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Erlangung des Doktorgrades
im Fach Englische Sprachwissenschaft**

**Relativization and accessibility: the formation and use of
English relative clauses by Azerbaijani, German, Kurdish
Sorani, and Persian learners of English**

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List of Abbreviations

A= Agent
ABL= Ablative case
ACC= Accusative
AN. MARK= Antecedent Marker
AS= Aspect Marker
AH= Absolutive Hypothesis
COP= Copula
CAH= Contrastive Analysis hypothesis
DAT= Dative
DEM= Demonstrative Determiner
DEM.CL= Demonstrative Clitic
Dem= Determiner
DO= Direct Object
DUR= Durative prefix
EZ= Ezafe
F= Feminine
FonF= Focus-on-Form
FonFs= Focus-on-FormS
GEN= Genitive
HABIT= Habitual
HERC= Head-external relative clause
HIRC= Head-internal relative clause
IMPF= imperfective Aspect
IO= Indirect Object
ISU= Intransitive Subject
L1= First Language
L2= Second Language
L3= third language
LDH= Linear Distance Hypothesis

M= Masculine
N= Neuter
NOM= Nominative
NP= Noun Phrase
NPAH= Noun Phrase Accessibility Hypothesis
NR= Nominalizer
NPmat= Noun Phrase in the Matrix Clause
NPreI= Noun Phrase in the Relative Clause
OBL= Oblique
OCOMP= Object of Comparison
OE= Old English
OM= Object modifier
PDE= Present-Day-English
PRF= Perfect
PST= Past
PDH= Perceptual Difficulty Hypothesis
PRO= Pronoun
POSS= Possessive
REL= Relative marker
RES= Resumptive Pronoun
RC= Relative Clause
SLA= Second Language Acquisition
SR= Subordinator
Srel= Restricting clause
SPC= Specific
SU= Subject
SPH= Subject Primacy Hypothesis
SOHH= Subject Object Hierarchy Hypothesis
TSU= Transitive Subject
WDH= Word Order Difference Hypothesis

Abstract

This dissertation investigates the potential effects of several factors that are assumed to codetermine the differences in the ease of acquisition of different types of relative clauses (RCs) in second language (L2) contexts. It mainly focuses on the roles of (i) the general learnability of RCs, (ii) prior linguistic knowledge, (iii) input frequency provided by textbooks, and (iv) *focus-on-formS instruction* in the acquisition of RCs in L2. The investigation commences by comparing and contrasting the relativization systems of five typologically diverse languages: Azerbaijani, German, Kurdish Sorani, Persian, and English. Subsequently, two precisely conducted studies unfold. The first study explores the usage patterns of different types of English RCs in 240 argumentative essays written by Azerbaijani-, German-, Kurdish Sorani-, and Persian-speaking learners of English, and native English speakers. The analysis of 588 RCs extracted from the data indicates that the syntactic functions of the relativized noun phrases, the location of the RCs in the matrix clauses, and the properties of RCs in the respective first languages impact the formation and usage patterns of RCs in L2 contexts. The second study inspects correctly formed, erroneously formed, and avoided types of English RCs formed by Persian-speaking learners before and after receiving focus-on-formS instruction. This study explores the potential effects of focus-on-formS instruction on the acquisition of RCs and the accessibility hierarchy of RCs. It consists of two stages: a pre-test and a post-test. The study employs two sentence-translation tests comprised of six types of RCs modeled on the RC types in the Noun Phrase Accessibility Hierarchy (NPAH). The analysis of 3840 RCs formed by 128 Persian-speaking learners of English in the pre-test is compared to that of 1560 RCs formed by 52 participants in the treatment group in the post-test. The results reveal that focus-on-formS instruction enhances the participants' performance in the formation of the correct RC types, particularly the RC types lower in the accessibility hierarchy of RCs, while concurrently diminishing errors and avoidance of such types. The intriguing findings also indicate an unconventional impact on the accessibility hierarchy of RCs, notably in the increased usage of genitive relatives within the treatment group, deviating from the proposed hierarchy by the NPAH.

Chapter One: Introduction

The idea of conducting research in the area of English relative clauses (RCs) began to form in my mind when I was teaching undergraduate students in English language departments at several universities in Iran. Most of the undergraduate students with different first language (L1) backgrounds seemed reluctant to incorporate specific types of RCs in their written and spoken communication, and their performance was unsatisfactory when attempting to form and use English RCs. In-class evaluation of the oral and written performance of Iranian learners of English revealed a distinct gap between the expected use of English RCs and students' actual performance. In addition, the inconsistent performance of second language (L2) learners of English in the use of genitive relatives, and frequent complaints of experienced school teachers about the weaknesses of textbooks of English in presenting relativization lessons in Iran, encouraged me to focus on the RC constructions in L2 settings. Going through the literature relevant to RCs, I found that although many studies in first/second language acquisition have been conducted on RCs, it is still not sufficiently clear why learners of English find some types of RCs more difficult to process, learn, and form. Furthermore, I noticed there has hardly been any research on the acquisition of different types of English RCs by multilingual learners who share a common official language (like Persian for Iranian learners of English) but who have typologically different L1s (such as Azerbaijani and Kurdish Sorani). Moreover, I found that the performance of non-European learners of English with typologically different L1s in the formation and use of different types of English RCs has not been contrasted with that of German-speaking learners of English.

The present dissertation mainly aims to explore the role of (i) the natural order of acquisition of RCs, (ii) prior linguistic knowledge, and (iii) the content of textbooks of English as input providers in the acquisition of English RCs in second language and third language (L3) contexts. The specific purpose of this dissertation is to inspect the patterns of use of English RCs by learners of English with the following first languages: Azerbaijani, German, Kurdish Sorani, and Persian. Therefore, firstly, the relativization systems of the four languages mentioned above, as well as that of the English language are described and compared. Through scrutinizing the RC constructions, the similarities and differences in the structure of RCs between the languages are highlighted. Then, the performance of the Azerbaijani, German, Kurdish Sorani, and Persian learners of English in the formation and use of different English RC types is explored. This is mainly done to examine

whether the frequency of use of RCs in L2 and L3 contexts is compatible with the natural acquisition orders proposed by the acquisition hypotheses. Furthermore, this is conducted to investigate whether L1, L2, or both L1 and L2 learners of English have an impact on their performance in the formation and use of English RCs. The final objective of the dissertation is to study the potential effects of input frequency on the formation and use of English RCs by learners of English. Thus, the types of RCs presented in the textbooks of English employed at German and Iranian schools are investigated.

This study is significant for the following reasons:

- (i) It investigates languages that are typologically different. English and German are closely related languages, both belonging to the West Germanic languages, while Kurdish Sorani and Persian belong to a different branch of the Indo-European languages (they are Indo-European but non-Germanic), and Azerbaijani is a Non-Indo-European language,
- (ii) It explores the structure of relative clauses in languages like Azerbaijani and Kurdish Sorani on which little research has been done, and investigates the use of English RCs by native speakers of these two languages who are learning English as their third language,
- (iii) It explores syntactic transfer in L3 acquisition that might lead to valuable insights about the acquisition of RCs that neither the study of first language nor second language acquisition alone can provide.

This dissertation is comprised of two separate studies (a corpus study that uses learner essays collected by the researcher, and an experimental study). Both studies examine if there is a general order of acquisition of RCs irrespective of individual first languages. Claims have been made regarding the natural order of acquisition of RCs in first language acquisition. The two most prominent hypotheses concerning this are the *Noun Phrase Accessibility Hypothesis* (NPAH) and the *Perceptual Difficulty Hypothesis* (PDH). These hypotheses were proposed by Keenan and Comrie (1977), and Kuno (1974), respectively. According to the NPAH, the relativizability of a noun phrase is related to its syntactic function concerning the RC, and some syntactic positions are universally more accessible to relativization than others. Hence, Keenan and Comrie proposed

a hierarchy for the natural order of the acquisition of RCs. The PDH was proposed to explain one of the contributing factors of processing difficulty in RCs, i.e., the interruption induced by the intervening clause within the sentence structure. According to the PDH, sentences with a center-embedded clause would be more difficult to learn and form than sentences with a peripheral attaching clause. Both the NPAH and PDH made predictions regarding L1 acquisition; however, they were extended to L2 acquisition later. To analyze the data, this dissertation employs the two hypotheses mentioned, subjecting them to tests to gauge their explanatory potential. In addition, the dissertation examines the predictions of the *Absolutive Hypothesis* proposed by Fox (1987), according to which there is a difference between intransitive and transitive subject relatives in terms of their accessibility to relativization. Furthermore, due to the limitations of these hypotheses and their failure to include all types of RCs that could have occurred in the data, the researcher expands the investigation in this dissertation by developing a model for the categorization of RCs. The model is mainly based on the categorization system of RCs used by Fox and Thompson (1990).

In addition, both studies in this dissertation investigate if differences in the relativization systems between the respective first languages and English are reflected in learners' production of RCs in English. The erroneously formed English RCs in the data are identified and compared to their comparable structures in L1s to figure out whether the errors are the results of L1 transfer. In most parts of Iran, children grow up speaking two languages, their first language and Persian, the latter being the official language and the language of instruction at schools. Hence, in the case of Azerbaijani and Kurdish Sorani in this study, Persian as a strong second language might influence learning a third language, that is, English. The corpus study explores whether the learners' L1s maintain their privileged roles in L3 acquisition, or the structure of RCs in Persian as a strong L2 has a stronger bearing on subsequent language acquisition. This is an area that is much less researched and, therefore, this study may contribute to new insights. By focusing on the patterns of use of English RCs by L3 learners of English, whose L1 is either Azerbaijani or Kurdish Sorani and whose L2 is Persian, and comparing the results with those obtained from monolingual Persian learners of English, the issue of cross-linguistic influence (also known as language transfer) is addressed in this dissertation.

In addition to comparing the performances of the learners of English with the four above-mentioned L1s (to each other), their performance in the formation and use of RCs is also compared to that of native English speakers through the analysis of a native English corpus. Furthermore, the corpus study explores if there is any relation between the type of RC used in the data and the dichotomy between animacy and inanimacy of head nouns. Unlike Azerbaijani, German, Kurdish Sorani, and Persian, Present-day English uses different relative pronouns to refer to animate and inanimate head nouns. Therefore, the similarities and differences in the use of RCs with animate and inanimate head nouns between the four L1 groups are examined.

Finally, the second study in this dissertation investigates whether the content of textbooks of English as well as the teaching of RCs through *focus-on-formS instruction* affect the accessibility hierarchy of RCs in L2 and the frequency of use of RCs. Focus-on-formS instruction is a type of instruction that involves a primary emphasis on linguistic structures, often presented as discrete grammar rules in isolation, with no apparent focus on meaning (Corbeil 2005:28). Exploring the effects of a particular type of instruction on the acquisition of RCs is an area to which scant attention has been directed and requires further studies.

The remainder of this dissertation is structured as follows: Chapter 2 is devoted to the theoretical background of RCs. It presents, therefore, a review of subordination and different types of subordinate clauses, provides the definition of RCs and the conventional classification of RCs into restrictive and non-restrictive RCs, and describes different types of RCs and the typology of RCs. Chapter 3 identifies and distinguishes the structures of relative clauses in the five languages Azerbaijani, German, Kurdish Sorani, Persian, and Standard Present-day English. Chapter 4 summarizes the diachronic variability of English RCs throughout history and shows that the categories are not fixed. Chapter 5 presents the reader with information regarding the hypotheses assuming (i) the natural order of acquisition of RCs, (ii) the impact of animacy of head nouns on RC acquisition, and (iii) the relevance of language experience. Additionally, the chapter provides an overview of previous studies conducted on the acquisition of RCs. Chapter 6 presents the first study, which is a corpus study. The chapter examines the correctly formed and erroneously formed English RC types extracted from the argumentative essays written by the native speakers of English and the learners of English who took part in the research and whose first languages are either Azerbaijani, German, Kurdish Sorani or Persian. The chapter also unveils the results derived

from analyzing each learner corpus and the native corpus. It proceeds to compare these findings to the predictions put forth by the aforementioned hypotheses. Chapter 7 delves into the acquisition of relative clauses within the classroom setting, elucidating the influence of instruction on the acquisition of RCs in L2 contexts. In Chapter 8, the dissertation introduces the second study, comprised of a pre-test and a post-test. The chapter inspects correctly formed, erroneously formed, and avoided types of English RCs in the performance of Persian-speaking learners of English before and after undergoing focus-on-formS instruction. Additionally, it scrutinizes the potential effects of focus-on-formS instruction on the accessibility hierarchy of RCs. Chapter 9, serving as the conclusion, offers conclusive remarks on the conducted studies regarding RCs and discusses the implications of the investigations for language educational purposes.

Chapter Two: Typology of Relative Clauses

This chapter categorizes relative clauses from a structural and functional perspective, providing an overview of common typological classification systems. The chapter starts with the definition of subordination and briefly describes the three types of subordinate clauses: nominal clauses, adverbial clauses, and relative clauses. This is followed by the typology of relative clauses. The chapter describes the semantic and syntactic classification of RCs and provides detailed information about the types of RCs introduced in each classification.

2.1 Relative Clauses as a Type of Subordinate Clause

Clauses are commonly divided into main clauses and subordinate clauses. A main clause is finite, while a subordinate clause may be finite or non-finite. In its most simple form, a finite clause includes a subject and a predicator, which is a verb that is inflected for tense and person, while a nonfinite clause contains a verb that is unmarked for tense, number, and person (Quirk et al. 1989:365). In non-finite clauses, the subject is frequently implicit and needs to be inferred from the main clause. A main clause is an independent clause and can stand on its own, but a subordinate clause cannot. As relative clauses are described in grammar as a kind of subordinate clause, subordination and different types of subordinate clauses are reviewed in the following.

2.1.1 Subordination

Subordination is basically “a form of clause linkage. If clauses X and Y are in a relation of clause linkage, then X is subordinate to Y iff X and Y form an endocentric construction Z with Y as the head” (Lehmann 1988:182). This means that a subordinate clause needs to be a part of a higher, that is, a superordinate clause. A superordinate clause in the structure on which subordinate clauses are dependent is called a matrix clause (Quirk et al. 1989:991; Huddleston and Pullum 2005:174). A subordinate clause may have a dependent relation to the whole matrix clause or only to some constituent of the matrix clause. The degree of the integration of subordinate constructions into the matrix clause varies. Different clauses displayed in Lehmann (1988:184) show that clauses “differ gradually on a parameter” that Lehmann calls “hierarchical downgrading”. At the starting pole of the continuum of hierarchical downgrading, “there is no hierarchical relation between the two clauses forming the complex sentence”. This is the situation that is called parataxis. However,

at the other end of the continuum, there is an obvious hierarchical relation between the subordinate clause and the matrix clause. This is the situation that is called embedding. Between the poles of the continuum, “there are various constructions in which the subordinate clause is ever more downgraded” (Lehmann 1988:182-184).

Assuming that subordinate clauses on the hierarchical downgrading continuum, proposed by Lehmann (1988), are grammatically dependent on the whole matrix clause or some elements in the matrix clause, three types of subordinate clauses are distinguished: (i) nominal clauses (called complement clauses by Thompson, Longacre, and Hwang 2007:238), (ii) adverbial clauses, and (iii) relative clauses.

2.1.2 Typology of Subordinate Clauses

The three major classes of subordinate clauses, (nominal, adverbial, and relative clauses), exist in English as well as in the four languages that are the first languages of the learners whose use of English RCs is investigated in this dissertation. Nominal clauses, which are approximate in function to nouns and noun phrases (NPs), can fulfill a range of functions in a sentence; however, languages differ regarding the number and the type of nominal clauses available to them. Thus, nominal clauses are language-specific with respect to their positions in the sentence, the range of functions they can fulfill, and the subordinators that introduce them. One type of nominal clause is a nominal relative clause. Nominal RCs, which are called *free RCs* by Andrews (2007:213), are a certain type of RCs in the typology of relative clauses. Nominal RCs do not exist in all languages; a language that does not have nominal RCs, for example, is Icelandic. However, in many languages like Azerbaijani, German, Kurdish Sorani, and Persian, they coexist with other types of RCs.

The second major category of subordinate clauses is adverbial clauses whose main function is that of an adverbial. In comparison with nominal clauses and relative clauses, most adverbial clauses are less subordinate because they neither are obligatory constituents of the main clause nor do they modify a noun phrase. An exception to this are adverbial clauses of time, location, and manner in English (Thompson’s group 1 in Thompson 2007:238), which are classified as adjuncts in Quirk et al.’s terminology (Quirk et al. 1989:504).

The third major type of subordinate clause is the relative clause. It is not easy to provide a universal definition for a relative clause, as there is a range of structurally different RCs, to which I will return in section 2.2.2. Andrews (2007) defines a relative clause as “a subordinate clause which delimits the reference of a noun phrase by specifying the role of the referent of that NP in the situation described by the RC”. Since the reference of the noun phrase is delimited in the matrix clause, Andrews calls the noun phrase an *NP_{mat}*. He calls the restricting clause an *S_{rel}*, and the grammatical function of *S_{rel}*, the *NP_{rel}* function. This function describes a situational role for the referent of *NP_{mat}* (Andrews 2007:206). A preliminary semantic definition of a relative clause is that an RC is a subordinate clause that modifies a nominal (Lehmann 1986:664). Semantically, there are two opinions of what a relative clause is. The semantic dichotomy in the definition of a relative clause refers to the existence of two types of RCs, restrictive and non-restrictive ones, which will be discussed in section 2.2.3.

2.2 General Typology of Relative Clauses

2.2.1 Functional Categories of Relative Clauses

Regarding the type of subordination, three basic types of RCs can be identified in English and many languages: (i) nominal RCs, which form a constituent of the matrix clause; (ii) adnominal RCs, which form part of a constituent of the matrix clauses; and (iii) sentential RCs, which do not form a constituent or part of a constituent of the matrix clause (Vries 2002:20). The difference between nominal, adnominal, and sentential RCs is illustrated for English in examples (1)-(3) below, which are my own.

- 1) Tina bought [**what** was left at the bookstore] $RC = NP = \text{Direct object of matrix clause}$
- 2) Tina bought the books [**which** were of high quality] $RC = NP = \text{Part of direct object of matrix clause}$
- 3) The bookstore was empty, [**which** was unusual for that time of day] $RC \neq NP \neq (\text{Part of}) \text{ a constituent of matrix clause}$

The position of the three basic types of RCs is illustrated in figure 2.1 on a cline of subordination, adapted from Lehmann's (1988) continuum of hierarchical downgrading (Lehmann 1988:189).

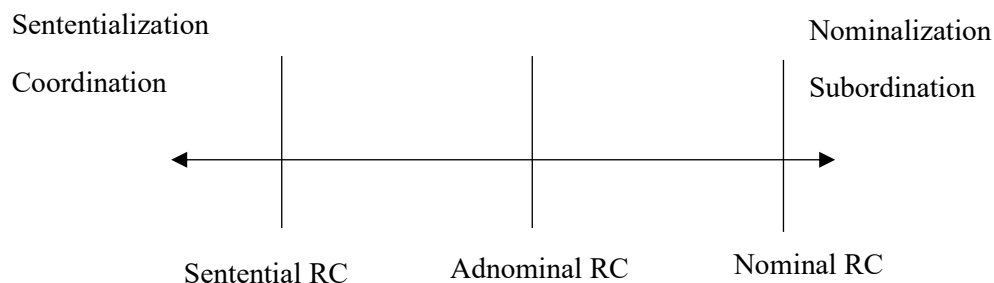


Figure 2.1 Position of RC types on the cline of subordination

According to Figure 2.1, nominalization and subordination, as well as sententialization and coordination are distinct but correlated parameters. While the degree of embeddedness/non-embeddedness of a clause is specified by the parameter sententialization/nominalization, the parameter coordination/subordination shows the degree of dependency/independency of a clause. The RC types on the right side of the continuum are more nominalized and less independent; by moving from right to left along the continuum, the degree of nominalization decreases but the degree of independency increases. The degree of nominalization in different types of relative clauses will be discussed in detail in section 2.2.2.4.

Excluded from the categories of RCs are clefts and pseudo-clefts, which resemble adnominal RCs, and pseudo-clefts, which look like nominal RCs. The main difference between these and RCs is that RCs modify their antecedents, whereas these clauses are not involved in any modification but just focus on their antecedents (Lehmann 1984:363; Quirk et al. 1989:1386-1387). They are therefore also not included in any of the studies in this dissertation.

2.2.2 Syntactic Categories of Relative Clauses

Different scholars have different subcategories of relative clauses. But in general, relative clauses can be syntactically categorized based on (i) their position with respect to the head noun (whether they precede the head noun or follow it), (ii) their location with respect to the matrix clause

(whether they are embedded or adjoined), (iii) the presence or absence of a relative marker in their structure, (iv) the type of relative marker in their structure (whether they are formed by relative pronouns or an invariable marker), and (v) their syntactic type (whether they are finite or non-finite clauses). The varieties of RCs in terms of their position concerning the head noun, and their location concerning the main clause are discussed in section 2.2.2.1; the categorization concerning the use of relative markers is discussed in section 2.2.2.2; the structural type in terms of being finite/non-finite is discussed in section 2.2.2.3.

