Research Paper

Coherence Analysis of Iranian M.A. Students' Comprehension and Production of English Relative Clauses

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Abstract

This study investigated whether English relative clauses play a significant role in textual cohesion, which is understood as textual connectivity and determination of sex and academic years in the perception and production of relative clauses of the Iranian EFL students. Therefore, 200 Iranian EFL language students (112 females and 88 males) majoring in English as a foreign language from Marvdasht and Shiraz Islamic Azad universities took two researcher-made tests, namely a reading comprehension test of 20 items and a writing test. Miltsakaki's (2003) rules for pronoun resolution were utilized to score students' answers. Semi-structured interviews were conducted with 30 English students to cross-validate the results of the tests conducted by the researchers. The results suggested that English relative clauses have an essential role in textual cohesion, which is understood as textual connectivity. The Kolmogorov-Smirnov Test and Mann-Whitney Test manifested that sex and academic year did not significantly affect Iranian EFL M.A. students' understanding and production of relative clauses. The results of this study are of critical pedagogical implications for English as Foreign Language teachers, students, and course designers..

INTRODUCTION

Choosing cohesion as the guiding principle for understanding and producing relative clauses (RC) requires a brief introduction to the attributes of the discourse and the level of discourse structure. Discourse is written or spoken communication; however, it is not just producing a meaningful text. Schiffrin (1994) proposed that based on the formalist view, discourse is language above the sentence. The content of discourse or what it is about referring to the discourse purpose. Each discourse has an intention or purpose. According to de

Beaugrande and Dressler (1981), a discourse has seven criteria: cohesion, coherence, intentionality, acceptability, informativeness, situationally, and intertextuality. Renkema (2004) mentions that not all of these criteria are equally significant; nonetheless, cohesion and coherence are the most critical notions in studying discourse structure. According to Hinkel (2004), a text will be coherent if all elements are present and well-matched. Discourses that are inconsistent will fail to deliver the intended message to the reader or hearer. Egg & Redeker (2006) stated that coherence could contribute to comprehending the meaning of a

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text. Indeed, one of the most salient elements that make up any piece of writing is its coherence. A single written text cannot be fully understood unless some degree of unity reflects all of its components. In other words, if a sentence is not perfectly consistent and coherent, the text will be incoherent.

Most English sentences, including embedded clauses, are challenging for EFL learners since they need to understand the embedded clauses and track the main clause (Kuno,1972). Most of the Iranian EFL students have Challenges and difficulty in comprehending and producing relative clauses in English. As a theory of local coherence in the discourse, Centering Theory can help students to produce well-organized and comprehensible discourse. More importantly, EFL teachers can apply the mentioned theory (CT) to analyze and score students' writing. RCs errors are universal, and these universal features, as presented by Izumi (2003), these universal features have specific syntactic properties and are the most frequently used structures that serve to modify a noun phrase (Velupillai, 2012). The formation of RCs entails embedding one of the most distinctive features of language as a cognitive system (Gibson et al., 2005). Yabuki-Soh (2007) suggested that due to the complexity involved in their formation, accurate processing and use of RCs are often considered the obstacle for EFL students to overcome. In numerous cases, the processing difficulties, as suggested by Schachter (1974), may force students to avoid RC structures and lead to covert relativization errors in their production. Considering the crucial role of ERCs in textual cohesion, considerable work must be conducted in the EFL context. That is to say, and there is a need for research to shed light on the understanding and production of English relative clauses, which contribute to the cohesion of discourse and referring expressions. A review of the literature indicated numerous studies on RCs, however, none explored Iranian M.A. students' comprehension and production of ERCs and their contribution to cohesion.

In the other place, academic writing could challenge EFL students in Iranian universities.

They have serious problems with writing academic essays or their research projects in terms of cohesion and coherence. As Ahmed (2010) noted, language students have to pass many academic courses in English. Nevertheless, these students still experience some problems in the cohesion and coherence of their English essay writing, as revealed by the results of a preliminary essay writing questionnaire administered to students. Also, based on Mohseni and Samadian (2019), teaching cohesive and coherent writing appears to be invalid in English language classes A lack of cohesion and coherence in the EFL learners' essays was observed. EFL students majoring in English at Islamic Azad Universities require to complete many academic courses in English; however, to the authors' best knowledge, most of them encounter problems in the cohesion and coherence of writing English essays. Writing a coherent text is a severe challenge in students' second language (Miltsakaki, 2001). A fundamental element in written discourse is coherence because it contributes significantly to comprehending what the writer intends to convey (Reinking, 2011; Wyrick, 2005). Halliday and Hasan (1976) characterized coherence as links between sentences that make the text semantically meaningful.

