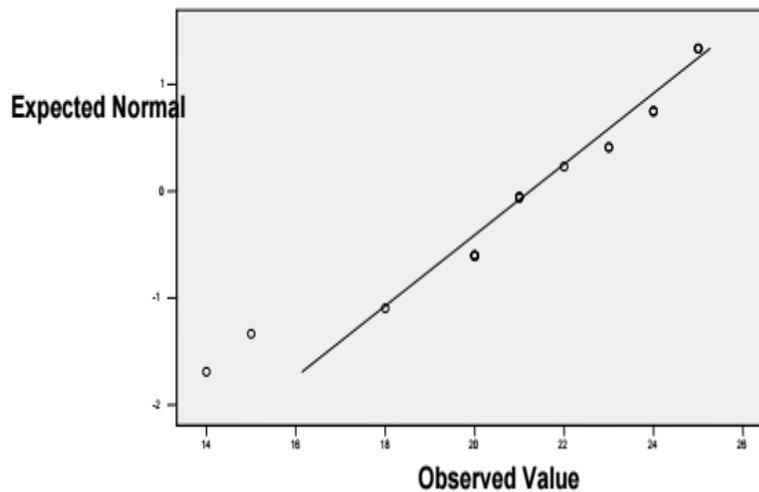


Figure 6. Normal probability plot for high proficient group on manipulated texts (reading 2)

The significance level of Levene Test is big; thus, the assumption of equality of variance for three groups is proved. However, for two groups of low proficient and high proficient, the significance level of Shapiro-Wilk and K-S Lilliefors is small; consequently normality of distribution is rejected in these two groups (graph 4 and 5). Accordingly the needed assumptions for application of one way ANOVA are not satisfied which drives us to apply non-parametric test of Kruskal- Wallis for comparing means of these three groups for manipulated texts. Tables 12 and 13 represent the results of Kruskal-Wallis Test:

Table 13. Kruskal-Wallis Test (Ranks)

group	N	Mean rank
reeding1	14	24.14
low	65	47.48
intermediate	21	77.40
high	100	
Total		

Table 14. Test statistics (a, b)

	Reading 2
Chi-Square	30.725
df	2
Asymp. Sig	.000

a. Kruskal Wallis Test

b. Grouping Variable: group

In the above tables, the number of subjects in each group as well as mean rank on reading 2 and related test statistics are presented. Considering the abovementioned data ($p \leq 0.05$) the hypothesis of mean equality for three groups of proficiency as was indicated by $\mu_1 = \mu_2 = \mu_3$ for manipulated texts (reading2) is rejected which means that text manipulation i.e. cohesive

readability reduction, has direct effect on students' performance. By examining the mean scores we can again rank these three groups as advanced, higher intermediate and lower intermediate. Up to this point, we have observed that the high proficient group has performed better than the two other groups in both reading 1 and reading 2, and then intermediate group stands in the second position in both readings with respect to better performance; finally, the low proficient group performed weakly in both tests.

In order to find the group which more drastically is influenced by the reduction of cohesive readability, "Difference Variable" is defined as below:

Difference = (Reading comprehension score from authentic texts) - (Reading comprehension score from manipulated texts)

Again by application of Kruskal-Wallis Test we examine that in which group Difference is bigger. Results are presented in below:

Table 15. Kruskal-Wallis Tests (Ranks)

group	N	Mean rank
difference low	14	47.25
intermediate	65	59.86
high	21	51.54
Total	100	

Table 16. Test Statistics

	Reading 2
Chi-Square	30.725
df	2
Asymp. Sig	.000

a. Kruskal Wallis Test

b. Grouping Variable: group

In the above tables, the mean difference between groups is presented. It is observable that the mean of the intermediate group (59.86) is bigger than the two other groups. In other words, text manipulation, i.e. reduction of cohesive readability, was more influential on intermediate group. High intermediate and low intermediate have taken the second and the third positions after intermediates. In plain English, when cohesive readability of expository texts is reduced, reading comprehension scores of students who are in intermediate level of language proficiency are reduced more than high proficient and low proficient students.

Discussion

The relationship between cohesive readability of expository texts and reading comprehension ability of the subjects was examined in the light of Paired-Sample T test as was reported in chapter four. The findings came out to be in favour of higher level of cohesive readability of expository texts, i.e. performance on the authentic passages which were not manipulated was much better. The mean score and t test revealed that at $P \leq 0.05$ level, the observed value shows a significant difference between reading comprehension results for authentic and manipulated texts. Having investigated the mean of the two performances indicates that the sig. value was 0.00. It means that students performed better when texts were authentic and their cohesive readability was not reduced. This resulted in the rejection of the first null

hypothesis of the study which claimed no relationship between cohesive readability of texts and reading comprehension ability.