2.2.2.1 Positional Types of Relative Clauses

Syntactically, relative clauses can be classified based on two “principal dichotomies, which cross-classify” (Lehmann 1986:664). The first principal division of RCs is between internal-head and external-head RCs. Head-external relative clauses (HERCs), in which the head noun is placed outside the RC, include adnominal and postposed RCs. Adnominal RCs contain prenominal (head-final) and postnominal (head-first) RCs. The main difference between prenominal and postnominal RCs is related to the order of the head noun and the RC in the matrix clause. While prenominal RCs premodify their head nouns, postnominal ones postmodify the head nouns. The second type of head-external RCs are postposed RCs, in which the head noun of the RC is separated from the RC by an intervening clause (Lehmann 1986:664).

In contrast to head-external RCs, in head-internal relative clauses (HIRCs), the head noun is indefinite and is placed inside the RC. HIRCs include circumnominal and preposed RCs. Circumnominial RCs contain their head nouns in situ, do not have relative elements, and use relative affixes instead. They are nominalized clauses in substantive function. This type of RC takes the place of a regular NP argument in the matrix clause. The position of the head noun in circumnominal RCs depends on the NPrel function, which could be subject, object, object of preposition (also called the complement of the preposition in Quirk et al. 1989), or genitive. Circumnominial RCs do not exist in the languages under investigation in this dissertation. Preposed RCs, which are called *correlatives* by some scholars like Keenan (1985:165), are mostly in left-adjoined positions and are separated from their correlates in the matrix clause. The correlates are usually a pronoun or determiner (Lehmann 1986:664).

The syntactic structures of postnominal, prenominal, postposed, circumnominal, and preposed RCs have been sketched by Vries (2002:20) as follows:¹

- a. Postnominal relatives: [S-matrix ... [NP RC] ...]
- b. Prenominal relatives: [S-matrix ... [RC NP] ...]
- c. Postposed relatives: [NP... S-matrix... [RC]]
- d. Circumnominative relatives: [S-matrix ... [[RC ... NP ...] ...]
- e. Preposed relatives: [S-matrix [RC (...) NP ...] [S-matrix ... (Pro/ Dem) ...]

The literal equivalents of the above-mentioned RC types are illustrated in English below. In all example sentences, the asterisk (*) indicates that the sentence is ungrammatical. The listing a-e, which are my examples, corresponds to the structures a-e above.

- a. She heard *the story* [(which) you told me yesterday].
- b. * She heard [you told me yesterday] *the story*.
- c. * *The story* she heard [which you told me yesterday].
- d. * She heard [you told me *the story* yesterday].
- e. * She heard [you told me (which) *the story* yesterday] she heard it.

The following example sentences illustrate the three types of HERCs. Examples (4-6) are Lehmann's (1986:664-665), and examples (7) and (8) are Vries's (2002:16-17). The grammatical category labels in the following examples are those used by Lehmann (1986:12-13) and Vries (2002:364)². In example (4), *ān* is a resumptive pronoun, which refers back to the head noun *Kārxāne*. Resumptive pronouns, which can appear as "pronouns (personal, possessive, demonstrative, existential 'there') or adverbs (demonstrative), point out or reinforce the grammatical function of the relativized NP in the RC by case-marking and position" (Herrmann 2003:148).

¹ In the above-mentioned syntactic structures, S-matrix stands for matrix clause, NP for noun phrase, Pro for pronoun, and Dem for determiner.

² POSS: possessive; NR: nominalizer; IMPF: imperfective aspect; HABIT: habitual; COP: copula; SR: subordinator; SPC: specific; RES: resumptive pronoun; PRF: perfect; PST: past

- 4) Kārxāne-yi [ke dar ān kār mi-kard-am] baste shode ast.
 factory-IND SR in it.RES work IMPF-did-1.SG closed become is.
 ‘The factory in which I used to work has been closed.’

(a postnominal RC in Persian)

- 5) [Orhan-in gör-düg-ü] adam çık-ti.
 Orhan-GEN see-NR-POSS.3 man leave-PST
 ‘The man Orhan saw left.’

(a prenominal RC in Turkish)

- 6) Hoca Nasreddin efendi-nin bir kuzu-su varimiş,
 teacher Nasreddin mister-GEN a lamb-POSS.3SG exist.COP.PRF
 ki gāyet ile besler imiş.
 [SR care with rear-HABIT COP.PRF]
 ‘The master Mr. Nasreddin had a lamb which he had reared with care.’

(a postposed RC in Turkish)

- 7) A mi [o nə ti *saan*-so ləgri] la.
 you know he SR give stranger-SPC money the
 ‘You know the stranger whom he gave the money.’

(a circumnominal RC in Dagbani)

- 8) [jo *laRke* KhaRe hai], ve lambe haiN.
 SR boys standing are those tall are
 ‘Which boys are standing, they are tall.’
 ‘The boys who are standing are tall.’

(a preposed RC in Hindi)

In some languages, both types of post-nominal and pre-nominal RCs can occur (see examples 9 and 10, which are mine, below). In Azerbaijani (9a and 9b) and German (10a and 10b), RCs can either precede or follow the head noun.

9) a. O *Kitab* [ki (sən) mən-ə vermiş-din] itib de.
 the book that you me-to gave-2SG lost is
 ‘The book that you gave me is lost.’

b. [Mən-ə verdig-in] *kitab* itib de.
 me-to gave-2SG book lost is
 ‘The book that you gave me is lost.’

10) a. Das *Buch*, [das du mir gegeben hast,] ist verloren gegangen.
 the book that you to me given have is lost gone
 ‘The book that you gave me is lost.’

b. Das [mir von dir gegebene] *Buch* ist verloren gegangen.
 the me from you given book is lost gone
 ‘The book that you gave me is lost.’

The second principal division of RCs, which cuts across the first division, is between embedded and adjoined RCs. An embedded RC is embedded in the main clause and together with the head noun constitutes a nominal within the main clause. Circumnominal and adnominal (postnominal and prenominal) RCs are embedded RCs. In contrast to embedded RCs, an adjoined RC is not a constituent of the matrix clause but is just marginally adjoined to it. Adjoined RCs can be preposed (11a), or postposed (11b) to the matrix clause. The preposed RCs, also called left-adjoined or clause-initial RCs, have distinctive features and are significantly different from the postposed, also called right-adjoined RCs or extraposed RCs (Lehmann 1986:665; Srivastav 1991:637; Andrews 2007:214-215). While some languages like Hindi have both types of right- and left-adjoined RCs, other languages allow only one type. Azerbaijani, English, German, Kurdish Sorani, and Persian allow only postposed RCs (right-adjoined RCs). As was mentioned above, there is a difference between a preposed and a prenominal RC, and between a postposed

and a postnominal RC. “The prenominal and postnominal RCs are attributes to their head and form a nominal together with it which can have one of the syntactic functions in the matrix clause which NPs usually have. The preposed and postposed RCs, by contrast, do not form a nominal with their head noun, have no syntactic function in the matrix clause, and cannot be categorized as anything but a clause” (Lehmann 1986:665). None of the languages that are the topic of this dissertation allow both preposed and postposed RCs. Therefore, two example sentences (11) from Hindi have been taken from Andrews (2007:214) to illustrate both types of adjoined RCs. In Hindi, NPmat must be definite and marked with the demonstrative *vo* in left-adjoined RCs; this is not required for right-adjoined RCs. Furthermore, left-adjoined RCs in Hindi can “specify two NPs in NPrel function, each with a corresponding demonstrative in the main clause” (Andrews 2007:215). *Wh* in Andrews’ examples is what Lehmann calls *SR*.

- 11) a. [Jo lar.kii kar.ii hai] vo lambii hai.
 wh girl standing is DEM tall is
- b. Vo lar.kii lambii hai [jo khar.ii hai].
 DEM girl tall is wh standing is
 ‘The girl who is standing is tall.’

Lehmann (1986:665) has summarized the positional types of RCs as follows:

Table 2.1 *Positional types of RCs according to Lehmann (1986:665)*

Subordination	Adjoined	Embedded
Head position		
Internal-head	Preposed	Circumnominal
External-head	Postposed	Adnominal (Postnominal and Prenominal)

Similar to the categorization of Lehmann (1986), the positional types of RCs have been categorized into two main types of embedded and adjoined RCs by Andrews (2007), and Keenan and Comrie (1977); however, the subcategories of each type have been named somewhat differently. The terms referring to the positional types of RCs used by Andrews (2007), Keenan and Comrie (1977), and Lehmann (1986) are summarized in Table 2.2 below. It should be noted that Andrews' categorization is based on the relationship between NP_{mat} and S_{rel}. When S_{rel} is contained within NP_{mat}, an embedded RC, and when it is positioned outside of NP_{mat}, an adjoined RC is specified (Andrews 2007:208).

Table 2.2 *Terms used by different scholars to refer to the same concepts in the positional types of RCs*

Lehmann (1986)	Post-nominal	Pre-nominal	Postposed	Circumnominal	Preposed
Keenan and Comrie (1977)	Post-nominal	Pre-nominal	Extraposed	-----	Correlative
Andrews (2007)	Head-external	Head-external	Right-adjoined / clause-final	Head-internal	Left-adjoined / clause-initial

Table 2.3 below shows the types of RCs that exist in the languages studied in this dissertation. Since internal-head RCs exist in none of the languages, they are omitted from the following table.

Table 2.3 *Types of RCs in Azerbaijani, English, German, Kurdish Sorani, and Persian*

Languages	Adjoined RCs	Embedded RCs	
	Postposed RCs	Post-nominal RCs	Pre-nominal RCs
English	√	√	--
German	√	√	√
Persian	√	√	--
Kurdish Sorani	√	√	--
Azerbaijani	√	√	√

2.2.2.2 Presence or Absence of a Relative Marker in a Relative Clause

In addition to the positional parameters in the syntactic categories of RCs, the presence or absence of a relative marker in the structure of a relative clause, and the type of the relative marker (whether it is a relative pronoun or an invariant marker) are important factors in the typology of RCs. In the structure of RCs, invariant markers (for example, *that* in English) are by some scholars interpreted as relative pronouns and by others as a general subordinate marker. The distinction between *wh*-pronouns and *that* in English will be discussed in section 3.2.1.

In several languages, like in English, relative markers can be omitted in specific conditions. In contrast, the omission of relative markers is not allowed in some languages (for example, German and Persian). A relative clause in which the relative marker is omitted is called a zero relative (also called a *contact clause* by Jespersen 2013).

2.2.2.3 Finite and Non-Finite Relative Clauses

An important factor regarding adnominal RCs is that they can surface in two different forms: finite and non-finite. Finite RCs, which are called unreduced RCs in Andrews (2007:212), are clausal, have a finite verb, and appear in different and more external positions. In contrast, non-finite clauses, also called reduced RCs, are not full clauses but are phrasal. Reduced RCs typically have reduced tense-mood marking, and their verb element is non-finite. They are confined to subject function. Furthermore, the verbs of this type of RCs “often have features of adjectival or nominal morphology” (Andrews 2007:212). Reduced RCs might appear in the positions appropriate for adjectival modifiers. Andrews (2007:212) uses the following German examples (12a and 12b) to illustrate the difference between the position of reduced and unreduced RCs.

- 12) a. der [in seinem Büro arbeitende] Mann
the in his office working man
'The man working in his office'
- b. der Mann, [der in seinem Büro arbeitet]
the man who in his office works
'The man who is working in his office.'

However, his claim does not hold for English because in an English sentence like (13), which is my example, the adjective precedes the noun but the reduced RC follows it.

- 13) The nice man
The man smiling at me.
The man who is smiling at me.

Non-finite modifying constructions are not regarded as RCs by many linguists due to the lack of a relative marker in their structure. Lehmann (1984) differentiates between RCs and non-finite modifying constructions. He calls the latter type “complex adjectival attribute” (14) and “participial attribute” (15).

- 14) People fluent in three languages. (Lehmann 1984:185)
15) Er liebt das an der Ecke stehende Blumenmädchen. (Lehmann 1984:47)

2.2.2.4 Degree of Nominalization

An important point regarding the structure of RCs is related to the degree of nominalization. As any relative construction contains a nominal, which is called the head, and a subordinate clause, which modifies the nominal, all RCs are nominalized. However, the degree of their nominalization varies. “The degree of nominalization of an RC correlates with two other properties: with its positional type and with its achievement on the hierarchy of syntactic functions” (Lehmann 1986:670).

Regarding the positional type, the preposed and postposed RCs, which are sentential adjoined RCs and show the full syntax of independent clauses, display no sign of nominalization. Circumnominal RCs are weakly nominalized, meaning that they are nominalized to the extent that they function like any other NP in the matrix clause. Postnominal RCs are moderately nominalized insofar as they are attributed to their heads. Finally, prenominal RCs, which internally have nominalizers, and nominal RCs are strongly nominalized (Lehmann 1986:670). Likewise, relative participles have a high degree of nominalization.

As mentioned above, the second property with which the degree of nominalization of an RC is inversely correlated is an achievement on the accessibility hierarchy. Any head of a relative construction has one of the fixed sets of syntactic functions available to a noun. Some of these syntactic functions are innately easier to relativize than others. Based on the inherent level of difficulty of the syntactic functions of the head of an RC, Keenan and Comrie created a hierarchy of the relativizability of each function (This hierarchy will be explained in detail in chapter 5). “The more an RC is nominalized, the less it can systematically make various syntactic functions available for relativization” (Lehmann 1986:669). Therefore, adjoined RCs can relativize all syntactic functions; circumnominal and postnominal RCs are somewhere in the middle, varying between more flexibility to less flexibility, and prenominal RCs do not perform well on the hierarchy (Lehmann 1986:669-670).

2.2.3 Restrictive and Non-restrictive Relative Clauses

Most scholars claim that based on the semantic relation between the subordinate clause and its head noun, two categories of RCs are distinguished: (i) restrictive RCs, which delimit the reference of the noun phrases they modify, and (ii) non-restrictive RCs (also called appositive RCs). The two categories of restrictive and nonrestrictive RCs are called defining and non-defining, respectively, in some grammar books, for example, in Foley and Hall’s (2003) *Longman Advanced Learners’ Grammar*.

Many linguists have the same understanding of the two types of restrictive and non-restrictive RCs. However, some generative linguists such as Huddleston and Pullum (2005) find the traditional classification of RCs misleading and categorize RCs into the two types of integrated and supplementary relative clauses. They discuss the differences between integrated and supplementary RCs considering three aspects: intonation and punctuation, interpretation, and syntax. According to Huddleston and Pullum (2005:187), the first distinction is that while integrated RCs are “integrated intonationally into the larger construction”, supplementary RCs are separated from main clauses by using a separate intonation unit in speech and by setting them off by commas in writing. This is the distinction that is also given for the difference between restrictive and non-restrictive RCs. Huddleston and Pullum explain the second distinctive criterion by focusing on the meaning of the names given to the types of RCs. They believe that the names

“directly reflect the difference in meaning”: integrated RCs contain information which is an “integral part of the larger message” while supplementary RCs contain information, which is additional and often parenthetical, that is, supplementary. Using two example sentences in English, (16a) and (16b), Huddleston and Pullum (2005:188) point out that the integrated RCs are not always restrictive, “in the sense of picking out a subset of the set denoted by the head noun”. In their view, the RCs in (16a) are semantically restrictive since they distinguish two sons from the other sons Martha certainly has. However, no restriction exists in (16b) since the RC does not distinguish the two sons from any other sons that Martha might have, and there is no implication that Martha has more than two sons.

- 16) a. Martha has [two sons who are still at school] and [two who are at university].
b. Martha has [two sons she can rely on] and hence is not unduly worried.

In addition to phonological and semantic factors, Huddleston and Pullum describe several syntactic differences as the third distinctive criterion that distinguishes integrated and supplementary RCs. One syntactic distinction lies in the usage of *which* in English supplementary relatives, where it can function as either a determinative or a pronoun, whereas in integrated relatives, it appears solely as a pronoun. The second difference is that *wh*-pronouns are generally used in the construction of supplementary RCs and that it is very uncommon to find a supplementary RC with *that* in Standard British English. Furthermore, the construction without a relative marker is not allowed as a supplementary relative. The third difference is that in comparison with integrated RCs, supplementary ones allow “a wider range of antecedents” (Huddleston and Pullum 2005:187-189; Algeo 2006:113).

As can be seen in Table 2.4, some linguists (Keenan and Comrie 1977; Downing 1977; Andrews 2007) do not include non-restrictive RCs in the category of relative clauses. Their definition of a relative clause is restricted to RCs that specify and delimit the reference of head nouns, that is, restrictive relative clauses. In contrast, the following linguists claim that relative clauses include both restrictive and non-restrictive RCs: Quirk et al. (1989); Fox (1987); Givon (2001); Greenbaum and Quirk (1990); Huddleston and Pullum (2005); Herrmann (2003). Table 2.4 provides an overview of the terms that are used by different scholars to refer to the two

semantic types of RCs. For the two semantically different types of RCs, this dissertation uses the terms restrictive and non-restrictive RCs.

Table 2.4 *Semantic classification of RCs by different scholars*

Scholars	Relative Clauses	
Keenan and Comrie (1977)	Restrictive RCs	-----
Quirk et al. (1989)	Restrictive RCs	Non-restrictive RCs
Lehmann (1986)	Restrictive RCs	Appositive RCs
Greenbaum and Quirk (1990)	Restrictive RCs	Non-restrictive RCs
Biber et al. (1999)	Restrictive RCs	Non-restrictive RCs
Foley and Hall (2003)	Defining RCs	Non-defining RCs
Huddleston and Pullum (2005)	Integrated RCs	Supplementary RCs
Andrews (2007)	Restrictive RCs	-----
Radford (2019)	Restrictive RCs	Appositive RCs

It should be noted that even the linguists who belong to the same school of thought regarding their concept of a relative clause use different labels in their definitions to refer to the same concept (see Table 2.5). For example, Keenan and Comrie (1977:63-64) define an RC as “any syntactic object if it specifies a set of objects in two steps: a larger set is specified, called the *domain of relativization*, and then restricted to some subset of which a certain sentence, the *restricting sentence*, is true. The domain of relativization is expressed in the surface structure by the *head noun phrase*, and the restricting sentence by the restricting clause, which may look more or less like a surface sentence depending on the language.” Example (17), which is my own, will be used to show the application of these terms. In this example, the domain of relativization is the set of men and *the man*, which specifies the domain of relativization, is the head noun.

17) The man [**who** I invited] is my friend.

Different terms used by different scholars to refer to the same concepts in the description of RCs are displayed in Table 2.5.

Table 2.5 *Terms used by different scholars to refer to the same concept in the description of a relative clause*

Keenan and Comrie (1977)	Restricting sentence	Head noun	Domain of relativization
Andrews (2007)	Srel	NPmat	Domain nominal
Quirk et al. (1989)	Restrictive clause	Antecedent	----
Greenbaum and Quirk (1990)	Restrictive clause	Antecedent	----
Foley and Hall (2003)	defining clause	Noun/pronoun	----
Huddleston and Pullum (2005)	Integrated clause	Antecedent	----

Chapter Three: Cross-Linguistic Description of Relative Clauses

This dissertation seeks to explore the use of English RCs by learners of English with the following first languages: Azerbaijani, German, Kurdish Sorani, and Persian. To achieve this, the current chapter offers a comprehensive overview of Azerbaijani, English, German, Kurdish Sorani, and Persian. It delves into a comparative analysis of the present-day relative clause systems in these five languages. Additionally, a diachronic overview is provided for English, revealing substantial changes in RCs over time.

3.1 Overview of the Languages Investigated in this Dissertation

3.1.1 English

English belongs to the West Germanic language branch under the broad family of Indo-European languages. English has approximately 380 million native speakers and around 750 million people speak English as their second language (Crystal 2003:61). It is a non-pro-drop language and the basic word order in most modern English sentences is subject-verb-object (SVO) (see example 18). This is an example of a basic sentence in English. I will use the same proposition for the other languages to show how they structure a basic sentence.

18) I bought a book.

3.1.2 Persian

Persian, also known as Farsi, is one of the Western Iranian languages within the Indo-Iranian branch of the Indo-European language family. Persian is spoken in Iran, Afghanistan, Tajikistan, and south of Uzbekistan, and is a verb-final language with SOV word order. Persian has over 110 million native speakers (Windfuhr and Perry 2013:418). Persian is written in a modified form of the Arabic script. In addition to the 28 characters of the Arabic script, Persian has four more consonant characters. Unlike in Arabic, short vowels are generally not indicated in Persian and only long vowels are specified. Transliteration of Persian to English is not available in a bilingual dictionary; however, several romanization schemes exist for transliteration of Persian (see <https://taushiro.com/media/romanization/Persian.pdf>). Persian is a pro-drop language (see

example 19), and its grammar is straightforward in many ways. There is no definite article and no grammatical gender in Persian. In the example below, *rā* is an object modifier (OM). Definite direct objects in Persian are marked with the post-positioned particle *rā*.

- 19) (man) katāb-i rā kharid-am.
 (I) book-IDEF OM buy.PST-1SG
 ‘I bought a book.’