Moreover, coherence is achieved using cohesive devices consisting mainly of lexical and grammatical devices (These help relationships between and within sentences). Paltridge (2006) stated that a text must contain a context, and he used textuality or texture instead of coherence. Halliday and Hasan (1976) assert that the links between and within the sentences are cohesion that helps create coherence. Cohesion and coherence are two significant linguistic concepts that make a discourse easy to understand. (Renkema, 2004). A coherent text is a meaningful context that is achieved by linguistic modes. Essentially, when a piece of writing has cohesion, an attempt has been made to link clauses, sentences and paragraphs so that the writing hangs together, which can be done by cohesive devices.

On the other hand, trying to search for a theory of discourse coherence, one may find

many theories that define coherence relations (Grosz, 1977; Lascarides, 1993; Mann, 1998; Sperber, 1986). Among these, Centering Theory is the leading theory of coherence. According to researchers working (Grosz, 1977; Grosz & Sidner, 1986) in Centering Theory (CT), coherence is defined as the local level of discourse which refers to coherence between contiguous sentences. In other words, it describes the local cohesion of two utterances, that is, coherence between words in each part and the choice of referential expression. Moreover, many researchers propose that finite clauses are the units to analyze discourse at the local level (Kameyama, 1998; Miltsakaki, 2001; Poesio, Cheng, Henschel, Hitzeman, Kibble, & Stevenson, 2000; Turan, 1995). In this study, the researcher considered the relative clause, a kind of finite clause, as the unit of analysis. EFL learners, especially Iranian students, find it laborious and demanding to comprehend and produce relative clauses (RC) in English. A relative clause consists of a subject, a predicate, and a tensed verb, contributing to textual cohesion. Nonetheless, considerable research has been investigated the most exciting topics, complex sentences containing relative clauses, most of the studies conducted in this field at the university level focused on using and processing English relative clauses. Producing and comprehending relative clauses contribute to cohesion and consequently to produce a coherent piece of writing; hence, no studies have heretofore explored whether ERCs contribute to cohesion.

The current research results are helpful to both English instructors and EFL students becoming cognizant of the role of ERCs that contribute to comprehending and producing a coherent text. Iranian master students who specialize in English-related courses must complete the thesis in English, and they must be able to give well-organized and easy-to-understand lectures. With the knowledge of RCs and their uses, they can deliver a coherent and east-to-understand discourse. Students should understand the differences between RRCs and NRRCs and their subtypes to promote discourse understanding and production. With their understanding of RC and its uses,

they can deliver an easy-to-understand and cohesive discourse. EFL instructors must improve their students' awareness of various RRCs and NRRCs, to promote understanding and production of speech. In comparison to some well-known language components like grammar and vocabulary, coherence is more challenging to acquire. A significant number of researchers have identified and investigated discourse coherence and the role of ERCs in discourse (Abu Shawish, 2015; Berman, 1994; Egg, 2006; Matsumoto, 2003). Following these, this study explored if Iranian M.A. students' comprehension and production of ERCs appropriately and if they contribute to cohesion. It also investigated whether there are any significant differences between M.A. students' understanding and production of ERCs regarding their sex and academic year. Some scholars as Maceoby and Jackline (1974) declared that gender differences contribute to variation in academic performance, while Archer and McDonald (1991) advocated that male perform better than females in different subjects. Based on the above controversies among scholars, the difference between the male and female learners' performance was also regarded in this study. Thus, the study attempts to answer the following research questions:

1. Do ERCs play any role in textual cohesion, which is understood as textual connectivity?

2. Do sex and academic year significantly affect Iranian EFL M.A. students' understanding and production of ERCs?

LITERATURE REVIEW
Chang (2004) analyzed the difficulties Chinese English-major encountered in a test including RCs and producing RCs in writings. The results indicated that 48% of the students did not employ any RC and, if any, the majority limited their application to one RC with object RCs used more frequently. Also, Liu and Braine (2005) examined cohesive devices used in 96 EFL Chinese students' argumentative compositions. The survey result showed that students could not use cohesive devices appropriately; moreover, they needed to learn

how to use coherence devices and good writing feedback. Moreover, according to Centering Theory Wiesemann (2009) examined the best method to segment relative clauses in English and Spanish. She divided discourse into smaller units of analysis and tried to measure the degree of cohesion between an utterance containing an RC and its immediate co-text, as modelled by Centering Theory. The results indicated that using different kinds of RCs in a text could improve its cohesion.

Additionally, Ahmed (2010) probed the Cohesion and coherence problems among Egyptian language learners in their written essays. The results showed that Egyptian EFL essay writing lacked cohesion and coherence, involving psychological, socio-cultural, and contextual, educational level, and socio-economic and socio-political factors. Further, conducting a study on 40 Iranian students' argumentative essays, Dastjerdi & Hayati (2011) concluded that the students could use cohesive devices correctly in their essay writing. In terms of cohesive devices, the usage of lexical devices was the highest, followed by conjunction devices and reference. For the second stage of their research, the results indicated that there is not any vital relationship between the number of cohesive devices used and the quality of their written essays. Munice (2002) concludes that grammar is as essential as content and is a communicational tool. If students ignore how the meaning is expressed, they cannot write coherently. In another study, Lee (1998, 2002, and 2002) provides a more comprehensive definition of coherence and uses it for teaching purposes in ESL and EFL environments. Coherence in her frame is the result of text characteristics and communication between readers and authors. Lee considered cohesion a component of coherence and included other discourse and reader-related components in its framework. In her research (2002b), students learned about each of these components by reading handouts, analyzing given texts, and modifying their drafts. Judging by all three reviewers, the student's final draft is more coherent.