The discussion now turns to the second question which sought to find at which level of language proficiency learners' reading comprehension is more affected by text's cohesive readability. Based on the results of comparing the obtained mean scores, it was indicated that as a result of texts manipulation, i.e. reducing cohesive readability, reading comprehension ability was influenced. As it was shown in the table 14, related to Kruskal-Wallis Test, difference variable (which was defined to show the score differences between reading 1 reading 2) for r intermediate group was bigger than the two other groups. It means that text manipulation (reduction of cohesive readability) has influenced intermediate group more than the two other groups. These results indicated that different proficiency levels were influenced differently when faced with expository texts with different levels of cohesive readability. All in all, it would result in the rejection of the second null hypothesis of the study which claimed no difference in comprehending expository texts with different levels of cohesive readability for EFL students with different proficiency levels. Putting it differently, it was observed that language proficiency and cohesive readability of expository texts interact with each other and they influence reading comprehension of ELF students. To flash back to the studies in the literature some findings have been reported which are overall in the same line with the findings of the present study. According to Majorie C. Demel (1990), microstructures, including cohesion is "an area that has remained unexplored" (p.19). Although many researches have been conducted in this field but still more work is demanded specifically in branches which join different areas together. Previous studies have concentrated on various factors in reading and comprehending a text, for example, Bauman (1997) worked on educational level required to read and understand written materials. He witnessed a positive relationship between proficiency level and capability of understanding a text. Additionally since decades ago, much work has been done on readability of texts. They all indicated the interaction of readability of texts and reading comprehension ability. McNamara, Louwse and Graesser (2005) in their study showed that characteristics of the reader such as proficiency level, characteristics of the text such as readability, cohesion and coherence and finally the comprehension activities are all influential on reading comprehension ability. This is consistent with the findings in the present research. Different researchers have also worked on issues such as text structure, readability, cohesion and coherence. Most of such works have examined interaction of such factors with language skills, specifically reading and writing; considering text structure, Zhang Lin (2002) believes that "apart from recognition and systematic knowledge, L2 learners also need knowledge of text structure such as narratives or expositions which would help them comprehending a text "(P.173). Jalali (2005) has studied expository text structures; he specifically investigated text structure awareness and its effect on comprehension of EFL students. Studies in the area of second language comprehension have cleared that coherence makes a text easier to understand. Birtton and Gulgoz (1991), Kinstsich and Vipond (1979) have proved the same results. They pointed that quality of understanding increases as coherence of text increases. Several other studies have acknowledged the importance of cohesive devices in understanding a text. Zang (2002) has studied these devices in expository texts. He found a positive relationship between such devices and understanding of expository texts. In the field of discourse, Jafarinejad (2007) found a positive relationship between existence of discourse markers and comprehension ability of Iranian EFL university students with different levels of proficiency In another study, Akbariyan (2001, p.p 1-14) shows that there is a significant positive relationship between conjunction and the students' performance on reading comprehension tests. Furthermore, Fallahpour (2005) observed that "the most influential cohesive

device is lexical cohesion" for EFL students in Iran (p. 127). Also Parvaz and Slami-Nodushan (2006) in a study tried to examine the effect of cohesive ties on language comprehension. The findings of the present study conform to all aforementioned studies with respect to the relationship between reading ability and proficiency level, cohesion and coherence and their effect on comprehension.

In recent years some researchers have stepped into a new realm which combines some different branches and by making use of computer tools measure some indexes and examine their influence on different abilities in L2 learning domain. McNamara, Louwerse and Graesser (2005) have examined text difficulty with respect to problems with vocabulary, syntactic composition, meaning, and cohesion. Primary challenge in their proposed grant was to analyze cohesion and coherence with respect to readability of the text and other factors such as reader characteristics (proficiency level). Ballin and Grafstine (2001) conclude that it is more plausible that there are really multiple readabilities, varying with the topic, the nature of the text and the nature of the audience. All in all, the previous findings are all consistent with what have been reached in the present study.

Concluding remarks

The present inquiry was carried out with the intention of investigating the relationship between cohesive readability of expository texts and reading comprehension ability of Iranian EFL learners. Moreover, it sought to see in which level of language proficiency participants are more sensitive to 24 reduction of cohesive readability of expository texts. A process of data collection and data analysis were carried out. By application of SPSS software a series of results were obtained which answered the two posed questions in previous chapters indicating that; first, there is a positive relationship between cohesive readability of expository texts and reading comprehension ability of EFL university students. Second, the results showed that language proficiency and cohesive readability level are significantly related as far as the effect on comprehension of expository texts by EFL university students is considered. These results may have a number of implications for teaching expository texts in EFL contexts. Firstly, language teachers would become more conscious about the effect of cohesive readability and its influence on reading and comprehending ability of their students for expository texts. Secondly, the result of this study would be useful for grading expository texts on several dimensions of language and discourse, specifically the cohesive readability facet, and matching texts for particular classes of readers.

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