3.1.3 Kurdish

Kurdish, one of the Indo-Iranian languages, is a branch of Indo-European. “Linguistically, Kurdish as a whole occupies an intermediate position between North-Western and South-Western Iranian dialects” (McCarus 2009:587). Kurdish is spoken in a large area that consists of much of Southeastern Turkey, Northern Iraq, Northwestern Iran, Northeastern Syria, as well as some other isolated areas in the former Soviet Union. There is no reliable ethnic census on the Kurds by country, but estimates indicate that they form a population between 30 and 35 million. The estimated number of Kurds is around 15 million in Turkey, more than 8 million in Iran, 6 million in Iraq, and 2 million in Syria. It is also speculated that between 1.5 and 2 million Kurds live in Europe, most notably in Germany. According to the Atlas of the Languages of Iran (Anonby, Taheri-Ardali, et al. 2015-2022), the varieties of the Kurdish language are Northern Kurdish (Kurmanji), Central Kurdish (Sorani), Southern Kurdish, Kurjali, and Laki. Sorani is the second most widely spoken variety of Kurdish with around 9 to 10 million native speakers mainly in the Kurdistan region in Iraq and in the Kurdistan Province, the Kermanshah Province, and some parts of the West Azerbaijan Province in Iran. Kurdish Sorani is a pro-drop language. It has verb inflection in which the verb inflects for person, tense, and number (see example 20), and its standard word order is subject-object-verb (SOV). In example (20), “im” is the agent marking clitic which attaches to the object.

- 20) (min) kteb-ek-im kri.
 (I) book-INDF.SG-Agent marking clitic bought.
 ‘I bought a book.’

3.1.4 Azerbaijani

Azerbaijani, also known as Azeri Turkish or Azeri, is one of the Turkic languages. Azerbaijani is quite similar to Turkish because both come from the same branch, Oghuz Turkic, in the classification of Turkic languages. Azerbaijani has approximately 23 million native speakers. There are two types of Azerbaijani: Northern Azerbaijani and Southern Azerbaijani. Southern Azerbaijani is widely spoken in the East Azerbaijan Province, the West Azerbaijan Province, the Ardabil Province, the Zanjan Province, and some parts of Hamadan and Qazvin in Iran, while Northern Azerbaijani is primarily spoken in the Republic of Azerbaijan and some parts of Russia. The Northern Azerbaijani and the Southern Azerbaijani have only a few linguistic differences and are mutually intelligible. Like Turkish, Azerbaijani has five cases: nominative, accusative, dative, locative, and ablative. The general basic word order in Azerbaijani as a verb-final language is subject-object-verb (SOV). Azerbaijani is a pro-drop language and the verb in this language inflects for person, number, and tense (see example 21).

- 21) (Mən) bir kitab ald-im.
 (I) a book buy.PST-1SG
 ‘I bought a book.’

3.1.5 German

German is a West Germanic language that belongs to the Germanic languages, a branch of the Indo-European language family. It is spoken in Germany, Austria, Switzerland, South Tyrol (Italy), Liechtenstein, and parts of Belgium and Luxembourg. As per the Federal Foreign Office of Germany (2020), German boasts approximately 100 million native speakers, with an additional 15 million individuals using it as their second language. It is the most widely spoken language in the European Union and is also the second most widely used scientific language. German is a non-pro-drop language. Although the position of the verb might vary “even within one and the same sentence type in the German language” (Lehmann 2011:397), German is a verb-second language in terms of independent declarative sentences (see example 22) (Bader and Häussler 2010:719; Brandt, Diessel, and Tomasello 2008:327; Lehmann 2011:408). However, the finite verbs occur in the final position in subordinate clauses in German (see example 23) (Baten and Håkansson

2015:524; Wolska and Wilske 2010:554; Brandt, Diessel, and Tomasello 2008:327). German does not seem to have a fixed word order. It is a language with a relatively free word order in which the subject can either precede or follow the object, but precedence of the subject over the object is more common (Bader and Häussler 2010:717; Weber and Müller 2004:71).

22) Ich kaufte ein Buch.
 I buy.PST.1SG one. ACC. N.SG book
 ‘I bought a book.’

23) Das ist das Buch, das ich gestern kaufte.
 this is the.NOM.N.SG book which.ACC.N.SG I yesterday buy.PST.1SG
 ‘This is the book which I bought yesterday.’

It should be noted that the sections on the description of RCs in the non-Germanic languages investigated in this dissertation, particularly in Kurdish Sorani, and Azerbaijani, are largely based on the researcher’s analysis. This is because RCs in these languages have remained mainly unexplored.

3.2 Structural Means of Marking Relative Clauses

3.2.1 English

Finite relative clauses in English can be formed by *wh*-pronouns, the invariant particle *that*, or no relative markers. Andrews (2007:217-218) makes a distinction between *wh*-pronouns and the invariant particle *that*. As he states, *wh*-pronouns express NPrels and form a constituent of the RC, but *that* is only an RC marker and does not form a constituent of the RC. According to him, the phenomenon of pied-piping provides evidence for the distinction between *wh*-pronouns and *that*. Pied-piping is the syntactic process by which the *wh*-pronouns can be embedded in a larger phase, as in “a man [whose son] Tina met”. Pied-piping cannot occur in *that*-clauses.

Likewise, Huddleston and Pullum (2005:184) consider *wh*-relatives (example 24a) and non-*wh*-relatives (24b and 24c) as two types of RCs. They differentiate between them by stating that the former contains an overt anaphoric link while the latter has a hidden anaphoric relation to the

head noun. They add that there are two types of non-*wh* relatives: *that*-relatives, which are introduced by the clause subordinator *that* (example 24b), and bare relatives (example 24c), which do not contain any relative pronoun or clause subordinator. Examples (24 a,b,c) are taken from Huddleston and Pullum (2005:184).

Wh-relative: 24) a. The film [*which* I needed] is not obtainable.

Non-*wh*-relative: *that*-relative: 24) b. The film [*that* I needed] is not obtainable.

 bare-relative: 24) c. The film [I needed] is not obtainable.

A question that might be raised here is whether the interpretation by scholars such as Andrews (2007), and Huddleston and Pullum (2005) for English corresponds to the interpretation of speakers; that is, whether for them *that* is different from *wh*-pronouns or whether they see it as a pronoun replacement of the antecedent.

In contrast to scholars who make a distinction between *wh*-relatives and *non-wh*-relatives, Quirk et al. (1989:365) introduce *wh*-pronouns (*who*, *whom*, *whose*, *which*), *that*, and *zero* (no relative pronoun) as relative pronouns in English. According to Quirk et al. (1989), the choice of the relative pronoun in any relative clause depends on the following three factors:

- (i) “the relation of the relative clause to its antecedent: restrictive or nonrestrictive,
- (ii) the gender type of the antecedent: personal or non-personal, and
- (iii) the function of the relative pronoun as subject, object, complement, or adverbial (including its role as a prepositional complement) or as a constituent of an element in the relative clause” (Quirk et al. 1989:1247-1248).

Table 3.1 summarizes the influence of all three factors on the choice of relative pronouns. As Table 3.1 shows, none of the relative markers has a number or person contrast. However, “the *wh*-pronouns have gender contrast between personal *who* and nonpersonal *which*, and case contrast between subjective *who*, objective *whom*, and genitive *whose*” (Quirk et al. 1989:366). It should be noted that the use of *whom* is restricted to formal registers and *whom* is hardly used in speech.

Table 3.1 *Relative pronouns in modern English (Quirk et al. 1989:366)*

	Restrictive		Non-restrictive	
	Personal	Non-personal	Personal	Non-personal
Subjective case	Who	Which	Who	Which
	That	That		
Objective case	Whom	Which	Whom	
	That	That		
	Zero	Zero		
Genitive case	Whose			

It is important to note that in English, relative markers that are not in subject or possessive positions can be omitted. Omission of the relative markers can occur in different English dialects even when the relative marker is the subject of the RC. Omission also occurred in earlier English. It should also be mentioned that, if the modified NPs by RCs are used “with the lexical meaning of a spatial, temporal, causal, or modal adverbial whose relative markers serve adverbial function in the RC”, adverbial adnominal RCs (also called adverbial RCs) are constructed (Herrmann 2003:59). Adverbial RCs are mainly introduced by a relative adverb (*where, when, why, or how*), but they can be followed by *that*, the zero-relative marker, or *which* (in combination with an appropriate preposition). Since adverbial RCs behave differently from adnominal RCs, they are excluded from the investigation in this dissertation.

Four structural types of non-finite verb clauses are distinguished in English: (i) bare-infinitive clauses, (ii) to-infinitive clauses, (iii) present participles (*-ing* participle clauses), and (iv) past participles (*-ed* participle clauses). Apart from bare-infinitive clauses, the other three types of non-finite verb clauses might function as relative clauses. Examples (25-27), illustrate *to*-infinitive clauses, present participle clauses, and past participle clauses, respectively. Example (25) corresponds to *I’ve got letters that I should write tonight*, which contains a restrictive relative clause.

- 25) I've got letters to write tonight. (Quirk et al. 1989:1268)
 26) The dog barking next door sounded like a terrier. (Quirk et al. 1989:1263)
 27) I noticed a man hidden behind the bushes. (Quirk et al. 1989:1269)

3.2.2 Persian

Persian RCs do not contain relative pronouns and are generally introduced by the invariant relative marker *ke*, which is equivalent to *that* in English (Keshavarz 1993:40). *Ke* does not agree with its antecedent. It is used “regardless of the animacy, gender, function, or number of the noun modified by the relative clause” (Taghvaipour 2004:267). Except in nominal RCs, the use of the relative marker *ke* in Persian is obligatory. RCs in Persian can only surface in the form of finite RCs. Just like in English, the head noun in Persian can have any grammatical function in the sentence. The description of Persian RCs in this dissertation follows Taghvaipour (2004:276-277), whose examples are also used for illustration (see example 28). Brackets around RCs were added by me in examples (28a), (28b), and (28c). The examples demonstrate the use of the invariant marker *ke* when the modified noun is in subject, object, or possessive positions. What distinguishes the meanings of examples (28a) and (28b) is the presence or absence of the object modifier *rā* within the RC. *Rā* marks *shomā* as a direct object and makes the distinction between the interpretation of the two sentences.

- 28) a. (relativized element in subject position)

... mard-i [ke shomā rā did]...
 ...man-DEM REL you OM saw.3SG
 ‘...the man who saw you...’

- b. (relativized element in object position)

... mard-i [ke shomā did-id]...
 ...man-DEM REL you saw.3SG
 ‘...the man whom you saw...’

c. (relativized element in possessive position)

... mard-i [ke pirāhan-ash zard ast] ...
...man-DEM REL shirt-his yellow is
...the man whose shirt is yellow ...

3.2.3 Kurdish Sorani

Relative clauses in Kurdish Sorani are often, but not necessarily, introduced by the invariant relative marker *ka*, which is equivalent to *who*, *which*, or *that*, in English. Similar to English and Persian, the head noun modified in Kurdish Sorani can have any grammatical function in the sentence. Syntactically, RCs in Kurdish Sorani differ from RCs in Persian. One of the main differences in the structure of RCs between these two languages is related to the possibility of omitting the relative marker in restrictive RCs in Kurdish Sorani, which is not permitted in Persian. *Ka* can be omitted in restrictive RCs in Kurdish Sorani when the relativized NP functions as an object in the RC. Omission of *ka* in subject relatives is also allowed although it rarely occurs (Kim 2010:88; Thackston 2006:72-73).

3.2.4 Azerbaijani

Like in most Turkic languages, the participle strategy is the dominant strategy for the formation of RCs in Azerbaijani (Zifonun 2001:19). Pre-modifying participle RCs in Azerbaijani are formed by using participle suffixes *-(y)an* and *-diq*, which attach to the verb stems preceding the head nouns. This means that the relativized element appears after the verb stem to which a participle suffix is attached. The participle suffix *-(y)an* is not marked for tense and is used in both active and passive voice; its tense and valency are taken from the context. However, the participle suffix *-diq* indicates the past tense. The vowel in the participle suffix *-diq* might change (for the sake of vowel harmony) to one of the following: *i, i, u, ü* depending on the last syllable of the word to which the suffix attaches.

Authier (2012:228) states that only subject relatives are formed by the suffix *-(y)an* and non-subject relatives are marked by the participle suffix *-diq*. However, RCs formed by the suffix *-(y)an* can be used to relativize subjects, as in (example 29), direct objects (example 30), indirect

objects (example 31), object of prepositions (example 32), and genitives (example 33). The following examples are mine. In example (29), ABL stands for the ablative case.

- 29) [Sən-i vur-an adam] bu şəhər-den-dir.
 you.SG-ACC hit-SUFFIX person this city-ABL-is.
 ‘The person who hits/hit you is from this city.’
- 30) [Sevil görsətd-an köynək] burada-dır.
 Sevil show-SUFFIX shirt here-is
 ‘The shirt which Sevil showed is here.’
- 31) [Sən o-na bir kitab ver-an oğlan] qardaş-ım-dir.
 you him-to a book give-SUFFIX boy brother-my-is
 ‘The boy whom you give/gave a book is my brother.’
- 32) [Mən onn-an kitab al-an qadın] ana-m-dir.
 I her-from book get-SUFFIX woman mother-my-is
 ‘The woman from whom I get/got a book is my mother.’
- 33) [Qız-ı burada yaşa-yan kişi] qardaş-ım-dir.
 girl-POSS here live-SUFFIX man brother-my-is
 ‘The man whose daughter lives/is living here is my brother.’

RCs marked by the participle suffix *-diq* in Azerbaijani can be used to relativize head nouns with any syntactic functions except the subject function. Thus, this suffix is a non-subject relative marker. The same examples given above for the attachment of *-(y)an* are used below to illustrate the RCs attached to *-diq*. In RCs formed by *-dig*, the target of relativization is direct object (example 34), indirect object (example 35), object of preposition (example 36), and genitive (example 37). There are some syntactic differences between the RCs formed by the attachment of *-diq* and *-(y)an* suffixes. In RCs formed by the suffix *-diq*, a possessive suffix that agrees in person and number with the subject is generally attached to the verb; by contrast, the subject is not indexed by a possessive suffix on the verb in RCs formed by *-(y)an*. Furthermore, while in object RCs

formed by *-(y)an*, the subject does not take any case suffix, in object RCs formed by *-diq*, the possessive relation between the subject and the verb within the RC can optionally be marked by case suffixes attached to the subject.

34) [Sevil görsət-diq-i köynək] burada-dir.
 Sevil show-SUFFIX- POSS shirt here-is
 ‘The shirt which Sevil showed is here.’

35) [Sən o-na bir kitab ver-diq-in oğlan] qardaş-im-dir.
 you him-to a book give-SUFFIX-POSS boy brother-my-is
 ‘The boy whom you gave a book is my brother.’

36) [Mən onn-an kitab al-diq-im qadin] ana-m-dir.
 I her-from book get-SUFFIX-POSS woman mother-my-is
 ‘The woman from whom I got a book is my mother.’

37) [Qiz-i burada yaşa-dig-i kişi] qardaş-im-dir.
 girl-POSS here live-SUFFIX-POSS man brother-my-is
 ‘The man whose daughter was living here is my brother.’

In addition to the participle strategy, which is the prototypical relative strategy for the formation of RCs in Azerbaijani, Southern Azerbaijani allows the strategy of post-modifying RCs using the invariant relative marker *ki*. *Ki* is equivalent to *who*, *which*, or *that* in English and is assumed to have been borrowed from Persian, in which relative clauses are marked by an invariant relative marker *ke*. Like in Persian, the invariant relative marker in Southern Azerbaijani cannot be omitted. Persian and Southern Azerbaijani have been in close linguistic and cultural contact in Iran for a long time and, therefore, can be considered a *linguistic area* (called *Sprachbund* by Thomason 2000) (Aydin 2007:312; Erfani 2005:41). According to Thomason (2000), a *Sprachbund* is a group of languages that share some structural features in consequence of geographical closeness and language contact, but not as a result of genetic relatedness or inheritance from a common ancestor.

It should be noted that the two types of postnominal and prenominal RCs can modify the same head noun in one sentence in Azerbaijani, resulting in a cross-linguistic rare structure of RC-head-RC (example 38).

- 38) [O mavi köynək gey-an] uşaq [ki alma ye-yir] qız-ım-dir.
 that blue shirt wear-SUFFIX child REL apple eat.PRS.3SG daughter-my-is
 ‘The child who is wearing a blue shirt and is eating an apple is my daughter.’

The rare structure of RC-head-RC, in which the two types of post-nominal and pre-nominal RCs can modify the same head noun in one sentence can occur in German like in Azerbaijani. Example (38) above can be literally translated as: *Das [ein blaues Hemd tragende] Kind, [das einen Apfel isst,] ist meine Tochter.* In German, ‘*eine blaue Bluse tragende*’ would be more likely, as *Hemd* in German is only used for males and *Bluse* for females (even if they were very similar in shape).

3.2.5 German

RCs in German grammar are presented as a type of attributive sentence, which is similar in function to adjectives and has the semantic function of identifying a noun more precisely. The prototypical RC in German retains an element of the superordinate clause and makes a statement about it (Eisenberg 2016:1040; Engel 1996:290; Schönig 1992:74). In German, RCs are generally introduced by a *d*-element (*der-die-das*) which has inflectional endings that are marked for number, gender, and case, and cannot be omitted from the sentence. In some regional and colloquial German, RCs are introduced by an uninflected relative marker. Uninflected relative markers are *wo*=where which has a fairly widespread occurrence, and *was*=what which is restricted to Bavarian and Austrian dialects. In addition to the *d*-element, German RCs can be introduced by *welcher*, *welches*, and *welche*, which have the same use as *der*, *die*, and *das*, and are equivalents to *wh*-pronouns in English. These pronouns are formal, restricted to written language, and have become somewhat archaic (Engel 1996:292; Fleischer 2004:218).

In German, relative pronouns take on the number and gender of the head NPs. The case, however, is determined by the function of the relative pronoun within the relative clause; it does

not depend on the grammatical function of the antecedent in the matrix clause. Depending on the grammatical function of relative pronouns, heads of RCs can be nominative, accusative, dative, or genitive. Table 3.2 provides an overview of the inflection of relative pronouns in the nominative, accusative, dative, and genitive cases.

Table 3.2 *Inflection of relative pronouns in the German language*

	Masculine	Feminine	Neuter	Plural
Nominative	der/welcher	die/welche	das/welches	die/welche
Accusative	den/welchen	die/welche	das/welches	die/welche
Dative	dem/welchem	der/welcher	dem/welchem	denen/welchen
Genitive	dessen	deren	dessen	deren

Examples (39 and 40), which have been taken from Sanfelici, Schulz and Trabant (2017:64-66), and examples (41 and 42), which are my examples, illustrate each type, respectively. In the following examples, the abbreviations *M.*, *F.*, and *N.* stand for masculine, feminine, and neuter, respectively.

39) Der Mann, [der rote Haare hat], ist mein Bruder.
 the.NOM.M.SG man PRON.NOM.M.SG red hair has is my brother
 ‘The man who has red hair is my brother.’

40) Der Mann, [den du getroffen hast], ist mein Bruder.
 the.NOM.M.SG man PRON.ACC.M.SG you met have is my brother
 ‘The man who(m) you met is my brother.’

41) Das Kind, [dem ich helfe,] ist mein Bruder.
 the child PRO.DAT.N.SG I am helping is my brother
 ‘The child whom I am helping is my brother.’

- 42) Der Mann, [dessen Kind in meiner Klasse ist,] ist krank.
 the man PRO.GEN.M.SG child in my class is is sick
 ‘The man whose child is in my class is sick.’

Like in Azerbaijani, German allows post-nominal, pre-nominal, and nominal embedded RCs, as well as extraposed RCs. Similar to other subordinate clauses in German, which have SOV word order, the verb in RCs is generally in the final position. Like in finite German RCs, the case in participle RCs is determined by the function of the head noun in the relative clause. In German participle RCs, which are not used frequently, the article is separated from the head noun and the RC is between the article and the head noun. This means the article precedes the participle RC (examples 43 and 44).

- 43) Der [die Frau liebende] Mann kam.
 the.NOM.M.SG the.ACC.F.SG woman.ACC loving-NOM man-NOM came.PST
 ‘The man who loves the woman came.’ (my example)

- 44) Der [gestern abend schnarchende] Junge wird sprechen.
 the.NOM.M.SG yesterday evening snoring-NOM boy will speak.PRS
 ‘The boy who was snoring last night will speak.’ (my example)

In long and complex German sentences (example 45), the main verb of the matrix clause can remain in the verb-second position.

- 45) Er hatte die Maler gekannt, [die von allen anderen, egal ob
 he had the painters known who by everyone else whether
 tot oder lebend, vergessen worden waren]. Yas (2012:127)
 dead or alive forgotten had been
 ‘He had known the painters who had been forgotten by everyone else, dead or alive.’

In another specific condition, the verb within the RC is in the second position. In these RCs, only *d*-pronouns are used. These RCs are predicates of existential sentences; for example, when the matrix clause is *es gibt* (there is), *da ist/sind* (there be), possessive existential *haben* (have), or evidential existentials like *sehen* (see), *kennen* (know) and *hören* (hear) (Weinert 2012) (Brandt 1990; Gärtner 2001a/b; Zifonun 2001; Zwart 2005; Wurmbrand 2014; Sanfelici, Schulz, and Trabant 2017). Example (46), taken from Sanfelici et al. (2017:67), shows an instance of an integrated V2 RC.

- 46) Hier gibt es zwei Frauen, [die haben den Präsidenten getroffen].
 here there-is two women PRON.NOM have the.ACC president met
 ‘Here there are two women that met the President.’