According to Grosz, Joshi, & Weinstein, 1983; and Miltsakaki, 2001, coherence in Centering theory is defined as local coherence, the coherence between sentences in a paragraph. It determines how two utterances have local cohesion. Additionally, the unit of utterance in the Centering model became central in some works because Centering was modified to illustrate the resolution of the anaphora. Based on extensive research on CT discourse units at the local level, clauses are central analysis (Benshams, 2020; Kameyama, 1998; Miltsakaki, 2001; Poesio, Stevenson, Di Eugenio, & Hitzeman, 2004; Taboada, & Hadic Zabala, 2008). Kameyama (1998) preferred a clause-based approach to account for intrasentential anaphora. Kameyama's method is based on the finite clause. Finite clauses are those clauses that contain a finite verb as their central predicate. Along the same line, Matsumoto (2003) also argued that clause is the best unit for "segmentation in human spoken discourse" (p. 26). Likewise, according to Taboada et al. (2008), different types of discourse segmentation were evaluated, including Miltsakaki's sentence-based method, the Kameyama clause-based hierarchical method, and the Poesio et al.'s clause-based method. They preferred to choose clause as the segmentation unit. Benshams et al. (2020) investigated the role of English restrictive and non-restrictive relative clauses in the cohesion of discourse and the possible differences in the understanding and production of various kinds of restrictive and non-restrictive relative clauses. Centering Theory was used as a framework to analyze the coherence of discourse. However, many studies have indicated that this clause is a local unit of analysis. In this study, clause-based centering is considered as a unit. Since a relative clause is one of the most salient types of subordinate clauses for researchers because of their complexity and difficulty to EFL learners, the researcher attempted to investigate the difficulty of comprehension and production of RCs. Azar (2002) believed that using relative clauses independent clauses could improve their communicative ability. Murphy (2000) pointed out that relative clauses tell us what person or thing the speaker refers to. Relative clauses allow the speaker to be more specific and add information about the refer-

ent; they make the writing more complicated. In the classification of a relative clause, a distinction is made between restricted and non-restricted relatives. (de Vries 2002; 2006). De Hann (1987) identified various types of relative clauses according to the function of the relative clause. The relative clauses which have to identify and modify definite head nouns are restrictive relative clauses, and those relative clauses that describe the definite head nouns are nonrestrictive in form. However, relative clauses which modify indefinite head nouns have just classified and describing functions. These RCs with classifying functions are restrictive in form, and those described in function are nonrestrictive. Loock (2007) and Loock and O'Connor (2013) distinguish various kinds of general relative clauses (NRRC): Continuative NRRCs, Relevance NRRCs, and Subjectivity NRRCs. According to Loock (2007), continuous NRRC indicates that the information transmitted by ARC is semantical, depending on the information in the main clause. Relevance NRRCs are used to give more information about the referent. The last taxonomy is the subjectivity NRRCs. Speakers use it to convey opinions, judgments, or comments. Within RRCs, DE Hann's (1987) classification was adopted; moreover, within NRRCs, the researchers follow Loock's (2007) functional classification.

In conclusion, different views on coherence make coherence an elusive concept, thus affecting the understanding of coherence and how it is taught and learned. However, some studies have investigated the coherent pedagogical aspect; there is no research to examine the understanding and production of English RCs by Iranian students. The current research explores the ability of Iranian EFL students' English RCs comprehension and producing. As mentioned above, in almost all of the studies, the researchers used ready-to-use tests and questionnaires to investigate the students' ability to comprehend and produce a coherent text. The researchers introduced a discourse perspective in which coherence and cohesion are the main components. There is no research to examine the understanding and production of RC English by Iranian students of English as a

foreign language. The researchers introduced a discourse perspective in which coherence and cohesion are the main components. Current research explores the English RC production and comprehension ability of Iranian learners of English as a Foreign Language. The difference between this study and the studies mentioned above is the use of tests conducted by researchers. As mentioned above, in almost all studies, researchers use ready-to-use tests and questionnaires to investigate students' ability to understand and produce a coherent text.