Azerbaijani, Kurdish Sorani, and Persian have SOV word order. Therefore, in these languages, existential constructions with RCs do not immediately follow the relativized element, but follow the verb in the matrix clause (see example 47, which is my example in Persian). The RCs in existential constructions do not have specific features in any of these languages. In example (47), DUR stands for the durative prefix (mi-) in Persian (Mahootian and Gebhardt 1997).

- 47) Do dāneshāmooz dar kelās vojood=dārad
 two student in class there are
 [ke kheily harf mi-zan-and].
 REL very speech DUR-hit.PRS-3PL
 ‘There are two students in class who speak a lot.’

3.3 Functional Categories of Relative Clauses

3.3.1 Adnominal Relative Clauses: Restrictive and Non-restrictive RCs

3.3.1.1 English

Adnominal RCs, which could be restrictive or non-restrictive, constitute the prototypical relative clauses in English (Quirk et al. 1989:1244). Adnominal RCs in English postmodify the head nouns,

whose relative markers (both *wh*-relatives and *that*) can serve all sorts of grammatical functions in the RC. Restrictive and non-restrictive RCs in English are distinguished from each other semantically and syntactically. According to Quirk et al. (1989:1239), restrictive RCs are formed when the head noun of a subordinate clause is viewed as “a member of a class which can be linguistically identified only through the modification that has been supplied”. In contrast, when the head noun is viewed as “unique or as a member of a class that has been independently identified and any modification given to such a head is not essential for identifying the head”, non-restrictive RCs are formed (Quirk et al. 1989:1239; Radford 2019:7-8).

Non-restrictive RCs in English are separated from the head nouns by a comma, while no punctuation is used with restrictive RCs (Quirk et al. 1989:1239; Biber et al. 1999:602). The following examples, which are taken from Biber et al. (1999:195), illustrate restrictive (example 48) and non-restrictive (example 49) English RCs, respectively.

48) We have 30 men who are working from 6 am to 11 pm and most of the extra payments we would expect to receive may go on overtime.

49) He warned the public not to approach the men, who are armed and dangerous.

3.3.1.2 Persian

Like in English, postnominal RCs are the prototypical relative clauses in Persian. Both types of restrictive and nonrestrictive RCs in Persian are introduced by the invariant marker *ke*, but the two types of RCs are distinct syntactically: while the suffix *-i* is required on the head noun of a restrictive RC, it does not attach to the head of a non-restrictive RC. The suffix *-i* is obligatory in restrictive RCs in Contemporary Standard Persian, even if the head noun is preceded by a demonstrative. However, in colloquial Persian, the head noun modified by a restrictive RC could appear just with a demonstrative, that is, without the suffix *-i*. It should be noted that the suffix *-i* in Persian is generally used to mark indefiniteness, but the suffix *-i* that exclusively appears at the end of the nouns modified by a restrictive RC is called *demonstrative -i* (Lazard 1957:66). *Demonstrative -i* can attach to the antecedent of restrictive RCs even if the noun is definite. Like in English, non-restrictive RCs in Persian appear between two commas. Examples (50) and (51),

taken from Taghvaipour (2005:14), represent instances of restrictive and non-restrictive RCs in Persian, respectively.

50) *dāneshju-i* [ke be shirāz rafte=bud] *barāy-am* *nāmeḥ-i* *nevesht*.
 student-DEM REL to Shiraz go.PP.3SG for-me letter-INDEF wrote.3SG
 ‘The student who had gone to Shiraz wrote me a letter.’

51) Ali, [ke be shirāz rafteh=bud], *barāy-am* *nāmeḥ-i* *nevesht*.
 Ali, REL to Shiraz go.PP.3SG, for-me letter-INDEF wrote.3SG
 ‘Ali, who had gone to Shiraz, wrote me a letter.’

3.3.1.3 Kurdish Sorani

Both types of restrictive and nonrestrictive RCs in Kurdish Sorani are introduced by the invariant marker *ka*. Kurdish Sorani allows *ka*-less restrictive clauses, but *ka* cannot be omitted in non-restrictive RCs. Syntactically, most of the restrictive RCs in Kurdish Sorani are formed by the attachment of the *ezafe* marker *-ī* to the endings of head nouns they modify. In non-restrictive RCs, however, no *ezafe* marker is attached to the head noun, but comma intonation is required after the head noun. The *ezafe* marker is one of the most frequent grammatical morphemes in most West Iranian languages (Haig 2011). Examples (52) and (53) represent instances of restrictive and non-restrictive RCs in Kurdish Sorani, respectively. To facilitate reading the example sentences, the abbreviations used in the glossing of the Kurdish Sorani RCs are provided in the footnote³.

52) *xwendekār-aka-ī* [(ka) çu=bu bo Hawler] *maktub-ek-i* *bo* *nusi-m*.
 student-DEF.SG-EZ REL go.PP.3SG to Erbil letter-INDEF-3SG.A for wrote-me
 ‘The student who had gone to Erbil wrote me a letter.’

53) *Šilan*, [ka çu=bu bo Hawler], *maktub-ek-i* *bo* *nusi-m*.
 Shilan REL go.PP.3SG to Erbil, letter-INDEF-3SG.A for wrote-me
 ‘Shilan, who had gone to Erbil, wrote me a letter.’

³ Ez: Ezafe marker; DEM: Demonstrative; DEM. CL: Demonstrative clitic; AS: Aspect marker; RES: Resumptive pronoun; A: Agent

As was mentioned above, restrictive RCs in Kurdish Sorani are typically but not essentially linked to the head noun by the ezafe marker (-*ī*), the linking element specific to Kurdish Sorani (also sometimes seen in some Northern and Southern Kurdish dialects which are in close contact with Kurdish Sorani). When the head noun ends with a vowel, (-*ī*) is pronounced [y]. Unlike in Kurdish Kurmanji, the ezafe does not distinguish number and gender in Kurdish Sorani. Furthermore, the ezafe marker in Kurdish Sorani always follows all the other nominal inflections like the demonstrative clitic (Öpengin 2016:111). It should be noted that in Kurdish Sorani, -*ē* and -*e* are also considered ezafe markers (Öpengin 2016:111). However, these markers are not used in the construction of RCs.

In Kurdish Sorani, the noun endings -*aka* and -*akān*, respectively, signify the singularity or plurality of the definite head nouns, while the noun endings -*ek* and -*ān* indicate, respectively, the singularity or plurality of the indefinite head nouns, (see Table 3.3). The ezafe marker -*ī* can be attached to the head nouns with all of the following endings: -*aka* (example 54), -*akān* (example 55), -*ek* (example 56), and -*ān* to form a restrictive RC. When the antecedent of an RC is a noun ending with -*ek*, it is also possible for that noun not to have any antecedent marker (that is no ezafe marker -*ī*) (example 57). In contrast to my analysis, Thackston (2006:73) considers -*ek* as one of the antecedent markers in Kurdish Sorani. Examples (54-57) are my examples.

Table 3.3 *Definite and indefinite markers in singular and plural nouns in Kurdish Sorani*

	Singular Nouns	Plural Nouns
Indefinite marker	-ek	-ān
Definite marker	-aka	-akān

54) keç-aka-ī [(ka) min kteb-ek-im bo kri=bu] hāt.
 girl-DEF.SG-EZ REL I book-IDEF-1SG for buy.PP came.3SG
 ‘The girl for whom I bought a book came.’

55) keç-akān-ī [(ka) min kteb-ek-im bo kri=bu-n] hāt-in.
 girl-DEF.PL-EZ REL I book-INDEF-1SG for buy.PP-them came.3PL
 ‘The girls for whom I bought a book came.’

56) keç-ek-î [ka nân-i kri=bu] hât.
 girl-IDEF.SG-EZ REL bread-3SG buy.PP came.3SG
 ‘A girl who had bought bread came.’

57) keç-ek [ka nân-i kri=bu] hât.
 girl-INDEF.SG REL bread-3SG.A buy.PP came.3SG
 ‘A girl who had bought bread came.’

As was mentioned above, one way to form a restrictive RC in Kurdish Sorani is attaching the ezafe marker *-î* to the end of NPs. Alternatively, another approach is to employ the demonstrative determiner *aw* preceding the relativized NP. The determiner *aw* acts like *-aka* in marking its head as definite. There are not any pragmatic differences between *aw* and *-aka* and they could be used interchangeably, but in pointing directly to a noun, *aw* is generally preferred to be used. In restrictive Kurdish Sorani RCs in which the NP is preceded by *aw*, the demonstrative clitic *-e*, (pronounced /-æ/) which is a definiteness marker, is attached to the end of the NP. Thus, the structure would be *aw ...-e*, which is called *the demonstrative determiner complex* by Öpengin (2016:112) (see example 58). All the Kurdish Sorani RCs which can be formed using the demonstrative determiner *aw...-e*, can also be formed using *aw* preceding the head noun, which is followed by the ezafe marker (see example 59). This means that the ezafe marker *-î* can co-occur with the demonstrative determiner *aw* and with the demonstrative clitic *-e*.

58) Aw brâdar-e [ka doyne hât] khalât-ek-i bo henâ-m.
 DEM friend-DEM.CL REL yesterday came-PST.3SG gift-INDF-3SG.A for brought-I
 ‘The friend who came yesterday brought me a gift.’

59) Aw brâdar-î [(ka) doyne hât] khalât-ek-i bo henâ-m.
 DEM friend-EZ REL yesterday came-PST.3SG gift-INDF-3SG.A for brought-I
 ‘The friend who came yesterday brought me a gift.’

As the verbs within RCs in the examples (60-63) are all transitive in the past tense, to better understand the examples, it should be noted that the transitive past tense in Kurdish Sorani is

different from the other tenses. In Kurdish Sorani, the agent affix is normally attached to the verb stem. However, when the verb is transitive and appears in the past tense, the agent affix precedes the verb stem and attaches itself to the direct object. Thus, it might look like possessive pronouns.

Another important point regarding relativization in Kurdish Sorani is related to the tense of the verb within the RC. When the relativized NP is in direct object position, indirect object position, or prepositional object position, a resumptive pronoun is used to refer back to both singular and plural head nouns if the verb within the RC is in the present tense (see 60 and 61, which are my examples). However, when the verb within the RC is in the past tense, a resumptive pronoun is used if the head noun is plural but not if it is singular (see examples 62 and 63, which are mine). In examples (60) and (61), *da*, which precedes the present stem, is the present tense marker. The present stem in Kurdish Sorani is followed by a suffixed personal ending.

60) miwe-ka-ī [(ka) to da-y= kr-i] zor baš-a.
fruit-DEF.SG-EZ REL you AS-it.RES=buy.PRS-2SG very good-is
‘The fruit you buy is very good.’

61) miwe-kān-ī [(ka) to da-yān=kr-i] zor baš-in.
fruit-DEF.PL-EZ REL you AS-them.RES=buy.PRS-2SG very good-are
‘The fruits you buy are very good.’

62) miwe-ka-ī [(ka) to kr-it] zor baš-a.
fruit-DEF.SG-EZ REL you buy.PS-2SG very good-is
‘The fruit you bought is very good.’

63) miwe-kān-ī [(ka) to kr-it-n] zor baš-in.
fruit-DEF.PL-EZ REL you buy.PS-2SG-RES very good-are
‘The fruits you bought are very good.’

3.3.1.4 Azerbaijani

Unlike the other languages investigated in this dissertation, the prototypical RCs in Azerbaijani are prenominal RCs, which are mainly restrictive. Prenominal restrictive RCs in Azerbaijani are

not different morphologically or in punctuation from non-restrictive RCs. This means that sometimes one prenominal RC could be interpreted as either restrictive or nonrestrictive depending on context (see example 64). If the context allows for more than one referent for the head relativized, the clause is restrictive. However, if it does not, the clause is non-restrictive.

- 64) [Ferhad-ın yaz-dıǵ-ı] kitab-i ald-im.
 Ferhad-GEN write-SUFFIX-3SG book-OM bought-I
 ‘I bought the book that/which Ferhad has written.’ (my example)

In addition to prenominal RCs, which are the dominant type of adnominal RCs in Azerbaijani, postnominal RCs are allowed in Azerbaijani. In postnominal RCs in Azerbaijani, non-restrictive RCs require a comma after the head noun, while no comma is required in postnominal restrictive RCs.

3.3.1.5 German

Restrictive and non-restrictive RCs in German are identical to English ones in their function. Unlike English RCs, restrictive and non-restrictive German RCs are always preceded by a comma and followed by one if they are not followed by a full stop. After *d*-pronouns (*der-die-das*)⁴ (example 65), negative indefinites (like *niemand* and *nichts*) (example 66), and general indefinites (like *alles* and *jeder*) (example 67), only restrictive RCs, which might be either embedded within the matrix clause or extraposed, are used. It should be noted that ‘*alles*’ is not followed by a *d*-relative clause, but by ‘*was*’ (example 67). This type of RC expresses limitations. The same holds for ‘*nichts*’ (example 66).

- 65) Den, den ich liebe, treffe ich morgen.
 ‘Tomorrow I will meet the one who I love.’ (my example)
- 66) Nichts, was ich gelernt habe, konnte ich mir merken.
 ‘I couldn't remember anything I learned.’ (my example)

⁴ These *d*-pronouns are demonstrative pronouns (see example 65). In this case ‘*der*’ could be replaced by the more explicit but more formal ‘*derjenige*’.

- 67) Anna erreichte [alles], [was] sie sich vorgenommen hatte.
'Anna achieved [everything] that she set out to do.' (Eisenberg 2016:1043)

In contrast to restrictive RCs, non-restrictive German RCs, for instance (example 68), taken from (Eisenberg 2016:1042), usually appear next to their head noun. Although this positional tendency should not be interpreted as a strict rule, it suggests that there might be a positional difference between restrictive and non-restrictive RCs (Eisenberg 2016:1041-1042).

- 68) Volker, [der gern angelt], hat gestern zwei Fische gefangen. (Um welche Person namens Volker es geht, ist im gegebenen Kontext auch ohne Relativsatz klar.)
'Volker, who likes fishing, caught two fish yesterday.' [Eisenberg's parentheses]

A certain type of non-restrictive RC in the German language is the continuative nonrestrictive type, which is in a very loose relationship to its antecedent (Eisenberg 2016:1042). Example (69), taken from Eisenberg (2016:1042), is an instance of this type of RC.

- 69) Wir wollten unsere Lehrerin besuchen, [die aber nicht zu Hause war].
we wanted our teacher visit, who but not at home was.
'We wanted to visit our teacher, but she was not at home.'

Sentential RCs (example 70) are another type of non-restrictive RCs with continuative characteristics. This type of RC refers back to the entire superordinate clause. I will return to Sentential RCs in German in section 3.3.3.5.

- 70) Doch genau dies ist den Autoren meisterhaft gelungen, [*was* mich wirklich überrascht hat].
'But this is exactly what the authors masterfully succeeded in, which really surprised me.'
(Eisenberg 2016:1043)

3.3.2 Nominal Relative Clauses

3.3.2.1 English

A nominal RC (also called a free RC, an independent RC, a headless RC, or a fused relative construction) is a relative clause that is not attached to an external head noun but contains its head noun within itself. Nominal RCs in English resemble *wh*-interrogative clauses in that they are both introduced by a *wh*-element. This sometimes causes difficulty in distinguishing these two types of clauses although they differ syntactically in several respects, which have been described in detail by Quirk et al. (1989:1059-1060). Nominal RCs are similar to noun phrases, “since they can be concrete as well as abstract and can refer even to persons”. This means that nominal RCs can be paraphrased by using “noun phrases containing a noun head with general reference that is modified by a relative clause” (example 71). “Nominal RCs have the same range of functions as noun phrases. In addition to the functions generally available to nominal clauses, they can function as an indirect object and object complement” (Quirk et al. 1989:1059).

71) [Whoever did that] should admit it frankly.

[‘The person who did that. . .’] (Quirk et al. 1989:1056)

There are two types of nominal RCs in English: definite nominal RCs, which are introduced by *wh*-words (example 72), and indefinite nominal RCs, which are introduced by *wh*-words+*ever* (*whoever, whatever, whichever,...*) (example 73).

72) The dog ate [what the cat left in its bowl]. (Andrews 2007:213)

73) [Whoever’s woods these are] is a good judge of real estate. (Andrews 2007: 214)

3.3.2.2 Persian

Like in English, nominal RCs in Persian behave like nominals and can appear in positions that can be occupied by NPs. Nominal RCs in Persian are introduced by the prefix *har-* ‘every-’ + *ānche/che* ‘what’ (for inanimate nouns) + *ke* (example 74), and the prefix *har-* ‘every-’ + *ānkas/kas/∅* ‘who’ (for animate nouns) + *ke* (example 75). It should be noted that *ke* can be omitted in nominal RCs in Persian (Abdollahnejad and Marefat 2017:137).

74) [har-ānche ke doos=dāsht-am] rā xarid-am.
 whatever REL liked.1SG OM bought.1SG
 ‘I bought whatever I liked.’ (my example)

75) [har-kasi/harki ke doos=dārad biyāyad] mi-tavānd be mā bepeyvandad.
 Whoever ke like.3SG come DUR-can.3SG to us join.3SG
 ‘Whoever likes to come can join us.’ (my example)

Similar to the impossibility of the omission of the relative marker in adnominal RCs in Persian, pied-piping is not allowed in Persian. However, it can occur in nominal RCs in which the relativized element is in a prepositional phrase (example 76) or a possessive position (example 77). This is especially common in colloquial Persian. The resumptive pronoun, which follows the preposition in the prepositional phrase or the NP in possessive position, is deleted, the preposition or the NP moves to the front of the *wh*-word (*har +ki*), and pied-piping occurs. In example (77), EZ stands for the *ezafe* marker, the linking element that links a head noun to its modifiers in an NP in Persian.

76) a. [harki⁵ be-sh pul dād.i] umad.
 whoever to-him/her money gave-[2]SG came-3SG
 ‘Whoever you paid money [came].’

b. [be harki pul dād-i] umad.
 to whoever money gave-[2]SG came-3SG
 ‘Whoever you paid money [came].’ Taghvaipour (2005:188)

77) a. [harki pirāhan-e-sh kasif bud]
 whoever shirt-EZ-s/he dirty was.....
 ‘Whoever’s shirt was dirty....’

⁵ Harki, which is generally used in colloquial Persian, is the shortened form of the pronoun harkas.

- b. [pirāhan-e harki kasif bud]...
 shirt-EZ whoever dirty was...
 ‘whoever’s shirt was dirty...’ Taghvaipour (2005:188)

3.3.2.3 Kurdish Sorani

Like in English and Persian, nominal relative clauses can appear in Kurdish Sorani. Nominal RCs in Kurdish Sorani are introduced either by (i) the prefix *har-* ‘-ever’ + *çi* (for inanimate nouns), and the prefix *har-* ‘-ever’ + *kas* (for animate nouns), or (ii) *away* ‘whoever-whatever’. Nominal RCs in Kurdish Sorani allow *ka*-less clauses. Like in Persian, in Kurdish Sorani, pied-piping can occur in nominal RCs in which the relativized element is in a prepositional phrase or a possessive position. Example (78) below illustrates an instance of a nominal RC in Kurdish Sorani. In this example, *-i* attached to *kavš* is a possessive suffix. It is the complement of *pe*, and is fronted.

- 78) [harkas/away kavš-i da pe dabu] halāt.
 whoever shoe-POSS in foot had ran away
 ‘Whoever had shoes on ran away.’ (my example)

3.3.2.4 Azerbaijani

Nominal RCs in Azerbaijani begin with the prefix *hər-* ‘-ever’ + *kim/ kəs* (for animate nouns), and the prefix *hər-* ‘-ever’ + *nəmənə* (for inanimate nouns). In contrast to postnominal RCs, which do not allow *ki* less clauses, nominal RCs in Azerbaijani permit *ki*-less clauses. Example (79) illustrates an instance of a nominal RC in Azerbaijani.

- 79) [hərnəmənə (ki) soyi-san] ala=bilə-sən
 whatever REL like-2SG buy=can-2SG
 ‘You can buy whatever you like.’ (my example)

3.3.2.5 German

In German, the relative pronouns *wer* and *was* appear in nominal RCs. Nominal RCs in German have no overt head noun and are called headless RCs (Pittner 1995:203; Eisenberg 2016:1042). In English, *what* corresponds to *that which*; the same holds for German in which *was* corresponds to *das was*. Example (80), from Fabricius-Hansen (2009:1031), and my example (81), illustrate nominal RCs in German.

80) *wer* diese Auffassung vertritt, ist ein Verbrecher. *Was* mich am meisten störte, war der Lärm.

‘Anyone who takes this view is a criminal. What bothered me the most was the noise.’

81) *was* ich sagen wolle, ist ...
what I say want, is

‘What I want to say is...’

As in English, nominal RCs in German can be converted into adnominal RCs if a demonstrative or an indefinite pronoun or a substantive expression appears in the superordinate sentence as a head for the relative clause (see Eisenberg’s (2016:1043) examples (82) below).

82) Anna erreichte [], [was] sie sich vorgenommen hat.

English equivalent: Anna achieved [] what she set out to do.

Anna erreichte [das], [was] sie sich vorgenommen hat.

English equivalent: Anna achieved [that] [which] she had set out to do.

Anna erreichte [alle Ziele], [die] sie sich vorgenommen hat.

English equivalent: Anna achieved [all goals] that she set out to achieve.