METHODS
Participants and Sample
The study participants included first-year and second-year Iranian M.A. students who studied English Translation at Islamic Azad Universities, Marvdasht and Shiraz Branches. In the first step, permission was received from the professors and students of the mentioned universities. The sample consisted of 259 university-level Iranian students who took part in the TOEFL proficiency test, a standardized, reliable, and valid test. The test was adapted from the TOEFL test that is a standardized test. It was used to check the homogeneity of the students in terms of different grammatical functions including relative clauses. The test was administered at the beginning of the course and 59 students were excluded to maximize the homogeneity of the sample. That is to say; participants were excluded if (1) they were non-first-year and non-second-year students (about 29 students were graduated students), (2) their English proficiency test scores were low (about 30 students' scores were between 15-20 from 41). Totally 200 M.A. students from equally distributed linguistic backgrounds (112 females and 88 males) participated in this study. Considering Dörnyei's (2007) words, sample is a group of participants whom the researcher examines to determine the result of any particular study. The convenience sampling method was used to select the participants of first-year and second-year M.A students. Convenience sampling is a nonprobability sampling in which people are sampled simply because they are "convenient" sources of data for researchers. The research-

ers used convenience sampling to select the M.A students of Marvdasht and Azad universities. The participants ages ranged between 23 to 38 and all were native Persian speakers. They were willing to participate in this research. The fourth phase involved 30 participants from the first phase. The 30 participants were selected from the volunteers who participated in the first phase.

Instrumentation
To achieve the objective of the current study, a questionnaire (students' demographic characteristics), a proficiency test, two researcher-made tests (Comprehension and Production tests), and a semi-structured interview were used in four phases of this study.

Phase 1: Questionnaire and Proficiency test
In Phase 1, a questionnaire and a proficiency test were administered to a group of 259 university-level Iranian students. The questionnaire consists of the participants' biographical information, including sex, age, and academic year. A multiple-choice test was used to measure the participants' overall English proficiency. The test was adapted from the TOEFL test that is a standardized test. The format of the TOEFL test was the PBT (paper-based TOEFL test). It consists of 41 multiple-choice

questions that fulfil a variety of different grammatical functions, including relative clauses.

Phase 2: Reading Comprehension Test
The RRC classification of De Haan (1987), identifying RRC and classification RRC, and Loock's (2007) grouping, continuative, relevance and, subjectivity NRRCs were used to make a reading comprehension test. Each test consisted of discourse including relative clauses, and some of them were a short conversation-like context which made a better item than a brief statement. Care must be taken to avoid any erroneous source of difficulty that the participants might have found hard to comprehend. Also, understanding the choices did not have to be cumbersome.

A team of three EFL experts verified reading comprehension tests for content validity, ambiguity, and adequacy. To determine the construct validity, the data were examined via SPSS version 21. The internal consistency was used to measure the construct validity. According to Table 1, there was a significant correlation between all items and the total grades. Hence, the reading comprehension test was valid. Therefore, some questions were either removed or changed.

Table 1
Internal consistency of the comprehension test items and total grades

Items	Classifying	Identifying	Subjectivity	Continuative	Relevance
1					0.531
2					0.710
3					0.517
4				0.551	
5				0.727	
6			0.467		
7			0.628		
8			0.554		
9			0.531		
10		0.526			
11					0.531
12					0.536
13		0432			
14		0.412			
15		0.512			
16	0.631				
17	0.710				
18	0.517				
19	0.551				
20		0.621			

The researchers used Cronbach's alpha method to explore the reliability of the measurement instrument, which is one of the technical characteristics to show that instruments used under the same conditions produce the same results, as shown in Table 2. Cronbach's alpha values for the variables were all greater than 0.7, all of which are sufficient, which confirms the reliability of the test.

Table 2
Reliability result of the comprehension test

Different Kinds of RRCs and NRRCs	Cronbach's Alpha
Relevance	0.701
Identifying	0.741
Continuative	0.721
Classifying	0.731
Subjectivity	0.708

Phase 3: Production Tests

Participants read 20 sentences consisting of a main clause and a blank, and they had to complete the second clause (a relative clause) naturally. For these tests, De Hann's (1987) classification of restrictive relative clauses, identifying RRCs and classifying RRCs, and Loock's (2007) taxonomy of non-restrictive relative clauses, continuative, relevance, and subjectivity, were considered. In table 3, Internal consistency was measured to examine the construct validity of the production test. There was a significant relationship between the items of the production test and the total grade, which verified the construct validity of the test.

Table 3
Internal consistency of the production test items and total grades

Items	Classifying	Identifying	Subjectivity	Continuative	Relevance
1					0531
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8			0.554		
9			0.531		
10		0.526			
11					0.531
12					0.536
13		0.432			
14		0.412			
15		0.512			
16	0.631				
17	0.710				
18	0.517				
19	0.551				
20		0.621			

Moreover, the reliability of the production test was evaluated using Cronbach's alpha. As shown in Table 4, the Cronbach's alpha values for the variables were more significant than 0.7; accordingly, the reliability of the test was verified.

Table 4
Reliability result of the production test

Different classifications of RRCs and NRRCs	Cronbach's Alpha
Relevance	0.721
Continuative	0.702
Subjectivity	0.800
Identifying	0.764
Classifying	0.730

Phase 4: A semi-structured interview

The researchers designed a semi-structured interview to collect qualitative data and analyze students' ideas, notions, and beliefs about coherence and relative clauses. As Richards (2009) noted, the interviews provided valuable pieces of evidence through an in-depth study of student concerns. For this purpose, 30 volunteer students (15 males and 15 females) who responded to the comprehension and production tests were interviewed individually. The interviews were conducted in Persian. With the participants' permission, all of the interviews were audio-recorded and translated into English. It was expected that their reflections could contribute to the qualitative analysis of the data obtained in the two tests.

Research Procedure

In October 2018, 259 M.A. students of Shiraz and Marvdasht Azad universities were chosen based on convenience sampling. The data were collected in four sessions which lasted over ten months (October 2018 - July 2019). One of the researchers attended the mentioned universities for collecting data and in the first step, permission was received from the participant. Then, there was a conversation with them and they were told the instruction entirely and obviously. Also, they were told that their participation was completely voluntary. After their preparing, a questionnaire and TOFEL proficiency test were administered to them. In fact, in the first session, a questionnaire was designed and administered to understand Iranian EFL learners' demographic data. It took five minutes to finish the questionnaire. The participants were assured that the questionnaire would be anonymous and that no personally identifiable information was required. Then, the first test of grammar test was given to the participants to determine their grammar threshold.

It consists of 41 multiple-choice tests. Generally, it took about 50 minutes to answer all the questions. In the second session, the second test, the comprehension test, was performed. The students had to read items containing a primary and subordinate relative clause and choose the correct choice. The language learner had 40 minutes to reply to all questions. The third test is a production test, and the participants read the sentences and completed them with a suitable relative clause. It took 60 minutes to complete all the sentences. A two-week interval was considered between the performances of the comprehension and production tests to reduce the memory factor. In the final step, semi-structured interviews were conducted in the fourth session. Interviews were conducted with 30 participants for approximately two months. The questions seek the information on English relative clauses as;

1- Did you learn English relative clauses in university?

2- Does learning English relative clauses help in reading and writing?

3- Do you use relative clauses in English in your writing?

4- Do you have a problem with coherent and consistent writing?

5- Do you think your English writing skills have improved by learning to use different types of ERC?

6- Does ERC help text cohesion?

Scoring the Tests

If the participants choose the correct option, they will receive a point. Participants who chose the wrong options scored zero. Regarding the production test, the anaphora analysis

algorithm of Miltsakaki (2003) was used to measure the participants' responses. Initially, the final utterance was selected. Then antecedents were identified, and then next, the grammatical rules were applied, such as gender or number agreement, use appropriate relative pronouns. Following Miltsakaki's algorithm, pronouns are solved. According to the algorithm, the score range for each answer is 0-9. Then, a second-rater marked the students' responses based on the algorithm of Centering theory once more, and the inter-rater reliability was found based on the results obtained. The results are shown in Table 5.

Table 5.
Inter-rater Reliability (Production Test)

	Grade 1	Grade 2
Grade 1	1	993**
Pearson Correlation		.000
Sig. (2-tailed)		200
N	200	
Grade 2	993**	1
Pearson Correlation	000	
Sig. (2-tailed)		
N		
	200	

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

As table 5 shows, the relationship between the two scores obtained by the two raters is 0.993 (sig. = 0.00). Hence, high consistency is between the two ratings.

Design of the Study
A mixed-methods approach was used to answer the research questions of the current study. This research design gathers, analyzes and merges quantitative and qualitative research and methods to understand the research problem. It reflects the views of participants (Creswell, 2015).

Data Analysis
To investigate the first question, the analysis of Chi-square tests was administered to examine the relationship between the variables. The lowest score and the highest score of each test and the theoretical median were considered. The second question could be tested either by parametric or by non-parametric statistical tests. The parametric tests required the distribution of the variable to be expected. For this reason, the Kolmogorov-Smirnov test (Table 7) was used to study the normality of the variable distribution. The test result shows statistical significance, which means that the distribution is not normal. Thus, the researchers used non-parametric tests to analyze the research question of the study. Next, the research question was tested through the Mann-Whitney test. The quantitative data from understanding and production tests were analyzed to investigate whether English RCs have a significant role in textual cohesion, which is understood as textual connectivity. To answer this question, the analysis of the Chi-square test was used (See Table 6).

To analyze the data from semi-structured interviews, students' responses to ERCs' learning experiences and their attitudes towards the usefulness of ERCs' learning were summarized. 30 male and female participants were interviewed randomly. The students were and asked some open-ended questions in Persian, and they were audio-recorded. Eventually, coding data and frequencies of interviewees' responses were analyzed qualitatively by the researchers. Additionally, the qualitative data from the participants' interviews were presented.