3.3.3 Sentential Relative Clauses

3.3.3.1 English

Sentential RCs are a type of RCs that “refer back to the predicate or predication of a clause, or to a whole clause or sentence, or even to a series of sentences” (Quirk et al. 1989:1118). These RCs are typically but not necessarily introduced by the relative word *which* in English (see example 83 taken from Quirk et al. 1989:1118). As sentential RCs do not constitute a noun phrase of the matrix clause and postmodify the whole matrix clause, they are not nominalized but sententialized. Thus, they cannot appear within the matrix clause but are always located at the margin of the sentence. Sentential RCs are similar to nonrestrictive post-modifying clauses in that they do not have a restrictive function, and they need a comma to be separated from their antecedent (Quirk et al. 1989:1118).

83) Things then improved, [which surprises me]. (Quirk et al. 1989:1118).

3.3.3.2 Persian

Sentential RCs in Persian occur in the rightward position after the verb in the matrix clause. Unlike in English, sentential RCs in Persian are not preceded by a comma. The example below (84) illustrates a sentential RC in Persian.

84) dirooz kār-i anjām=dād-am [ke hame taajjeb=kard-and].
yesterday action-IDEF.SG did-1SG REL everyone surprised-3PL
'I did something yesterday, which surprised everyone.' (my example)

3.3.3.3 Kurdish Sorani

Like in Persian, sentential RCs in Kurdish Sorani occur in the rightward position after the verb in the matrix clause. Example (85) is an instance of a sentential RC in Kurdish Sorani.

85) doyne kār-ek-im kird [ka hamu pe-yān=seyr=bu]
yesterday action-IDEF.SG-A.1SG did REL everyone surprised-3PL
'I did something yesterday, which surprised everyone.' (my example)

(example 94). In English, in any position other than the possessive position, a gap is left in the RC. The occurrence of a gap means that one constituent of the sentence is missing due to the *wh*-movement (Andrews 2007:219-220). A gap indicates the absence of a resumptive pronoun. English allows resumptive pronouns neither in finite nor in non-finite RCs. In examples (91-96), which illustrate the six syntactic functions of the NPs in English, gaps are shown by squares. The examples (89-94) are mine.

- 89) The person who □ sent the letters...
- 90) The person whom we met □...
- 91) The person whom we sent the letters □...
- 92) The person from whom we got the letters □...
- 93) The person whose teacher sent the letters...
- 94) The person who I am taller than □...

Table 3.4 *Distribution of gaps and resumptive pronouns in adnominal and nominal RCs in English*

	English						
		Subject	Direct Object	Indirect Object	Object of Preposition	Genitive	Object of Comparison
Gap	Adnominal	√	√	√	√	X	√
Resumption	RCs	X	X	X	X	X	X
Gap	Nominal	√	√	√	√	X	√
Resumption	RCs	X	X	X	X	X	X

3.4.2 Persian

As was mentioned in section 3.4.1, in English, in any position other than the possessive position, a gap is left in the RC, and resumption is not permitted. In Persian, both gaps and resumption are allowed, each with specific conditions. RCs in Persian behave differently from English concerning the pattern of distribution of resumptive pronouns and gaps. A gap is always left in subject Persian RCs (example 95). However, in object RCs, it is optional to use a gap or a resumptive pronoun in

place of objects; that is, gaps and resumptive pronouns are alternatively used in object RCs in Persian (example 96). In indirect object RCs (example 97), object of preposition RCs (example 98), genitive (example 99), and object of comparison RCs (example 100) in Persian, gap is not allowed. It should be noted that since Persian is a pro-drop language, a gap in place of subjects might appear in all types of RCs except subject RCs. This means that if a gap in place of the subject does not occur in Persian, a resumptive subject pronoun appears in its place.

95) Kas-i ke nāme-hā rā ferestād...
 person-DEM REL letter-s OM sent. 3SG
 ‘The person who sent the letters...’

96) a. Kas-i ke (mā) molāghāt-ash=kard-im...
 person-DEM REL (we) meet-him/her.PST-2PL
 ‘The person whom we met’

b. Kas-i ke (ma) molāghāt□=kard-im...
 person-DEM REL (we) meet.PST-2PL
 ‘The person whom we met’

97) Kas-i ke (ma) nāme-hā rā barā-yash ferestād-im...
 person-DEM REL (we) letter-s OM for-him/her sent-2PL
 ‘The person whom we sent the letters’

98) Kas-i ke (ma) nāme-hā rā az u gereft-im...
 person-DEM REL (we) letter-s OM from s/he got-2PL
 ‘The person from whom we got the letters’

99) Kas-i ke moallem-ash nāme-hā rā ferestād...
 person-DEM REL teacher-his/her letter-s OM sent.3SG
 ‘The person whose teacher sent the letters’

- 100) Kas-i ke (man) az u boland-tar hast-am...
 person-DEM REL (I) than s/he tall-er be-1SG
 ‘The person who I am taller than’

It is also important to mention that the distribution of resumptive pronouns in restrictive and non-restrictive Persian post-nominal RCs is different from each other if the relativized element is in direct object position. While either resumptive pronoun or gap could be used in direct object position in restrictive postnominal RCs in Persian (example 101), resumptive pronouns are obligatory in non-restrictive RCs (example 102a). Example (102b) below illustrates an incorrect Persian RC with a gap shown as a square.

- 101) Hushang ketāb-i rā [ke pesar-am (ān rā) xarideh=bud] dozdid.
 Hushang book-DEM OM REL son-my (it OM) buy.PP.3SG stole.3SG
 ‘Hushang stole the book that my son had bought.’ Taghvaipour (2005:43)

- 102) a. Omid, [ke shomā u rā molāqā t=kardid], daee-ye man ast.
 Omid, REL you s/he OM meet.PST-2PL, uncle-EZ I is
 ‘Omid, who(m) you met yesterday, is my uncle.’

- b. * Omid, [ke shomā □ molāqāt=kardid], dāee-ye man ast.
 Omid, REL you □ meet-PST-2PL, uncle-EZ I is
 ‘Omid, who(m) you met yesterday, is my uncle.’ (my example)

In Persian, there exists a distinction in the behavior of nominal RCs and post-nominal RCs concerning the distribution pattern of resumptive pronouns in the direct object position and object of preposition (Taghvaipour 2005:185-187). In post-nominal RCs, either a gap or resumptive pronouns may be employed in the direct object position, while the usage of resumption is proscribed in nominal relative clauses (example 103).

- 103) * Hushang harchi pesar-am ān rā xarideh-bud dozdid.
 Hushang whatever son-my it OM buy-PP.3SG steal.PS.3SG
 ‘Houshang stole whatever my son had bought.’ Taghvaipour (2005:196)

In the position of object of preposition, gaps are not permitted in postnominal RCs in Persian (example 104). This is also the case in nominal RCs; however, as pied-piping is allowed in nominal RCs, a gap can be allowed in this type of RC (example 105c). Example sentences in (105a-c) are Taghvaipour's (2005:197). In colloquial Persian, *-ash* is used instead of *u* to refer to the third-person singular pronoun.

104) mard-i [ke az u / -ash soāl porsid-i]
 man-dem that from (s)he/(s)he question ask-PS-2SG
 'The man who you asked a question from...' Abdollahnejad and Marefat (2017:138)

105) a. harki az u / -ash pul gereft-i āmad.
 whoever from him/her money took-2SG came-3SG
 Literally: 'whoever from him you took money came.'

b. * harki az ----- pul gereft-i āmad.
 whoever from ----- money took-2SG came-3SG

c. az harki ----- pul gereft-i āmad.
 from whoever ----- money took-2SG came-3SG

Table 3.5 presents the distribution of gaps and resumptive pronouns in postnominal RCs and nominal RCs in Persian.

Table 3.5 *Distribution of gaps and resumptive pronouns in adnominal and nominal RCs in Persian*

	Persian							
	Type of RC	SU	DO		IO	OBL	GEN	OCOMP
			Rest	Non-rest				
Gap	Adnominal RCs	√	√	X	X	X	X	X
Resumptive pronoun		X	√	√	√	√	X	√
Gap		√	√	√	√	√	X	X

Resumptive pronoun	Nominal RCs	X	X	X	X	√	X	√
--------------------	-------------	---	---	---	---	---	---	---

SU: Subject, DO: Direct object, IO: Indirect object, OBL: Oblique, GEN: Genitive, OCOMP: Object of comparison, Rest: Restrictive

3.4.3 Kurdish Sorani

One of the differences between nominal RCs and postnominal RCs in Kurdish Sorani is related to pied-piping. Like in Persian, pied-piping occurs in Kurdish Sorani nominal RCs where the relativized element is in a prepositional phrase (example 106a) or a possessive position (example 107a). When the preposition (example 106b) or the noun phrase (example 107b) moves to the front of a *wh*-word (*har* +...), pied-piping occurs. In examples (106) and (107), each pair conveys the same meaning.

- 106) a. [harkas kteb-it bo kri] šad bu.
 whoever book-2SG for bought happy became
 Literally: ‘Whoever for him you bought book became happy.’
- b. [bo harkas kteb-it kri] šad bu.
 for whoever book-2SG bought happy became
 Literally: ‘For whoever you bought the book became happy.’
- 107) a. [harkas mašen-aka-y xarāb bu] brd-i lay aw mekenika.
 whoever car-DEF-3SG.POSS broken was took-it to that mechanic
 ‘Whoever’s car was broken, took it to that mechanic.’
- b. [mašen-aka-y harkas xarāb bu] brd-i lay aw mekenika.
 car-DEF-3SG.POSS whoever broken was took-it to that mechanic
 ‘Whoever’s car was broken, took it to that mechanic.’

The distribution of resumptive pronouns in the object of preposition position constitutes another distinction between post-nominal RCs and nominal RCs in Kurdish Sorani. In the object of preposition position, a gap is not permissible in nominal RCs in Kurdish Sorani (example 108b); nevertheless, since pied-piping is acceptable in nominal RCs in this language, a gap may be allowed in this type of RC (example 108c). Consequently, a choice emerges between the presence (example 108a) or absence of a resumptive pronoun (denoted by ---) (example 108c) in nominal RCs positioned as the object of preposition. It is important to note that, unlike Persian, Kurdish Sorani exhibits no disparity in the distribution of resumptive pronouns and gaps between restrictive and non-restrictive RCs.

- 108) a. [harkas (ka) dagal-i qsat=krd] zang-i leda.
 whoever REL with-him/her talked.2SG phone-3SG.A hit.PST
 Literally: ‘whoever with him/her you talked called.’
 ‘Whoever you talked with called.’
- b. * harkas dagal ----- qsa-t=krd zang-i leda
 whoever with ----- talked-2SG phone-3SG.A hit.PST
 ‘Whoever you talked with called.’
- c. [dagal harkas (ka) ----- qsa-t=krd] zang-i leda
 with whoever REL ----- talked-2SG phone-3SG.A hit.PST
 ‘Whoever you talked with called.’

Table 3.6 summarizes the pattern of distribution of gaps and resumptive pronouns in adnominal RCs and nominal RCs in Kurdish Sorani. The gap indicates the absence of a resumptive pronoun.

Table 3.6 *Distribution of gaps and resumptive pronouns in adnominal and nominal RCs in Kurdish Sorani*

		Kurdish Sorani												
		Type of RC	SU	DO		IO		OBL		GEN	OCOMP			
				Pre	Past		Pre	Past				Pre	Past	
					Sin	Pl		Sin	Pl				Sin	Pl
Gap	Adnominal RCs	√	X	√	X	X	√	X	X	√	X	X	X	
Resumptive pronoun		X	√	X	√	√	X	√	√	X	√	X	√	
Gap	Nominal RCs	√	√		√		√		√		X	X		
Resumptive pronoun		X	X		X		√		X	√				

SU: Subject, DO: Direct object, IO: Indirect object, OBL: Oblique, GEN: Genitive, OCOMP: Object of comparison, Pre: Present, Sin: Singular, Pl: Plural

3.4.4 Azerbaijani

Pied-piping is not possible neither in nominal RCs nor in adnominal RCs in Azerbaijani. There is much similarity between nominal RCs and post-nominal RCs in Azerbaijani in terms of the pattern of distribution of resumptive pronouns and gap. The only difference between post-nominal RCs and nominal RCs in Azerbaijani is related to the use of resumptive pronouns in the position of direct object. Like in Persian, while both gap and resumptive pronouns can be used in direct object position in post-nominal RCs, resumption is not allowed in nominal RCs. Furthermore, like in Persian, if the position relativized is the direct object, there is a difference in the use of resumptive pronouns between post-nominal restrictive and non-restrictive Azerbaijani RCs. While a resumptive pronoun is used in direct object position in non-restrictive postnominal RCs in Azerbaijani, a gap appears in restrictive ones. Table 3.7 shows the pattern of distribution of gaps and resumptive pronouns in post-nominal RCs and nominal RCs in Azerbaijani.

Table 3.7 *Distribution of gaps and resumptive pronouns in pre-nominal, post-nominal, and nominal RCs in Azerbaijani*

	Azerbaijani							
	Type of RCs	SU	DO		IO	OBL	GEN	OCOMP
			Rest	Non-rest				
Gap	Pre-nominal RCs	√	√	√	X	X	X	X
Resumptive pronoun		X	X	X	√	√	X	√
Gap	Post-nominal RCs	√	√	X	X	X	X	X
Resumptive pronoun		X	√	√	√	√	X	√
Gap	Nominal RCs	√	√	√	√	√	X	X
Resumptive pronoun		X	X	X	X	X	X	√

SU: Subject, DO: Direct object, IO: Indirect object, OBL: Oblique, GEN: Genitive, OCOMP: Object of comparison, Rest: Restrictive

3.4.5 German

Post-nominal RCs in German are different from nominal RCs in terms of the pattern of distribution of resumptive pronouns and gaps (see Table 3.8).

Table 3.8 *Distribution of gaps and resumptive pronouns in adnominal and nominal RCs in German*

	German						
	Type of RC	SU	DO	IO	OBL	GEN	OCOMP
Gap	Post-nominal RCs	√	√	√	√	X	√
Resumptive pronoun		X	X	X	X	X	X
Gap	Nominal RCs	√	√	√	√	X	√
Resumptive pronoun		X	X	X	X	X	X

SU: Subject, DO: Direct object, IO: Indirect object, OBL: Oblique, GEN: Genitive, OCOMP: Object of comparison

Chapter Four: A Brief Look at the History of English Relative Clauses

English relative clauses have undergone significant changes throughout the history of the English language. These alterations pertain to (i) the type of marking, and (ii) the position of relative clauses in main clauses.

Regarding the type of marking, the relative clauses in Old English (OE) appeared with (i) *pronominal relativizers* (the pronouns *se*, *seo*, *þæt* which were typically inflected for the case of the relativized NP and correspond to *who-whom-whose* in Present-Day-English (PDE)), (ii) an *invariant particle* (*þe*, which corresponds to *that* in PDE), or (iii) no relative markers at all, as in “That is the woman you met yesterday” in PDE. RCs without relative markers were rare in OE, but there are instances found in early poetry and even in translations of Latin texts (Traugott 1992:224 and 228). Out of the pronominal relativizers in OE, the pronoun *se* could appear alone like the other pronominal relativizers, or was followed by the invariant particle *þe*. The constructions in which *se* was followed by *þe* are called attracted relatives. The combination of *se þe* was more likely to be used when the antecedent had no demonstrative or quantifier. The animacy parameter did not exist in Old English, as OE had grammatical gender (Traugott 1992:224-225).

In addition to the invariant particle *þe*, there are a few instances of *þæt* used invariantly in OE. The invariant *þæt* (as opposed to pronominal *þæt*) could be used in OE “when the gender, number, or case of neither the antecedent nor the relativized NP was neuter nominative or accusative singular” (Traugott 1992:227). Gradually, *þe* that was used as a complementizer in OE was replaced by invariant *þæt* in Middle English. The presence of invariant *þæt* in OE is important because *that* as the invariant relativizer completely replaced *þe* in Middle English, and the OE system reformed completely. As documented first in Kivimaa (1966) and later in Fischer (1992), *that* became the only relativizer that was used in restrictive and non-restrictive RCs, with animate and inanimate antecedents in Middle English. One might still find the remains of the paradigm *se*, *seo*, *þæt* in some Early Middle English texts, “mostly with analogical *þ-* rather than *s-*”, however, most of these texts are rewritings of OE texts (Allen 1977:197; Fischer 1992:296).

Regarding the position of the RCs in main clauses, relative clauses in OE either followed their heads immediately (example 109) or appeared to the right of the head “if they modified a dependent phrase” (example 110) or to the right of the main clause (example 111) (Traugott 1992:284). The invariant marker *þe* is shown in bold in the following examples.

109) swa bið eac þam treowum [**þe** him (DAT) gecynde
 so is also to-those trees PT to-them natural
 bið up heah to standanne].
 is up high to stand
 ‘so it is also with trees to which it is natural to stand up straight’. (Traugott 1992:229)

110) on þæs caseres dagum [**þe** wæs gehaten Licinius] wearð
 In that emperor's days PT was called Licinius was
 astyred mycel ehtnys ofer þa cristenan.
 stirred-up much persecution over those Christians
 ‘In the days of the emperor [who was] called Licinius there was much persecution
 of the Christians.’ (Traugott 1992:275)

111) Sealed þæm munucum corn genog [**þe** wæron æt Hierusalem].
 gave those monks corn enough who were at Jerusalem
 ‘gave enough corn to the monks who were in Jerusalem.’ (Traugott 1992:284)

One of the most important changes in the structure of English RCs was the introduction of interrogative pronouns as relative pronouns. The use of *wh*-relatives dates back to the beginning of the Middle English period, but these types of RCs were very rare in the twelfth century, and still rare in the thirteenth century. *Which* was the rarest type and was found in sentences with both animate and inanimate antecedents, but *whom* and *whose* were mainly used with animate ones. *Whom* and *which* were only used in relative clauses in which the relative pronoun was the object (or complement in Quirk et al.’s terminology) of a preposition. *Which*, *whom*, and *whose* were mostly found in non-restrictive RCs. In Late Middle English, *that* gave way to *which*. This was

presumably part of the development in which *that* became restricted to restrictive relative clauses in the thirteenth century. In the fourteenth century, *that* kept its place as the typical relativizer, especially in poetry, but in the fifteenth century, *which* began to replace *that*. *Which* was used for both animate and inanimate antecedents; so, there was no gender distinction in Early Modern English (Fischer 1992:296-297).

As early as the sixteenth century, *wh*-pronouns were used in all types of non-restrictive RCs and were finding their way into restrictive RCs, although *that* was still commonly used in the oral mode of discourse (Dekeyser 1984:62). In the early sixteenth century, *which* was commonly employed to refer to personal antecedents. However, during the seventeenth century, a distribution along the animacy parameter was established, leading to the replacement of *which* by *who* when referring to proper-name antecedents. Along with *which*, the combination *the which* was favored by certain authors in the sixteenth century, but it dropped out of use in modern English (Rissanen 1999:293-296).

In PDE, the positioning of relative markers within relative clauses is governed by two distinct parameters. The animacy parameter, which discerns personal antecedents from impersonal ones, and the information parameter, which delineates between restrictive and non-restrictive relative clauses. As per the first parameter, *who* and *whom* denote personal antecedents, *that* and *which* are employed with inanimate ones, and *whose* is used with both animate and inanimate antecedents. In adherence to the second parameter, the relativizer *that* is exclusively employed in restrictive RCs, whereas in non-restrictive RCs, *who* and *which* are utilized, following the animacy parameter (Fischer 1992:295).

Chapter Five: Theories of Language Acquisition and an Overview of the Literature

The literature on relative clauses shows that a bulk of linguistic analyses of RCs as well as psycholinguistic analyses of the cognitive processes involved in the acquisition of RCs have been conducted. This chapter mainly focuses on the roles of the following factors in the acquisition of RCs: (i) a natural fixed order of acquisition of RCs, (ii) transfer from L1 and previously learned L2(s), (iii) textbook contents as L2 input providers, and (iv) animacy status of the modified noun phrases by RCs. Furthermore, the chapter provides an overview of the literature on the factors described. The chapter sets the background for the current research, which aims to investigate the formation and use of L2 RCs by second language learners of English. Hammarberg (2001:22) defines *Second language* as any language that is learned or acquired after the first language (or first languages, in the case of infant bilingualism) either through instruction inside the classroom, or outside of the classroom naturally as a result of living in a country in which the language is spoken. For clarity, he uses the term third language (L3) to refer to “the language that is currently being acquired” by the learner, and states that “L3 is not necessarily equal to language number three in order of language acquisition” (Hammarberg 2001:22). In this dissertation, the term *second language* refers to the second language learned after a first language, and the term L3 is used for the language that is acquired after a second language. Thus, in the studies in this dissertation, English is the L2 for German and Persian learners of English, while it is the L3 for Azerbaijani and Kurdish Sorani learners, who have already learned Persian as their L2s.

5.1 Theories Assuming a Natural Order of Acquisition of RCs

There are several hypotheses concerning the natural order of acquisition of relative clauses. They are (i) the Noun Phrase Accessibility Hypothesis (NPAH), (ii) the Absolutive Hypothesis (AH), (iii) the Perceptual Difficulty Hypothesis (PDH), (iv) the Subject Object Hierarchy Hypothesis (SOHH), (v) the Linear Distance Hypothesis (LDH), (vi) the Structural Distance Hypothesis (SDH), and (vii) the Word Order Difference Hypothesis (WDH). These hypotheses, which are described below, are primarily theories of L1 acquisition of RCs, but several attempts have been made to check their applicability to L2 acquisition. As no sufficiently broad range of languages has been studied to examine linguistic theories through non-L1 data, Gass and Lee (2007:329-330) believe that any investigation using L2 data can help take a major step forward in second language

acquisition (SLA). This dissertation mainly focuses on the first three hypotheses mentioned above. Out of the hypotheses concerning the natural order of acquisition of RCs, the NPAH, and the PDH have shown more accuracy in a larger number of studies; therefore, this dissertation focuses more on the NPAH and the PDH, which are said to be the major hypotheses of RC acquisition (Izumi 2003:285). Furthermore, following the AH, this dissertation investigates the transitivity/intransitivity of subject RCs in the data. However, as will be shown in detail in chapter 6, all of the relative clauses extracted from the corpora used in this investigation cannot be categorized according to these three hypotheses. Thus, other categorization systems of RCs were checked and, finally, the categorization system of RCs was expanded based on the model proposed by Fox and Thompson (1990), which works better with the data.

5.1.1 Theories Investigated in this Dissertation

5.1.1.1 Noun Phrase Accessibility Hierarchy

One of the first significant cross-linguistic studies on the formation of RCs was carried out by Keenan and Comrie (1977). They investigated relativization in data from fifty different languages of the world. They suggested a typological generalization that classifies languages with respect to the possibility of relativization based on empirical observation of languages rather than theoretical reasoning. Keenan and Comrie's hypothesis, the Noun Phrase Accessibility Hierarchy (NPAH), proposes a universal hierarchy of relativization, known as *accessibility hierarchy*.

There are three hierarchy constraints in the NPAH: first, subject (SU) is the grammatical position that all languages must be able to relativize. Languages might differ in the strategies they use to relativize the positions on the NPAH, but there is always one primary strategy in each language that relativizes the SU position although some languages might use other strategies in addition to the primary one. Second, the relativization strategies can be applied to a continuous segment of the NPAH. If a strategy could apply to a position lower on the NPAH, but did not work on any of the higher positions on the NPAH, then there would be a gap that breaks the continuity of the NPAH. "A language is free to treat adjacent positions on the accessibility hierarchy as the same, but it cannot skip positions" (Keenan and Comrie 1977:67). The third constraint is that "each point of the accessibility hierarchy is a possible cut-off point for any strategy that applies to a

higher point. This means that in designing the grammar for a possible human language, once we have given it a strategy that applies at some point on the AH, we are free to terminate its application at any lower point” (Keenan and Comrie 1977:67)

In this theory, Keenan and Comrie pay attention to the relativizability of noun phrases and focus on the syntactic functions of the head nouns with respect to the RCs. They state that the relativizability of an NP is linked to its syntactic position and that some syntactic positions are more accessible to relativization than others. The syntactic functions that an NP might have in the English language include subject (SU), direct object (DO), indirect object (IO), oblique (OBL), genitive (GEN), and object of comparison (OCOMP). Henceforth, SU relatives, DO relatives, etc. are used to denote NPs functioning as subjects, direct objects, etc. Table 5.1 illustrates the six syntactic functions of the NPs with English examples. It is important to note the position of the NPs in the matrix clauses is not the focus of the NPAH. Examples in Table 5.1 are from Rod Ellis (1994:102).

5.1 *Syntactic functions of the head nouns relativized in English RCs in the NPAH*

SU	<u>The man</u> who lives next door...
DO	<u>The man</u> whom I saw ...
IO	<u>The man</u> to whom I gave a present...
OBL	<u>The man</u> about whom we spoke...
GEN	<u>The man</u> whose wife had an accident
OCOMP	<u>The man</u> that I am richer than...

SU: Subject, DO: Direct object, IO: Indirect object, OBL: Oblique, GEN: Genitive, OCOMP: Object of comparison

According to the NPAH, the noun phrase in the subject position is the position most accessible to relativization, which is followed by the DO position and the other syntactic functions in the order in the table. Therefore, the hierarchy hypothesized by the NPAH, from the most accessible position for relativization to the least accessible one is (SU) > (DO) > (IO) > (OBL) > (GEN) > (OCOMP) (> = more accessible than). Concerning the markedness relationship in different RC types, Izumi (2003:287) states that if a language allows the formation of an RC on a given position

in the accessibility hierarchy, it also allows the formation of RCs on all positions higher, but the converse is not true.

It is important to note that IO relatives seem to be the most “subtle” type of relatives in the NPAH; for the formation of RCs, many languages, including English, “assimilate” IO relatives (for example: *The teacher whom the students gave a letter...*) to OBL relatives (for example: *The teacher whom the students gave a letter to...*) (Keenan and Comrie 1977:72). The authors seem to distinguish between *they gave him a letter* (= IO) and *they gave a letter to him* (=OBL), which are structurally different but their NPs have identical semantic roles. An indirect object in English can be rephrased as a prepositional phrase starting with *to* or *for*. The researcher is aware that IO relatives do not contain prepositions; however, similar to Keenan and Comrie’s (1977) study, in several studies on English RCs (Diessel and Tomassello 2005; Izumi 2003; Ozeki and Shirai 2007; Yas 2012; Kim and O’ Grady 2016), examples of RCs with prepositions were counted as IO relatives. Some scholars even place IO and OBL relatives in the same category due to the identical semantic roles that the NPs in these two types of RCs play.

The accessibility hierarchy in the NPAH “reflects the psychological ease of comprehension” (Keenan and Comrie 1977:88). It is harder to understand RCs formed in lower positions than the ones formed in higher positions. Therefore, the subject position is the easiest position to comprehend, learn, and produce (Izumi 2003:288). Although the hierarchy in the original NPAH hypothesis was originally formed as a typological universal and was not meant to predict the acquisition order of RCs, based on the idea that marked items are acquired later than unmarked items, it was hypothesized that the NPAH reflects the natural order of acquisition of RCs in L1, which was then extended to L2 too. This was borne out by several studies on the acquisition of RCs in L1 (Prideaux and Baker 1986; Romaine 1984; Tavakolian 1981; Brown 1971), and L2 (Hawkins 2007; Hamilton 1994; Eckman, Bell, and Nelson 1988; Doughty 1988, 1991; Pavesi 1986; Gass 1979, 1980, 1982; Eckman 1977; Ioup and Kruse 1977). Thus, the NPAH was claimed to be a valid framework for understanding not only the linguistic facts about RCs but also the acquisitional facts about them in L1 and L2 contexts (Izumi 2003:292).

One important aspect of the accessibility hierarchy is related to the use of resumptive pronouns in relative clauses. The English language does not allow pronoun retention in any of the positions at the accessibility hierarchy of the NPAH. Pronoun retention corresponds to what is referred to as ‘resumptive pronoun’ by Lehmann (1986:11). However, Keenan and Comrie (1977:93) observed that pronoun retention is used in some positions or all positions of the hierarchy except subject position in several different languages. According to Keenan and Comrie (1977:93-94), more marked positions on the NPAH exhibit pronoun retention. If pronoun retention at a lower position of the hierarchy is allowed in a language, all the higher positions of the hierarchy allow pronoun retention as well.

5.1.1.2 Absolute Hypothesis

According to the main claim of the NPAH, the NPs in subject position of RCs are the most accessible ones to relativization. The higher accessibility of subject than other grammatical positions to relativization was later called the *Subject Primacy Hypothesis* (SPH) by Fox (1987). Although the Subject Primacy Hypothesis was supported by the results of several studies (Keenan 1975; Romaine 1980; Dekeyser 1984; Suárez 2012), it was challenged by Fox (1987). Fox stated that if SU relatives were naturally the most accessible type of relatives, the instances of the use of this type of relatives should be much higher than that of other relatives in both written and spoken discourses. Furthermore, Fox (1987:857) added that if simple texts have the highest ratio of subject relatives to other relatives, then conversation data, which is syntactically and structurally simpler than written texts, should have the highest ratio of SU relatives. She analyzed more than 100 RCs collected from naturally-occurring English conversations among friends and/or relatives, and observed that the absolute frequency of SU relatives and DO relatives was the same. However, when Fox categorized SU relatives into two groups of transitive (TSU) and intransitive (ISU) types in her analysis, she observed the following hierarchy: DO relatives > ISU relatives > TSU relatives. The results of her study showed that DO relatives, which she called *P-relatives*, had a higher frequency than intransitive and transitive SU relatives. P-relatives were followed by intransitive subject relatives (ISU), which Fox called *S-relatives*, and finally transitive subject relatives (TSU), which she called *A-relatives*. Thus, the accessibility hierarchy of relativization proposed by Fox was as follows: DO > ISU > TSU. Fox (1987:864) proposed the *Absolute Hypothesis*, according

to which *absolute RCs* (intransitive subject relatives and direct object relatives) were more accessible to relativization than transitive subject relatives (Fox 1987:869).

According to Fox, a relative clause in discourse can have the function of either describing an entity or providing an anchor. The function of description, which is mostly fulfilled by stative verbs, is performed by S-relatives when they describe the referents, that is, the head nouns of the relative clause (see example 112). The second function, anchoring, is carried out by A-relatives and P-relatives when the referent is linked to the text through another referent (see examples 113 and 118). The term anchoring, which Fox uses, is based on Prince's (1981) taxonomy of given and new information. "A discourse entity is anchored if the NP representing it is linked, by another NP" (Fox 1987:859). While in A-relatives, the object within the RC is responsible for linking the head of the RC to the text, P-relatives use the subject in the RC to link the head of the RC to the text (*I* in example 114). Since NPs in SU relatives perform the linking function better than NPs in the DO relatives, P-relatives are more frequent than A-relatives (Fox 1987:859).

112) She is married to this guy [who is very quiet].

An example of *S-relatives* in Fox (1987:859)

113) a. The man [who bought the book] is my father. (My example of *A-relatives*)

b. - Did they get rid of Kuleznic yet?

- No in fact I know somebody [who has her now].

An example of *A-relatives* in Fox (1987:859)

114) a. The man [who *I* met yesterday] is from California. (My example of *P-relatives*)

b. This man [who I have for linguistics] is really too much.

An example of *P-relatives* in Fox (1987:859)

The study conducted by Fox was carried out on spoken discourse only. As spoken discourse differs from written discourse, the results obtained by Fox might not be generalizable to all kinds of text types. Therefore, some other studies were carried out to re-examine the validity of the NPAH and Fox's parameters in both spoken and written discourses. Roland et al. (2007) conducted a study on a total of eight corpus data sets representing a variety of genres of written and spoken language. They noticed a higher use of object relatives than subject relatives only in spoken corpora, and their results extended Fox's observations to a much larger set of data. Additionally, they reported that the nature of the subject relatives in the spoken corpus data was different from the ones in the written data: SU relatives were mostly used to modify NPs with a low content value, such as *someone*, *something*, or *people* (Roland et al. 2007:9-11).

5.1.1.3 Perceptual Difficulty Hypothesis

Another hypothesis that claims to predict a natural order of difficulty for the acquisition of RCs is the Perceptual Difficulty Hypothesis (PDH) which was proposed by Kuno (1974). Kuno believes that the position of the RC in the matrix clause is important and that the limitation of the human working memory causes difficulty in the processing of sentences containing center-embedded RCs. According to his hypothesis, if an RC appears in the middle of the matrix clause, it interrupts the flow of the matrix clause by separating the matrix subject from its verb. In contrast, right/left-embedded RCs, which are adjoined to the matrix clause, do not cause any interruption. He assumes that interruption is an obstacle to the comprehension of RCs; therefore, center-embedded RCs interfere with language processing and make the comprehension of the sentence more difficult in comparison with right-embedded RCs. Thus, according to the AH, sentence (a) in example (115) is perceptually more difficult to process than sentence (b) (examples from Kuno 1974:119). I believe that Kuno could have chosen better examples to illustrate his hypothesis because reading these examples one might wonder whether the difficulty arises from center-embedding itself or rather from the fact that sentence (a) contains multiple center-embedding, which is extremely rare in authentic language.

- 115) a. The cheese that the rat that the cat chased ate was rotten. (Center-embedded)
- b. The cat chases the rat that ate the cheese that was rotten. (Right embedded)

According to Doughty (1991:439), the PDH, "while intuitively appealing, has not found consistent empirical support", and "there have been no acquisition studies conducted that have emanated from it." His claim was refuted by Izumi, who is a proponent of the PDH. Izumi (2003: 292) states that the PDH "is based on a sound theoretical foundation", and has been experimentally supported by studies conducted by Cook (1973); Schumann (1980); Prideaux and Baker (1986); Bates, Devescovi, and D'Amico (1999). Izumi believes that the PDH needs closer attention and more in-depth investigations particularly for L2s, as it has not received enough attention in second language acquisition studies.

Although the relatives in the NPAH are not "specifically focused on in Kuno's formulation of the PDH", all types of RCs in the NPAH "can logically be placed in different matrix positions, resulting in twelve different types of RC construction" (see Table 5.2) (Izumi 2003:289).

Table 5.2 *Izumi's examples of RC types outlined in the NPAH placed in different matrix positions (Izumi 2003:288)*

Matrix position	RC type	Example
Subject	SU	The woman who speaks Russian fluently is my aunt.
	DO	The car which the man drove is very fast.
	IO	The man who(m) I gave the book [to] is my colleague.
	OPREP	The woman who(m) Bill is looking at is beautiful.
	GEN	The man whose car broke down is my boss.
	OCOMP	The mountain which Mt. Fuji is higher than is Mt. Takao.
Object	SU	The teacher liked the girl who passed the exam easily.
	DO	We like the coat which Mary wears.
	IO	Mary likes the man who(m) I gave the book [to].
	OPREP	She is the woman who(m) Tom wants to live with.
	GEN	I know the woman whose husband is a professor.
	OCOMP	I know the hotel which Hilton is cheaper than.

SU: Subject, DO: Direct object, IO: Indirect object, OPREP: Object of preposition, GEN: Genitive, OCOMP: Object of comparison

It should be noted that in both Rod Ellis' (1994) and Izumi's (2003) example sentences of IO relatives in Tables 5.1 and 5.2, no distinction has been made between pairs such as "The man who(m) I gave a book" and "The man to who(m) I gave a book". Some researchers claim that there is a difference in meaning between "I gave the man a book" and "I gave a book to the man". There is a body of research on so-called *dative alternation*, which treats the indirect object and prepositional objects that correspond to them (mostly with *to*, but in some cases with *for*) as equivalents. To merge the two constructions in SLA research is problematic, as there are languages that have only a dative construction (e.g., German and Azerbaijani) and others, in which nouns cannot have a dative construction but must have a prepositional construction with nouns (but have a dative with pronouns) such as French, and languages that only have prepositional constructions (e.g., Persian and Kurdish Sorani).

Furthermore, I think OPREP RCs in object matrix position could be illustrated by a better example than Izumi's "She is the woman who(m) Tom wants to live with" in Table 5.2. The sentence sounds unnatural, as it could only be used in a very specific context. A sentence like *This is the woman who(m) Tom wants to live with* or *I know the woman who(m) Tom wants to live with* would be more natural and might be a better choice to exemplify this type of RC.

While the NPAH predicts the order of RC acquisition by focusing on the syntactic position that is relativized, the PDH predicts the ease of processing of RCs by focusing on the position of the RC in the matrix clause. However, these two hypotheses are "complementary, not contradictory, to one another" (Izumi 2003:316-317). By considering the predictions of both the NPAH and the PDH, it can be deduced that in each type of RC (SU relatives, DO relatives, ...), the RC which is located in the matrix subject position (center-embedded RC) is perceptually more difficult than the same type of RC located in the matrix object position (right-embedded RC) (Izumi 2003:289). According to this hypothesis, the predicted hierarchy of relativization would be as follows in a representation in which the first letter in each abbreviation stands for the syntactic function of the relativized NP in the matrix clause, and the abbreviation following a hyphen represents the syntactic function of the NP within the RC. O-S, O-O, O-IO, O-OPREP, O-GEN, O-OCOMP > S-S, S-O, S-IO, S-OPREP, S-GEN, S-OCOMP.

Izumi (2003) investigated RC acquisition by learners of English with various first languages via employing three different elicitation tasks: a sentence combination test, a grammaticality judgment test, and an interpretation test. Izumi focused on just three of six types of RCs in the NPAH: SU, DO, and OBL RCs. The results of the first two tests showed partial agreement with the NPAH as SU relatives were found to be more accurate than DO relatives in two matrix positions, subject and object position. The results also supported the prediction by the PDH, as in terms of the matrix positions, the frequency of RCs in the object position was higher than RCs in the subject position. In the interpretation test, the results were consistent with the PDH, too, since the RCs in object position in the matrix clause obtained a higher score than subject positions. However, the rank order of SU, DO, and OPREP relatives was not very clear and the result was not completely in line with the NPAH. The accuracy pattern obtained from the test was as follows: O-S > O-OPREP > O-O > S-S > S-OPREP > S-O. Table 5.3 displays the differences between the claims made by the NPAH and the PDH.

Table 5.3 *Comparison of the NPAH and the PDH*

	The NPAH	The PDH
Theoretical basis	Typological markedness	Limitation of the working memory
The focus of the hypothesis	On the syntactic position of the NP that is relativized	On the location of the RC in the matrix clause
Accessibility hierarchy/ Order of difficulty (from the easiest to the most difficult)	SU>DO>IO>OBL>GEN> OCOMP	Right embedded RCs > center-embedded RCs O-S, O-O, O-IO, O-OPREP, O-GEN, O-OCOMP > S-S, S-O, S-IO, S-OPREP, S-GEN, S-OCOMP

Note: the greater than sign (>) implies: easier to comprehend than

In the above-mentioned hypotheses, two aspects might account for the order of the acquisition of RCs: the complexity of RC types and the frequency of use of each type. If we assume that complex constructions are less frequent, then this raises the question of whether the frequency of input, which will be discussed in section 5.3.2, can determine the order of acquisition.

Many studies have been carried out to investigate the natural order of the acquisition of RCs. They explored the acquisition of RCs in different languages and different genres by children or adult learners in both first and second-language learning contexts. The comprehension and production of different types of RCs by L1 and adult L2 learners have been investigated in many studies, some of which are the following: Gass (1979); Hyltenstam (1984); Pavesi (1986); Clancy, Lee and Zoh (1986); Eckman et al. (1988); Doughty (1991); Sadighi (1994); Izumi (2003); Birney, Halford, and Andrews (2006); Hawkins (2007); Ozeki and Shirazi (2007); Marefat and Rahmany (2009). In addition, several studies have focused on children's comprehension and production of different types of relative clauses Smith (1974); Sheldon (1974); Hakes et al. (1976); Tavakolian (1981); Hakuta (1981); Goodluck and Tavakolian (1982); Clancy et al. (1986); Keenan and Hawkins (1987); MacWhinney and Pléh (1988); McKee et al. (1998); Kidd and Bavin (2002); Diessel and Tomasello (2001, 2005); Brandt, Diessel, and Tomasello (2008); Chan, Yip and Matthews (2011). The relative clause studies in L1 English context are summarized in Table 5.4 below.

Table 5.4 *Summary of previous studies on the natural order of occurrence of RCs in different corpora and genres in L1*

Researcher	Data Set	Hypothesis Supported
Keenan (1975)	English written texts	NPAH
Romaine (1980)	Scottish English texts	SPH and NPAH
Dekeyser (1984)	Early Modern English corpus	SPH and NPAH
Prideaux and Baker (1986)	English fiction and non-fiction texts	NPAH and PDH
Fox (1987)	Naturally-occurring English conversations	Absolute Hypothesis
Hardy and Milton (1994)	English literary narratives (two American novels told in first-person narration), spoken conversations, 2 written expository works, 6 other novels, and 20 short oral narratives	NPAH
Gordon and Hendrick (2005)	Three written and spoken English corpora (<i>Switchboard: Telephone Speech Corpus</i>	SPH in both written and spoken data, and Absolute

	(1992); <i>CHILDES: The Child Language Data Exchange System</i> (1984); <i>Brown: The Brown University Standard Corpus of Present-Day American English</i> (1967)	Hypothesis, but only in spoken corpora
Hogbin and Song (2007)	English literary texts from two different periods, the eighteenth and the twentieth centuries	SPH and Absolutive Hypothesis
Roland et al. (2007)	Eight corpus data sets representing a variety of genres of written and spoken language	SPH

In the field of SLA, many studies demonstrated that the acquisition order of RCs adheres to the natural order of acquisition. However, studies such as Hamilton (1995), which investigated the acquisition of RCs in English as an L2, Hawkins (1989), which examined the acquisition of RCs in French as an L2, and Tarallo and Myhill (1983), which explored the acquisition of RCs in Persian, Japanese, German, Chinese, and Portuguese as second languages, provided evidence that the NPAH is not confirmed by all studies in L2 contexts. The summary of the studies conducted in this area is provided in Table 5.5.

Table 5.5 *Summary of the studies on the natural order of the acquisition of RCs in L2*

Researcher	Context	Findings
Hamilton (1995)	Learners of English as an L2 with different first languages (Japanese, Arabic, Korean, Spanish, Chinese, and nine other languages)	NPAH was not confirmed.
Hawkins (1989)	English-speaking learners of French	NPAH was not confirmed.