Drawing on the previous studies in the related literature, a semi-structured interview was designed by the researchers. In fact, the interview provides an opportunity for digging into learners' views towards using English relative clauses. In order to address validity, the suitability of the questions was investigated and the questions were checked carefully by the researchers after consulting the past studies. According to Ary, et al., (2013), cred-

ibility is the standard of rigour in a qualitative study. To establish the credibility of the interview data, low-inference descriptors and member checks were used. Using member checks involved the researchers' sharing their interpretations of the data with the participants to avoid any miscommunication, identify inaccurate interpretations, and show courtesy to the participants by letting them read what has been written about them.

RESULTS
Results of Quantitative Data
According to the test results (Table 6), the lowest score is 0, and the highest score is 180

for the total grade, so 90 was chosen as the theoretical median of the answers. According to the outcome of the Chi-square test with a significance level of 0.05, the effect of English RCs on textual cohesion is confirmed. Findings in the survey show that the mean total grade is 113.8250 (Table 6), higher than the theoretical median. The Chi-square test result is 113.320, and its significance level is less than 0.05; therefore, the significant role of English RCs in textual cohesion is confirmed. Hence, English RCs have a significant role in textual cohesion, which is understood as textual connectivity.

Table 6
Chi-square test for total grade of comprehension and production tests

	N	Mean	Minimum	Maximum	Theoretical Median	Chi-Square	df Asymp Sig.
Total grade	200	113.8250	135	90	113.320	41	.001

d. The minimum expected cell frequency is 4.8.

The next question under current research is "Do gender and academic year have any significant effect on Iranian EFL M.A. students' understanding and production of ERCs?"

This question was tested either by parametric or by non-parametric statistical tests. It is necessary to present a normal distribution of the variables through parametric tests. Therefore, the normality of the variable distribution was measured by Kolmogorov-Smirnov Test (Table 7). As the p–value was lower than 0.05 (p<0.05) for the variable (Total grade), the statistics were significant which means that the distributions were abnormal. Hence, nonparametric tests could be used to analyze the

research question of the study. The following part tested the research question through the Mann-Whitney test, and the results are presented.

Mann-Whitney Test of sex and academic year
Table 7 shows the number of people in each group and the average rank of each class. One hundred twelve females and 88 males participated in this study. One hundred fifteen students were first-year –students and 85 students were second-year students. The mean rank for females is 99.49, and the mean rank for males is 101.79. The mean rank for the first-year students is 105.45, and the mean rank for second-year students is 93.81.

Table 7
Ranks for Sex and Academic Year

	Sex	N	Mean Rank	Sum of Ranks
Total Grade	Female	112	99.49	11142.50
	Male	88	101.79	8957.50
	Total	200		
	Academic Year	N	Mean Rank	Sum of Rank
Total Grade	First Year	115	105.45	12126.50
	Second Year	85	93.81	7973.50
	Total	200		

Mann-Whitney Test was performed to find any significant difference between Iranian EFL M.A. students' perceptions of ERCs regarding their sex and academic year. As shown in Table 8, the level of significance for the variable "total grade" is more significant than 0.05. Therefore, the total grade does not significantly affect different sex and academic year levels, and there is no significant difference between Iranian EFL M.A. students' perceptions of ERCs in terms of their sex and academic year.

Table 8
Mann-Whitney U test for sex and academic year

	Sex	Academic year
Mann-Whitney U	4814.500	4318.500
Wilcoxon W	11142.500	7973.500
Z	-.280	-1.407
Asymp. Sig. (2-tailed)	.780	.195

Results of Qualitative Data

The interview was designed to seek the opinions of the interviewees on the English relative clauses, different kinds of ERCs, and the role of ERCs role in the textual cohesion, which is understood and produced as a connected text. It was expected that their reflections could contribute to the qualitative analysis of the data obtained in the two tests.

To analyse semi-structured interview data, the researchers briefly summarized student responses about their ERCs learning experience and attitudes towards the usefulness of ERCs learning during the interview. Analysis revealed that English RCs have a significant role in textual cohesion, which is consistent with most of the opinions of the interviewed students on the role of ERCs in textual cohesion. Most students put forward that learning relative clauses in English helps understand the text and write a coherent text; however, a few students indicated that they use different ERCs in their writing. One of them stated:

Sometimes I can understand or use different types of relative clauses or distinguish between different relative clauses. Well, I can say who and which are different in their meanings, but what about who, which, and that? Do they use in the same condition? I am not sure. Sometimes I can remove relative clauses. That is my understanding. However, sometimes, I use it, and I will use it or erase a place where it is not a truth. I will get confused. Some relative clauses are abstract and complex for me to understand. Too many rules should be memorized to reach the construction of the correct way of using relative clauses.