Tarallo and Myhill (1983)	English-speaking learners of Persian, German, Chinese, Japanese, and Portuguese	NPAH was confirmed in the acquisition of post-nominal RCs in German, Persian, and Portuguese; however, in languages with pre-nominal RCs, Japanese, and Chinese, the NPAH was not confirmed as DO relatives had higher accuracy than SU relatives.
Sakamoto and Kubota (2000)	Learners of Japanese with different first languages (English, Chinese, and Indonesian)	NPAH was partially supported since the participants' preference in their choice of less marked RCs was limited to SU, DO, and IO relatives. The participants did not choose less marked RCs more than OPREP relatives, which are more marked RCs in the accessibility hierarchy of the NPAH.
Roberts (2000)	English-speaking learners of Japanese	NPAH and SPH were not confirmed
Kanno (2000, 2001)	English-speaking learners of Japanese	SPH was confirmed.
Ioup and Kruse (1977)	Learners of English with different first languages (Persian, Spanish, Chinese, Japanese, and Arabic)	PDH was confirmed.

5.1.2 Other Theories

5.1.2.1 Subject Object Hierarchy Hypothesis

Another hypothesis that claims to predict a natural order of difficulty for the acquisition of RCs is the *Subject-Object Hierarchy Hypothesis* (SOHH), which was proposed by Hamilton (1994). This hypothesis which was developed for English seems to be motivated by the NPAH and the PDH. The SOHH is based on the notion of *processing discontinuity*. According to Hamilton (1994:134-135), processing discontinuity, (shown as *i* in example 116), is based on two assumptions: one is that center-embedding of the relative clause in the main clause causes an interruption in the main clause and creates a discontinuity. The other assumption is that phrasal boundaries which occur within object RCs appear between the relative pronoun and the *wh*-trace, (shown as *t*), caused by relativization. Hamilton treated *that* as a relative pronoun. He claims that the number of discontinuities in the structure determines the order of difficulty of RCs. Hamilton's (1994:135) examples below (116 a,b) demonstrate that only one discontinuous *S* is caused by a relativized subject, while a relativized object causes two phrasal discontinuities within RC (*S* and *VP*). In the following examples, *VP* stands for verb phrase and *S* stands for sentence. In addition, *i* is co-indexed, meaning that it marks words in a phrase as referring to the same thing.

- 116) Relativized subject: ...a) The man who *i* [*S* *t*_i saw us].
Relativized object: ...b) The man who *i* [*S* we [*VP* saw *t*_i]]. (Hamilton 1994:135)

The SOHH only considers four types of RCs which differ in terms of the position of the head noun in the matrix clause and the function of the relative pronoun within the RC. Therefore, the hierarchy proposed by this hypothesis is as follows: object-subject (OS) > object-object (OO) > subject-subject (SS) > subject-object (SO). The symbol > means easier to process than. In each pairing, the first letter shows the function of the head noun in the matrix clause, and the second letter indicates the function of the relative pronoun within the RC. Table 5.6, which is taken from Izumi (2003:290) presents Hamilton's (1994:134) examples for each type of RC in SOHH. As the table shows, an OS sentence, which has a single discontinuity within the RC, is the easiest type among the four types, while an SO sentence, which has three discontinuities (one caused by the center-embedding of the RC in the matrix clauses and two within the RC), is the most difficult one.

Table 5.6 *Example sentences for different RC types in SOHH (Izumi 2003:290)*

Sentence Type	Example
OS	They saw the boy who i [S t i entered the room].
OO	A man bought the clock that i [S the woman [VP wanted ti]].
SS	The man [who i [S t i needed a job]] helped the woman.
SO	The dog [that i [S the woman [VP owns t i]]] bit the cat.

OS: Object head noun, Subject target of relativization; OO: Object head noun, Object target of relativization; SS: Subject head noun, Subject target of relativization; SO: Subject head noun, Object target of relativization; []: Phrasal boundary; t: *Wh*-trace; i: Co-index. S: Sentential node; VP: Verb phrase

Although the other types of RCs have not been specifically considered in Hamilton’s SOHH, based on the studies conducted by Wolfe-Quintero (1992) and O’Grady (2017), it is assumed that Hamilton’s hierarchy hypothesis can account for the other types of RCs as well. This means that based on the number of discontinuities in both the matrix clause and the RC, the level of difficulty of RC types can be predicted. Table 5.7, taken from Yas (2012:209), shows the number of discontinuities in each type of RC. The first letter in each abbreviation shows the function of the head noun in the matrix clause and the second part in the abbreviation indicates the function of the relative pronoun in the RC. Based on the number of discontinuities, the difficulty order of RCs in SOHH would be as follows: O-S/O-GEN > O-O/S-S/S-GEN > S-O/O-IO/O-OPREP > S-IO/S-OPREP > O-OCOMP > S-OCOMP. This difficulty order is not completely in line with the one proposed by the NPAH. However, it is compatible with the PDH, according to which each RC type in an object matrix position is easier than the same RC type in subject matrix position.

Table 5.7 *Number of discontinuities in each RC type according to the SOHH (Yas 2012:209)*

RC Types	Number of Discontinuities
O-S/ O-GEN	1
O-O/ S-S/ S-GEN	2
S-O/ O-IO/ O-OPREP	3
S-IO/ S-OPREP	4
O-OCOMP	5
S-OCOMP	6

5.1.2.2 Linear Distance Hypothesis

The Linear Distance Hypothesis (LDH), which was so called by O'Grady, Lee, and Choo (2003) was first put forward by Tarallo and Myhill (1983), and Hawkins (1989) when they explained L2 learners' preference for subject RCs over object RCs in learning English as an L2 (as cited in O'Grady et al. 2003:434). According to the LDH, L2 learners' preference for subject relatives refers to the shorter linear distance between the subject and the subject gap, as opposed to the longer linear distance between the direct object and the direct object gap; the longer the distance between the relativized element and the gap, the more difficult is the comprehension of the relative clause. Linear distance is measured by counting the number of intervening words between the head noun and the gap (see example (117) taken from O'Grady et al. (2003:434)). O'Grady et al. (2003) only used RCs with *that* in their examples from the English language.

- 117) a. Subject relative: the man [that ___ likes the woman]
 Linear distance between the head noun and the gap = 1 word
- b. Direct object relative: the man [that the woman likes ___]
 Linear distance between the head noun and the gap= 4 words

5.1.2.3 Structural Distance Hypothesis

Many studies have reported that L2 learners of English find subject RCs easier to comprehend, and use subject RCs more frequently than direct object RCs. Although some scholars claim that L2 learners' preference in this regard is said to be caused by a linear distance effect, O'Grady, Lee, and Choo (2003) believe that their preference is attributed to structural factors. O'Grady et al. (2003) conducted a study on the Korean language, which is a head-final language in which subject gaps in RCs are more distant from the head noun than object RCs' gaps. According to the LDH, in Korean, subject RCs would be more difficult to comprehend; however, contradictory results were obtained from their study as the Korean learners showed a strong preference for subject RCs. In response to the inconsistency in the LDH, O'Grady et al. (2003:435) proposed the *Structural Distance Hypothesis* (SDH) as a means of measuring "the depth of embedding of the gap", and calculated the distance by counting the number of intervening maximal projections (see example

(118) taken from O'Grady et al. (2003:435)). The maximal projection is the phrasal level of phrase structure rules in X-bar terminology. In the following example, *VP* stands for verb phrase and *S* stands for sentence. As the structural distance between the head and the gap is shorter in subject RCs than in object RCs, SDH predicts that the comprehension of subject RCs would be easier than in object RCs. Therefore, the problem in the Korean language was resolved as it turned out a subject gap is structurally closer to the head than a direct object gap is, although a subject gap is linearly more distant from the head than a direct object gap is. That explains why English-speaking learners of Korean find subject relatives far easier than direct object relatives (O'Grady et al. 2003:442).

- 118) a. Subject relative: the man that [*S*___ likes the woman]
number of nodes between the head and the gap = 1 (S)
- b. Direct object relative: the man that [*S* the woman [*VP* likes ___]]
number of nodes between the head and the gap = 2 (VP, S)

5.1.2.4 Word Order Difference Hypothesis

Regarding the processing of complex structures like RCs, MacDonald and Christiansen (2002) present a different interpretation motivated by a connectionist approach to language comprehension. In their *Word Order Difference Hypothesis* (WDH), an interaction of language experience and biological factors affects the processing capacity of each language learner. In particular, they focus on the impact of canonical against non-canonical word order on processing RCs, and state that non-canonical word order causes more difficulty than canonical word order. As MacDonald and Christiansen (2002:40) state, subject RCs are quite regular structures in terms of word order. That is because the word order in subject RCs is the same as the word order in simple active one-clause sentences, which are very frequent in English. Therefore, they assert that the learner's experience in making simple active sentences assists the acquisition processes of subject RCs. They state that this experience cannot assist in processing object RCs since they have a more irregular word order. The following example, taken from Yas (2012:212), shows the application of the WDH for processing subject RCs (example 119a) and object RCs (example

119b). The word order in the first sentence is SVO, which is in line with the word order of simple active sentences in English. However, the word order in the second sentence is OVS which is not common in English sentences. In the following sentences, *CP* stands for complementizer phrase, *IP* for inflectional phrase, and *VP* for verb phrase.

119) Subject relatives: The lion [CP that [IP __ carries the cow]]

Object relatives: The lion [CP that [IP the cow [VP carries __]]]

Rahmany, Marefat, and Kidd (2011) conducted a study on the acquisition of RCs by Persian-speaking children. The results of their study show that Persian children experience more difficulty with object and genitive Persian RCs, which contain non-canonical word order, compared to subject RCs.

5.2 A Theory Assuming that Animacy Influences RC Acquisition

Several studies have focused on the role of certain factors other than grammatical function in the acquisition of RCs. Hawkins (2007:349) assumes that the NPAH is not a sound hypothesis and that other factors such as “L1 influence, and semantic factors like animacy” influence the acquisition and the use of RC structures. Some investigations have been carried out to explore whether there is a difference in the acquisition order of RCs between the RCs with animate head nouns and the ones with inanimate head nouns. Studies that have investigated the role of the animacy of the head noun on language learners’ performance in the relativization of SU and DO relatives were done by Jeon and Kim (2007); Kanno (2007); Yabuki-Soh (2007); Ozeki and Shirai (2007); and Fernandez-Duque (2009); Mak, Vonk and Schriefers (2002); Traxler et al. (2002); Weckerly and Kutas (1999). According to these studies, animacy has an important role in determining accessibility to relativization because the tendency to use different grammatical positions of the NPAH differs as to whether the head noun is animate or inanimate. A summary of the studies conducted in this area is provided in Table 5.8.

Table 5.8 *Summary of the studies on the effect of animacy of head nouns of RCs*

Researcher	Data Set/learners	Findings
Roland, Dick, and Elman (2007)	English written corpora	SU relatives tend to have animate head nouns, but object relatives have inanimate head nouns.
Mak, Vonk, and Schriefers (2002)	Dutch and German newspaper texts	SU relatives with animate head nouns are easier to process than SU relatives with inanimate heads, whereas DO relatives with animate head nouns are harder to process than DO relatives with inanimate heads.
Kanno (2007)	Learners of Japanese with different first languages	When there are semantic clues, such as animacy clues, learners found SU relatives easier to process than DO relatives.
Ozeki and Shirai (2007)	A learner corpus (collected from learners of Japanese whose first languages were Mandarin Chinese, English, and Korean)	All the learners involved in the study except Korean learners preferred SU relatives with animate head nouns and DO/OBL relatives with inanimate head nouns.
Sasaki (1991)	Japanese-speaking learners of English and English-speaking learners of Japanese	Animacy cues had a more significant role than word order cues in helping learners determine the grammatical function of NPs in the target language.

As Table 5.8 shows, several studies previously carried out on RCs reveal that SU relatives usually have animate NPs, but object relatives have inanimate NPs, and that SU RCs that contain animate NPs are processed easier and faster than object RCs.

5.3 Theories Assuming that Language Experience is Relevant

5.3.1 Impact of the Earlier Learned Language(s)

In addition to the theories positing a natural order of acquisition of RCs, there are theories suggesting that syntactic transfer from previously learned languages influences the acquisition of RCs in the target language. “Transfer is the influence resulting from similarities and differences between the target language and any other language that has been previously (and perhaps imperfectly) acquired” (Odlin 1989: 37).

One of the systematic ways to study two or more languages to identify the structural differences and similarities between them is the Contrastive Analysis hypothesis (CAH). The CAH was proposed in 1957 when structural linguistics and behavioral psychology were dominant. The theoretical foundations for CAH were formulated in Robert Lado's book, *Linguistics Across Cultures* (1957). This hypothesis is based on the assumption that second language learners tend to transfer the forms and meanings from their native language and culture to the second language and culture (Lado 1957:2). Transfer might facilitate or obstruct learning. Lado assumes that learning is facilitated when the features of the native language are similar to the ones in the target language (positive transfer), while differences cause more difficulty in the learning process (negative transfer) (Lado 1957:1-2). This was later supported by studies conducted on *linguistic distance*, which considers how distinct linguistic structures are in different languages or different dialects. Schepens, Van der Slik, and Van Hout (2013a 2013b), and Van der Slik (2010) claim that the larger the distance between an L1 and an L2 is, the lower the L2 learnability. Schepens et al. (2015:225) define learnability as “the degree to which the L1 facilitates or impedes the learning of an L2”.

In terms of predictability, CAH is classified into strong, moderate, and weak versions. Wardhaugh (1970) proposed the two versions of strong and weak. The strong version is predictive as it claims that the errors language learners will make are predictable based on a comparison of descriptions of the native and target language. The weak version, however, is explanatory as it makes no prediction; it is a discovery approach in which the errors are observed and are followed by an analysis to provide explanations for the sources of errors (Eckman 1977:316; Schachter

1974:205). In addition to the strong and weak versions of the CAH, a moderate version was proposed by Oller and Ziahosseiny (1970). They believe that the strong version of the CAH is too strong and the weak version is too weak. They state that “the categorization of abstract and concrete patterns according to their perceived similarities and differences is the basis for learning; therefore, wherever patterns are minimally distinct in form or meaning in one or more systems, confusion may result” (Oller and Ziahosseiny 1970:186).

For about a decade, the CAH was considered a valid theory. However, scholars gradually discovered that it had theoretical and practical limitations. Scholars found that a complete comparison of two languages is very difficult or impossible at times; furthermore, it often turned out that not all differences between L1 and L2 were difficult for L2 learners, nor were all similarities easy. Besides, some difficulties that had not been predicted by the CAH were identified in the performance of L2 learners. Richards (1971a and 1971b) and Selinker (1972) referred to several examples of errors that were not attributable to interference from L1 (interlingual errors) but were intralingual. Intralingual errors refer to the misuse of a particular rule of the target language because of a false analogy. Thus, the focus on the predicted areas of difficulty shifted to the actual errors made by the L2 learners, and language researchers conjectured that the systematic analysis of the actual errors committed by the L2 learners could shed more light on the sources of language difficulty.

When it turned out that L1 interference is not the only reason for the occurrence of errors in L2, the weak version of the CAH developed into the *Error Analysis Hypothesis*, which focuses on the patterns of the actual errors in the target language produced by L2 learners to explain their cause. There is no prior prediction of errors in this approach; instead, the actual errors are explored and categorized, and where possible, are attributed to (i) differences between L1 and L2, (ii) overgeneralization (extending the application of a linguistic rule to items that are excluded from it), (iii) simplification (reducing the structural complexity of a text), (iv) employing strategies of learning and communication, or (v) a variety of other sources (Richards 1971a and b; Selinker 1972).

It should be noted that in error analysis, only errors were taken into consideration and mistakes were excluded from the analysis. Mistakes are random and unsystematic errors of performance, while errors are systematic and show a lack of competence (Corder 1967:166). Rod Ellis (1997:17) makes a somewhat similar distinction between the two terms and states that “errors reflect gaps in the learner’s knowledge; they occur because the learner does not know what is correct. Whereas, mistakes reflect occasional lapses in performance; they occur because, in a particular instance, the learner is unable to perform what he or she knows”.

Although error analysis helped in gaining insights about the sources of errors, researchers in L2 acquisition identified a drawback concerning this approach. The most serious criticism of error analysis was made in Schachter’s (1974) influential article entitled "An Error in Error Analysis". Schachter claims that error frequency is insufficient in the analysis of learner data and that the frequency of errors in a construction needs to be compared to the total use, to detect avoidance strategy. Her contribution to the larger topic of L1 influence was that L1 influence can manifest itself in the avoidance of constructions. Several studies like Swain (1975), Kleinmann (1977), Beebe (1980), and Gass (1980) provided evidence for this.

In general, language transfer has experienced three main stages (Yi 2012:2372). The first stage was from the 1950s to 1960s when the difficulties in the target language were said to be predictable through comparison of the native language and the target language. The second stage was from the 1970s to 1980s when the CAH was severely criticized by cognitivists in the late 1960s. It was claimed that L1 transfer has a trivial role in L2 acquisition and that L2 acquisition is facilitated by principles of universal grammar (Chang 2004; Ioup and Kruse 1977; Dulay and Burt 1974). The third stage of language transfer, during which different theories have been proposed, was from the 1980s hitherto. At the third stage, language transfer has been considered a complex broad concept that is not restricted to L1 knowledge but includes linguistic, psycholinguistic, sociolinguistic, and socio-psychological factors, as well as developmental factors, individual difference, and frequency of input (Yi 2012:2372).

As mentioned above, language transfer indicates the effect of the learner’s already known language (which is L1 for monolinguals and L1/L2(s) for multilinguals) on the learner’s acquisition of the target language. Language transfer is more complex in L3 acquisition than in L2

acquisition because it involves not only all the processes associated with L2 acquisition but also more complicated relationships between the other languages the learner already knows (Puig-Mayenco et al. 2020:33; Clyne 1997:113). In the brain of a multilingual, “all linguistic knowledge is interconnected” and the languages a multilingual knows are “not functionally separated” (Slabakova 2017:653). Thus, “there is potential influence at all linguistic levels (lexicon, syntax, phonology, etc.)” from all the languages a multilingual knows (Bardel 2019:104). It is argued that different amounts of previous experience that L3 learners have with more than one language “makes transfer a multidimensional factor” (Puig-Mayenco et al. 2020:33), and that investigation of L3 acquisition can provide essential new insights into the language learning process (Flynn et al. 2004:3).

The results of studies conducted on L3 acquisition have been inconclusive. Flynn, Foley, and Vinnitskaya (2004:5) claim that the learners’ L1s do not play a privileged role in subsequent language acquisition, and that language learning is cumulative, which means all previously known languages can “potentially influence the development of subsequent language acquisition”. Similarly, Schepens, Van der Slik, and Van Hout (2015:249) claim that L1 and L2 influences are combined in L3 acquisition. By contrast, Rothman (2010, 2011) predicts no significant importance of L1, while Bohnacker (2006) predicts an L2 blocking effect on the L1 influence. Schepens et al. (2015) focus on the effect of linguistic distance at the lexical or morphological level between learners’ previously learned languages and the language being learned. The results of their study demonstrate the importance of distance effects with respect to both L1 and L2 in learning an L3, with the L1 distance effect being greater than the L2 distance effect. Furthermore, their results suggest that smaller distances from L1 to L3 and from L2 to L3 correlate with higher degrees of L3 learnability.

In addition to the factor of *typological similarity* of the previously learned languages and the L3, Hammarberg (2001:23) argues that the *recency* of the L2 and the learner’s *proficiency* in L2 are important factors in cross-linguistic influence in L3 acquisition. He claims that while learning an L3, learners probably borrow from an already known language that they actively use rather than the languages they know but do not frequently use. Moreover, he states that L2 influence is favored if the learner has a good proficiency in the L2 and if the learner has acquired the L2 naturally.

5.3.2 Impact of Input Frequency on L2 Acquisition

In addition to the theories related to the natural acquisition of relative clauses, which highlight the existence of an innate universal grammar in language acquisition in generative linguistics, there is a different theory called the usage-based theory of language acquisition. This theory, which is based on the usage-based linguistics proposed by Langacker (1987:17), focuses on the impact of input exposure, frequency, and experience on language acquisition (Tomasello 2005). In linguistics, language input is defined as the amount of authentic language to which the learner is exposed (Corder 1967:165). Input can be provided from various sources, including the environment around the learners, other learners, instruction, and coursebooks.

According to the usage-based theory, which is closely related to cognitive linguistics, the complexity of a structure in a language is not determined by the innate complexity of the structure, but by the interaction of cognition and use (Ibbotson 2013:1). The more a linguistic unit is “rehearsed” in the mind of the language learner, the more it is “entrenched” (Ibbotson 2013:3). According to Croft (2010: 499), “the usage-based model is a model of grammatical representation in which language use determines grammatical representation”. Croft particularly focuses on the significance of the frequency of use of input. The two main types of frequency are *token* frequency, the repeated occurrence of a particular word or specific phrase, and *type* frequency, the occurrence of different items that can be applied to a certain pattern or construction (Nick Ellis 2002:166). In Nick Ellis’ (2002) view, input frequency of both types is a determining factor in language acquisition because “rules of language, at all levels of analysis (phonology, syntax, discourse), are structural regularities that emerge from learners’ lifetime analysis of the distributional characteristics of the language input” (Nick Ellis 2002:144). Zyzik (2009), who also has a usage-based perspective, believes that language acquisition is closely tuned to the sufficiency of the input frequency. Zyzik (2009:54) states that input “must be abundant enough for the learner to abstract regularities from concrete exemplars of language use”. According to Zyzik (2009), and Gass and Mackey (2002), not many studies have been conducted on the impact of quantity and quality of input on L2 acquisition in instructed settings. They believe that additional studies in this area are required.