Twenty-five students out of thirty interviewed stated that if different relative clauses are used in written English, allowing the creation of more complex sentences rather than simple sentences, then the text will improve the form and complexity of their writing style. According to these students, when relative pronouns and their references are used correctly in each part of writing, writing is coherent. However, to obtain a coherent text, the students must correctly use relative clauses or adjective clauses to provide more information about nouns or pronouns. In addition, relative pronouns that are co-referent with a nominal can be used at the beginning of relative clauses, and it is necessary to understand which noun in the same sentence the relative clause refers to. In addition to understanding the text, this also helps to produce a coherent text. The excerpt from this interview is as follows:

When it comes to consistency, my writing is very coherent. That is when I am writing; I will focus on using complex sentences. Relative clauses are complex sentences. They follow the nouns and make the clause dependent.

All students stressed that knowing how to use English relative clauses makes the texts coherent. Their statements replicated the M.A. students' responses to the tests. For example, one mentioned:

I think a good article should include complex sentences, for example, complex sentences with relative clauses when the reader read my

first sentence and may want to read more. The reader thinks they want to read more, and so on. Similarly, another student admitted the importance of communicating to his audience achieved using the correct relative clause in his essay. This approach recognized that it was not successful in the first attempt, but it was part of what he studied in the class. He said:

What is a coherent text? When I can use the appropriate pronouns, the text is coherent. My teacher suggested in a class that he should be able to use sufficient relative clauses necessary. I have to choose a relative value to tie a statement. This is coherence, I think.

As mentioned above, all of these points indicate the convergence between the interviewees' thinking and the quantitative results.

DISCUSSIONS
Degree of Cohesion of RCs

The first research question asks whether English RCs have a significant role in textual cohesion, understood and produced as a connected text. The question was explored by administering a multiple-choice-test comprehension and a production test designed to explore learners' understanding and produce relative clauses. To answer the first question, both kinds of RRCs and NRRCs were considered.

The researchers in this survey tracked down those who adopted Centering theories that aided in the anaphora resolution. Anaphora is defined as an expression that refers to the antecedent, and its interpretation depends on another expression in the context. The Centering theory is one of the best theories for explaining how anaphora relates to its antecedents, which is called anaphora resolution in discourse and helps form a coherent sequence of discourse. Considerable research has been conducted to discover the relationship between text coherence and pronoun resolution.(Baldwin, 1993; Berman, 1994; Di Eugenio, 1996, 1998; Hedberg, 1999; Kehler, 1993; Kim, 1999; Strube, 1999; M. Taboada, 2002, 2005; Taboada, & Hadic Zabala, 2008; Tetreault, 1999). When teachers attempt to measure a student's composition or speech, they focus on the cohesive devices, such as lexical and grammatical structure, allowing the reader or listeners to

establish related connections between what he is reading and what he is listening to (Castro, 2004). Cohesion helps provide texture, and through the use of cohesive links or bonds, it can provide unity and continuity between one part of the speech and another.

In this study, the researchers chose clauses as the unit of discourse analysis in the local text structure. Because CRs help text cohesion, the researchers chose restrictive/non-restrictive relative clauses in English. The results of two types of tests (understanding and production tests) are considered to measure the role of RCs in textual cohesion. According to the results of the two tests, the theoretical median of the answers is 90, and the average of the total score is 113.8250, which is higher than the theoretical median. Since the chi-square test result is 113.320, it is confirmed that the English RC starts in contextual cohesion Plays an important role.

According to Hoover (1992), when Spanish and English speakers were asked to understand sentences with multiply-embedded RCs, they used different strategies. The results show that Spanish speakers can understand double centre-embedded sentences, while English speakers cannot. English speakers can assign semantic roles at the end of sentences, while Spanish speakers must assign semantic roles online. It is said that English speakers have to wait until the end of the sentence to assign semantic roles. Despite these factors, the complexity of the centre-embedded RCs has been a good test of the source of support for clause-based sentence processing.

The present research confirmed Miltsakaki's (2002, 2003, 2004, and 2005) attempts to improve the role of relative clauses in textual cohesion. She analyzed 200 NRRCs and checked them using the centring algorithm. According to the centring transformation, 13 sentences have a higher degree of cohesion, while 46 sentences have a lower degree of cohesion. Furthermore, Miltsakaki (2003) found that listeners can better understand sentences requiring minimal processing based on pronoun rules and centring transitions. More cohesiveness means that if the sentences' backward-looking center (Cb) and a preferred center (Cp) is the same, the listener or author will understand it effortlessly.

The results of this study also support (Kameyama (1998); Poesio et al. (2000); and Poesio et al. (2004a, 2004b)) who said that understanding the role of English relative clauses (ERCs) in the text is very crucial.

Likewise, the present study was in line with Gordner, Gibson, and Watson (2005). They use self-paced reading methods to study the treatment of RRCs and NRRCs in supportive and null contexts. They predict the interaction between the context and the type of RCs. They say if the processing mechanism shows strong interaction between context and sentence information, then restrictive and unrestricted relative clauses should treat differently.

Wiesemann (2009) selected 200 RCs and segmented them based on five approaches to discourse segmentation. Using the Centering transitions and centring algorithm, the cohesion of "Pre-RC and Post-RC" was evaluated. The results show that when the speech is divided into independent clauses and clauses in parallel relations, the transition between the sentences has greater cohesion, so the discourse has a higher degree of cohesion. To divide discourse into smaller units, the separation of subordinate clauses (including NRRCs) from their main clauses hurts the cohesion of discourse, resulting in lower scores, but only when transitioning to sentences containing RC. Lastly, the separation of the embedded clause from its matrix clause results in a more incoherent transition.

Sex and Academic Year

The second question was whether sex and academic year had any significant effect on the understanding and production of ERC by Iranian EFL students. A Mann-Whitney test was conducted to investigate whether Iranian EFL M.A. students significantly differ in their perceptions of ERCs regarding sex and academic year. The significance level of the variable total grade is more significant than 0.05 (Table 8). Therefore, the total grade does not significantly affect the different levels of sex and academic year.

An inconsiderable amount of research has been conducted to investigate the effect of sex and academic year on learning English as a foreign language and learning English grammar rules. Some researchers showed that the syntactic components of L2 sentence processing could be improved by increasing L2 proficiency and exposure to the target language (Frenck-Mestre, 2002; Rah, 2010). Prentza (2012) examined the structural distinction between RRCs in Greek and English in the same vein. The study explored the effect of proficiency on the acquisition of ERRCs. Advanced Greek learners were asked to choose syntactic features. As Greek and English RRC are formed differently, advanced Greek learners could not learn the use of ERRCs properly. Zhu (2014) also investigated the effect of various levels of proficiency on the transfer of ERRCs syntax. The study results revealed that low-level proficiency learners transferred more for complex L2 than high proficiency level learners. Likewise, Alroudhan (2016) explored why Arab adult learners as a foreign language faced challenges in learning RRCs and the factors that affect the acquisition of RRCs. He concluded that "…certain factors influenced the acquisition process such as participants' age, age of learning, and age of immersion" (p.33). He also stated that the difference between males and females does not significantly affect "resumptive pronoun uses and the use of overt and covert relative markers" (p.43).

CONCLUSION

The present study investigated whether ERCs were comprehended and used by EFL learners correctly and whether sex and academic year had any significant effect on the understanding and production of ERC by Iranian EFL students. A significant conclusion of the current research was that Iranian EFL students could better comprehend and produce RCs, which promoted discourse cohesion. The construction of relative clauses in Persian is different from that in English. As a result, Iranian English students find it challenging to comprehend and produce relative clauses as a foreign language. Because of the difference in sentence structure and confusion in writing or speaking, there are very few relative clauses applied to the writing of English learners. Therefore, it is essential to provide students with a solid concept to improve their writing skills. Inconsistency is a problem in student writing and can become a

significant obstacle to their success. The reason may be that coherence errors are more difficult to deal with than grammar errors because they involve strings of sentences or paragraphs. The use of RC is essential for producing and understanding coherent English text. It is difficult for Iranian EFL students to understand and produce embedded clauses, such as relative clauses. By learning to use ERCs in their text, they can focus on understanding and generating coherent text.

It is worthy to note that several factors have been recognized in previous studies on discourse interpretation, some of which are easier to control, such as individual forms of linguistics. In contrast, others are more difficult to model, such as speakers' knowledge, the language contextual information, and communicative intent. In the computational linguistics literature, discourse modelling is still in its infancy. This study is probably the first Iranian context to provide insights into students' comprehension and production of relative clauses from the local structure (sentence coherence).

Iranian master's students specializing in English-related courses must complete the thesis in English and must be able to deliver an easy-to-understand discourse in it. With knowledge of RC and its use, they can produce a coherent and well-organized discourse. It is recommended that English as a Foreign Language teachers improve language learners' awareness of the various ERCs to promote understanding and production of discourse. The results of current research may help English teachers and EFL students understand the role of ERCs, to understand and produce them more appropriately and coherent. Additionally, EFL teachers can benefit from teaching students ERCs and their subtypes and use activities to teach their students how to use these ERCs and inform EFL students about their strengths and weaknesses.

All in all, the results of this research are of crucial didactic importance to program designers and materials developers. Students must learn strategies for improving writing according to the conventions of English academic discourse. Syllabus designers can introduce various kinds of relative clauses, besides they can provide sufficient resources, including online and in print, to improve students' compression and production of relative clauses.

In general, this study investigated new findings regarding the textual consistency of English relative clauses. Nevertheless, it has some limitations. The first is the size of the sample. Only 200 Iranian ESL students from the Islamic Azad University Shiraz and Marvdash branches participated in the current study. Of course, a larger sample size can produce more reliable and generalizable results. In addition, the results of this research involve students studying translation. Hence, other English majors can be considered.

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