Input can be divided into two types: that which occurs in natural acquisition and that which is provided in instructed acquisition. The present study investigates exclusively the latter because it is difficult to assess the frequency of exposure to RC types in the environment. However, it is possible to inspect the textbooks of English which have been used by the learners as one source of input. We know which textbooks of English are available at schools for the learners and what type of RCs the textbooks cover.

Although the difficulty in learning and producing English RCs for non-native English speakers is mainly attributed to the structural complexity of RCs or L1 and L2 transfer, poor quality of relativization lessons in textbooks of English at schools could reinforce this difficulty. The reason for their impact is that school textbooks provide the major source of input into classroom lessons in the form of texts, explanations, and activities (Hutchinson and Torres 1994:317). Exposing students to optimal input can facilitate students' accurate production of the target language and accelerate their language learning (Burke 2010; Rod Ellis 2005; Riazi 2003; Byrd 2001; Garinger 2001; Sheldon 1988; Woodward 2016). Although the degree of dependence on textbooks in different language classes varies, language textbooks still shape the dynamics of most classes in all types of educational institutions such as schools, colleges, and language schools. Hence, the evaluation and content analysis, and the revision of textbooks of English are important for getting better achievement in second language learning.

Language researchers have conducted studies to evaluate textbooks of English in various countries implementing different models, frameworks, and checklists. Some studies have examined cultural and social issues in language textbooks (Dang and Seals 2016; Ekawati and Hamdani 2012; Nagatomo 2011; Yuen 2011; Lee and Collins 2008; Risager 1991; Arizpe and Aguirre 1987; Porreca 1984; Stern 1976), while others have explored the way grammar is covered by language textbooks (Fernández 2011; Azizifar, Kooshaa and Lotfia 2010). The importance of textbooks of English with respect to the way they cover specific grammatical structures, and their effect on the acquisition and use of those structures by language learners has not received enough attention. When the strengths and weaknesses of language textbooks are identified, areas in the textbooks that need revision can be pinpointed; consequently, the quality of textbooks could be improved. As a result of the improvement of the textbooks, language learners' achievements may be enhanced and their proficiency may develop.

Although it is difficult to comprehensively analyze the content of textbooks of English in terms of their efficacy in presenting specific grammatical structures, it is possible to indirectly evaluate the range and the depth of the linguistic materials in textbooks by analyzing the performance of the students. Through quantitative and qualitative post-use textbook evaluation, according to Van Els et al. (1984), the effects of the textbooks on their users can be assessed retrospectively. There might be a connection between the performance of school graduates' production of English RCs and the way English RCs are covered in their textbooks of English. Therefore, the efficacy of the grammar lessons on RCs in their textbooks is taken into consideration in this dissertation.

It should be noted that the education system in Germany varies from state to state, and individual states in Germany are responsible for the education policy in the state. Therefore, schools do not always follow the same curriculum in every state, and textbooks employed at schools might differ as well. In North Rhine-Westphalia where the participants of the first study in this dissertation were recruited from, the following textbook series are used: *Green Line* series (2015-2018) published by Ernst Klett, *English G Access* series (2014-2017) published by Cornelsen, and *Camden Town* series (2013-2017) published by Diesterweg (see Table A1 in Appendix A for more details). The situation is different in Iran where the same textbooks of English are used in all Iranian private and public schools. The textbooks of English used in Iran are *English Book One* (2014), *English Book Two* (2014), *English Book Three* (2014), and *English for Pre-university Students* (2014). They are designed by the Textbook Curriculum Development and Planning Department of the Ministry of Education and are printed in Tehran.

The German and the Iranian textbooks of English that the researcher examined cover subject, object, and participle RCs. However, unlike the German textbooks, the Iranian textbooks of English do not introduce the distinction between restrictive and non-restrictive RCs and do not cover genitive and zero relatives. Thus, it is expected that the German learners of English form and use more genitive and zero relatives than the Iranian learners of English. In addition, the RCs presented in the German textbooks of English are repeated quite more often in different lessons in each set of books and are practiced more frequently through a larger number of exercises compared to the RCs in the Iranian textbooks. As the frequency of input affects the acquisition, it is quite likely that German learners of English perform better in the use of English RCs, in general.

Chapter Six: Study I: A Corpus Study

As was mentioned in chapter 1, one of the main objectives of this dissertation is to explore the extent to which (i) the universal properties of RC acquisition, and (ii) the linguistic properties of RCs in previously learned languages might impact the formation and use of English RCs in the argumentative essays written by the learners of English whose first languages are either Azerbaijani, German, Kurdish Sorani or Persian.

As described in chapter 5, regarding the universal acquisition of RCs, several hypotheses have been postulated. Some of these hypotheses, namely the NPAH, AH, and PDH were investigated in a corpus study the data of which was collected from the native English speakers and the learners of English with the above-mentioned L1s. This chapter primarily focuses on the design of this corpus study as well as the results obtained from the investigation of the corpora employed. In this chapter, separate sections are devoted to the analysis of the data compared to the predictions of each hypothesis. Besides this, one section is dedicated to the analysis of the data according to an alternative approach, which includes all types of RCs extracted from the corpora used in the present study. In another section, the incorrectly formed RCs in each learner corpus are inspected and the potential sources of errors are discussed to examine the impact of the linguistic properties of RCs in the previously learned languages on the acquisition and use of RCs in the newly learned language. Additionally, the frequency of use of RC markers and that of finite and non-finite RCs in each corpus is inspected. Finally, a section of the chapter is devoted to an investigation of the role of the animacy status of the modified noun phrases in each RC type used in each corpus.

6.1 Objectives of the Corpus Study

The identification of patterns of use of a particular grammatical feature in learners' language is preliminary to the task of explaining the reasons for the pattern that is used. To explore the patterns of use of different types of English RCs by the Azerbaijani, German, Kurdish Sorani, and Persian learners of English, and the native speakers of English in argumentative essays, Study I is conducted. In this study, the frequency of each type of RC used in the learner corpora and the native English corpus is counted. An underlying assumption here is that the frequency of RCs used in the argumentative essays written by L1 and L2 learners of English may reflect the ease or

difficulty of the RC types for learners of English. Hence, based on the results that will be attained from each corpus, a difficulty hierarchy will be set up, and the accurate, erroneous, and avoided types of RCs in each corpus will be identified. The hierarchies obtained from the analysis of each learner corpus and the native corpus will be compared to the hierarchies proposed by the NPAH, AH, and PDH to see to what extent the findings of the present study support the above-mentioned hypotheses. Moreover, since neither the NPAH, AH, PDH nor the other hypotheses proposed for the acquisition of RCs include all types of RCs extracted from the corpora used in this investigation, the researcher will use another model for the categorization of all the RC types that occurred in the actual data. The model is mainly based on the categorization system of RCs proposed by Fox and Thompson (1990) with a few additions.

Besides this, the frequency of RC types in each learner corpus is discussed by focusing on the types of relative clauses presented in the textbooks of English employed in German and Iranian schools. This helps to figure out whether the content of the textbooks of English as input providers affects the acquisition of RC types by the learners.

In addition, the frequency of the animate/inanimate head nouns in the RC types will be investigated. It is assumed that the rate of occurrence of the animate and inanimate NPs in each RC type can display the preference of the language learners in using each RC type with animate/inanimate NPs. According to the results of several previous studies mentioned in section 5.2, subject relatives tend to occur in the conditions in which the NPs are animate, while object relatives usually occur in clauses that modify inanimate NPs. The present study examines whether subject and object relatives in the learner corpora and the native corpus display the same results.

It is also assumed that the structure of RCs in previously learned languages may affect the acquisition and use of RCs in the language being learned. The comparison of the most and least frequently used RC types in different corpora, and the comparison of the avoided and erroneous RCs in each corpus with their comparable structures in the respective L1 and L2 will reflect whether the structure of RCs in L1 and/or L2 codetermine the production and usage patterns of English RCs.

Finally, the frequency of use of different RC markers and that of finite/non-finite RCs is examined in each corpus in this study. This part of the analysis is unconnected with the above-mentioned hypotheses, but it would be interesting to figure out how similarly or differently the learners of English with typologically different L1s perform in this regard.

6.2 Research Questions and Predictions

The present corpus study addresses the following research questions which allow us to formulate some predictions.

- (i) How often and how correctly do the native English speakers and the English learners with Azerbaijani, German, Kurdish Sorani, and Persian L1s use different types of English RCs in their argumentative essays?
- (ii) Does the frequency of use of different RC types in each corpus conform to the hierarchies proposed by the NPAH, the AH, and/or the PDH?
- (iii) Do syntactic properties of relative clauses in L1 or the strong L2 (which is used as actively and proficiently as L1) codetermine the usage patterns of English RCs?
- (iv) Does the content of textbooks of English employed at German and Iranian schools play a role in the formation and the patterns of use of English RCs in the argumentative essays written by German and Iranian learners of English?
- (v) Does the animacy status of the modified NPs affect the frequency of use of subject and object RCs formed by the learners of English and the native English speakers in their argumentative essay?

To answer the above-mentioned research questions, the following predictions are formulated in the present study:

Prediction 1: The frequency of RC types used in the essays written by native English speakers and learners of English with Azerbaijani, German, Kurdish Sorani, and Persian L1s is affected by: (i) the syntactic functions of the NPs relativized, and (ii) the location of the RCs in the matrix clauses.

In other words, it is predicted that the predictions of the NPAH and the PDH are borne out by the patterns of use of RC types in the corpora. If the data of this study provides support for both the NPAH and the PDH, the results will be allied to the findings of previous studies, like Izumi (2003:316-317), according to which the NPAH and the PDH are not competing hypotheses but complementary, although they are based on different motivation.

Prediction 2: The AH was proposed by Fox based on an analysis of spoken data. Since written data is used in the present study, it is predicted that the frequency of RC types used in the corpora is not affected by the type of verb in subject relatives. Therefore, the absolutive RCs (intransitive subject relatives and direct object relatives) are not more accessible to relativization than transitive subject relatives. This means that if the frequency of use of absolutive RCs in the data of this study is not higher than that of transitive subject relatives, the prediction of the Absolutive Hypothesis is not supported by the patterns of use of RC types in the corpora. The first two predictions are associated with the first 2 research questions in the current study.

Prediction 3: The properties of RCs in L1 affect the performance of the learners of English in the production and use of English RCs. If the four different L1 speaker groups behave differently from each other, the data has already shown that the first language does affect their performance in English. This prediction is allied to the third research question.

Prediction 4: The content of textbooks of English employed at German and Iranian schools plays a role in the formation and the patterns of use of English RCs in argumentative essays. It is expected that the German learners of English use more genitive and zero relatives than the Iranian learners of English because textbooks of English used in Iranian schools do not cover these RC types. Furthermore, if the performance of the German learners of English in the use of English relative markers differs significantly from that of the Iranian learners of English, it could be assumed that the variety of English, American/British, used in textbooks of English employed in Germany and Iran could account for the difference. This prediction is connected to the fourth research question in the present study.

Prediction 5: Animacy has a role in determining the distribution of RC types. If the results of this study show that SU relatives mostly occur with animate head nouns, while DO relatives occur with

inanimate head nouns, the results indicate that animacy has a role in determining the distribution of subject and object relatives. This prediction is associated with the fifth research question in the present study.

6.3 Method

Section 6.3 of this chapter depicts the design of Study I. It describes the participants and their backgrounds, and the methods of data collection and data analysis.

6.3.1 Participants

The L2 participants in Study I were 24 Azeri, 24 German, 24 Kurdish Sorani, and 24 Persian university students of English in the English language departments at universities in Northwest Iran and the University of Siegen in Germany. The participants were undergraduate students in the final year of their studies who were following a four-year program to get their bachelor's degree with a major in either English teaching or English translation. They were of both sexes and aged between 20-35 years old. It is presupposed that undergraduate students in the final year of their studies have learned most of the grammatical features of English and have been exposed to all types of RCs. Therefore, it is assumed that their performance is likely to show their knowledge of grammar in the English language and reflect their grammatical competence. All the participants were asked to fill out a learner profile (see Appendix B) which provided us with detailed information about each participant. The participants completed the information about their gender, age, nationality, native language, mother's and father's native languages, the languages spoken at home, the medium of instruction at school, and the years of studying English. They were also asked to state whether they used any reference books to write their essays. To maintain the privacy of the individuals taking part in the study, all the information provided by the learners was kept confidential and pseudonymized; that is, the names of the participants were replaced with a pseudonym, and their confidential information and contact details were only accessed by the researcher. The participants were assured that their essays would be anonymized so that the results would be treated in a way that the names never occurred anywhere in any result sheet or analysis sheet.

The native English speakers whose essays were used in this study were 24 fully native speakers of American English aged between 22-48 years old. They were undergraduates at Indiana University in Indianapolis. Their data had been collected by Louvain University, and this is the only information provided by the Louvain Centre about these native speakers (<https://uclouvain.be/en/research-institutes/ilc/cecl/locness.html>).

Conducting corpus studies at larger scales helps researchers draw stronger conclusions and make firmer generalizations. Despite being aware of the importance of large-scale studies, many studies in SLA are conducted on small scales due to the limitations imposed by time and other requirements of the research participants. Such limitation was unavoidable in the present study too.

6.3.2 The Learner Corpora

The learner corpora used in this study were 192 English argumentative essays written by 96 learners of English whose first languages are either Azerbaijani, German, Kurdish Sorani, or Persian. The essays were collected at several universities in Iran and the University of Siegen in Germany during the years 2014-2015. The learner corpora were compiled as follows: the participants of the study had to choose two out of the six topics listed below and write one essay on each topic. Each student wrote two argumentative essays of 250 words in English, meaning each student produced 500 words. Thus, the genre and the word number of the data were controlled. The total number of words in some essays was just a few words less or more than the target word number. The learner corpora of 192 argumentative essays consisted of nearly 48,000 words. The advantage of using essays as data collection sources is that the participants wrote the essays without being aware of the linguistic features that would undergo analysis afterward. Moreover, argumentative essays in essence necessitate the use of RCs to construct longer complex sentences. Table 6.1 shows the number of words in the whole corpus and each of the four subcategories of the learner corpora.

Table 6.1 *Word numbers in each of the four groups of the learner corpora*

Sub-corpus	Azerbaijani	German	Kurdish Sorani	Persian
Number of words	12000	12000	12000	12000

To not put the participants under stressful conditions, they wrote their essays at home (untimed) following the conditions that had been explained to them in advance. They were allowed to consult language reference tools (dictionaries, and grammar resources) if they needed them, but the writing had to be entirely the participants' own work. They were not allowed to ask anyone for help or draw on other books or essays. Some participants sent their essays to the researcher electronically, while others handed in handwritten essays that were later typed up by the researcher. All the spelling mistakes made by the participants were retained when typing up the text. The participants' names were replaced with pseudonyms to keep the privacy of the data.

The topics of the argumentative essays were selected from the list of topics suggested by the International Corpus of Learners of English by the Louvain Centre, except for topic six. The topics do not reflect any personal or political attitudes. The topics are:

1. The prison system is outdated. No civilized society should punish its criminals: it should rehabilitate them.
2. A man/woman's financial reward should be commensurate with their contribution to the society they live in.
3. Some people say that in our modern world, dominated by science, technology, and industrialization, there is no longer a place for dreaming and imagination. What is your opinion?
4. In his novel *Animal Farm*, George Orwell wrote "All men are equal: but some are more equal than others". How true is this today?
5. Most university degrees are theoretical and do not prepare students for the real world. They are therefore of very little value.
6. Pollution: A silent but deadly threat to humanity?

6.3.3 The Native English Corpus

While some researchers analyze only learner corpora (Flowerdew 2001; Housen 2002; Nesselhauf 2005; Granger 2009; Ädel 2015; Callies 2016), some others find it more standard to use a native speaker corpus as a control corpus as well (Granger and Tyson 1996; Hyland and Milton 1997;

Lorenz 1999; Hinkel 2001, 2002; Hewings and Hewings 2002; Bolton et al. 2003; Neff, Ballesteros, Dafouz, Martinez, and Rica 2004; Martinez 2005; Gilquin, Granger, and Paquot 2007; Fakhra 2009). Although the analysis of L2 learners' written production is a valuable contribution to language studies, the distinctive features in written texts by non-native English learners can be better identified if learner corpora are compared to a native English corpus. According to Gilquin, Granger, and Paquot (2007:322), using a native corpus as a target norm can ensure more accurate judgments on the use of specific features exclusive to learner products. Furthermore, such contrastive analyses, which apply to "a wide range of linguistic features" can establish the "patterns of overuse, underuse and misuse" of structures in the study, and help to "fill in some gaps" in the knowledge of L2 learners at "the different stages of interlanguage development."

Choosing a native corpus from the same genre as the learner corpora is very important because many features of language are genre-sensitive. Hence, to be able to make meaningful statements about differences in usage, comparable types of discourse need to be studied (Granger and Tyson 1996:18). In the present study, the researcher retrieved the native English control corpus (ICLE-US-IND-0001.1-28.1) from the website of the Louvain Centre for English Corpus Linguistics (<https://uclouvain.be/en/research-institutes/ilc/cecl/locness.html>). It consists of 28 essays with a total of 13454 words. To make the data comparable with the learner corpora, only the first 24 essays in the corpus which were written on the same topics and had the same number of words were analyzed. The reason for choosing this native English data for the analysis was its comparability to the learner corpora as it was approximately the same size as that of each learner corpus (12000 words) and was of the same genre. The topics on which the native English speakers had written their argumentative essays were:

1. Money is the root of all evil.
2. Crime does not pay.
3. A man/woman's financial reward should be commensurate with their contribution to the society in which they live.
4. Feminists have done more harm to the cause of women than good.

6.3.4 Procedure

To find answers to the questions addressed in Study I, the study was conducted in the following steps. All the steps were taken by the researcher. Firstly, the learner corpora were compiled as described in section 6.3.2, and the native English corpus was retrieved from the Louvain website (see section 6.3.3). Then, all the essays in the learner corpora and the native corpus were inspected for all occurrences of RCs. In addition, the instances of inaccurate forms of RCs that occurred in the corpora were identified. Following Izumi (2003), in counting the incidences of the incorrectly formed RCs, the errors in the use of articles and tenses, and comma splices in the RCs were ignored. Overall, 588 instances of RCs were found in the data (582 correctly formed and 6 erroneously formed RCs). The frequencies of the incidences of the target features in each corpus were classified according to the categorization system of RCs by the NPAH, PDH, AH, and the expanded model of the categorization of RCs proposed by Fox and Thompson (1990).

The target features in the data were counted manually by the researcher and were labeled without the help of tagging programs (the detailed labeling/codification of the data will be described in section 6.4). To ensure the accuracy of the counting, the researcher double-checked the frequency of the target features in the data. There were three reasons why the researcher decided not to use computerized programs to analyze the corpus. Firstly, the most important reason was that the learner corpus used in the present study was written by L2 undergraduate students whose essays are expected to have ill-formed structures. Such data can be analyzed better by a language specialist as there might be some incidences of incorrectly formed RCs, which are unlikely to be identified by programs. Secondly, tagging programs cannot always correctly distinguish reduced RCs from other present and past participle constructions. Thirdly, computerized tagging programs are mostly implemented for doing research on "large numbers of texts for large numbers of features" (Grant and Ginther 2000:143). RCs are the only linguistic features to be analyzed in the relatively small-size corpus in this study. Therefore, the corpus was analyzed manually.

Both the learner corpora and the native corpus were examined quantitatively in terms of the following parameters: (i) the occurrence of each RC type, (ii) the syntactic role of the NPs within RCs (NPrel role), (iii) the syntactic role of the NPs in matrix clauses (NPmat role), (iv) the

frequency and the type of relative markers, (v) the occurrence of full or reduced RCs, (vi) the occurrence of RCs with animate or inanimate head nouns, and (vii) the position of the RC in the matrix clause (right-embedded/center-embedded). This quantitative analysis method follows that of Keenan (1975) and Fox (1987) in their main investigations on RCs.

The results of the analysis of each parameter obtained from each learner corpus were compared to the results obtained from the other learner corpora and the native corpus. Comparing the results obtained from each learner corpus to that of the native English corpus helped to reveal the similarities and differences and discover the items overused or underused in each non-native corpus.

6.4 Results

The main purpose of Study I in this dissertation is to establish the frequencies of the use of RC types in the learner corpora and the native corpus employed in this study to:

- (i) set up the hierarchies of the frequency of use of different types of English RCs and compare the hierarchies obtained from each corpus to one another and the hierarchies proposed by the NPAH, AH, and PDH,
- (ii) suggest a new system for the categorization of all the RC types used in the data to include the RCs that cannot be properly accommodated in the previously-mentioned hypotheses,
- (iii) identify the most and least frequently used RC types in each corpus, and the most common errors in each RC type in each corpus to investigate whether the frequencies of RCs and the errors are the result of (a) natural order of acquisition of RCs, (b) L1 and/or L2 transfer, or (c) the content of textbooks of English as input providers, (a, b, and c are not mutually exclusive),
- (iv) see if there is any relation between the RC type used in the corpus and the dichotomy between animacy and non-animacy of head nouns.

6.4.1 NPAH

To investigate the possible impact of the syntactic functions of the NPs relativized on the formation and use of RCs by the learners of English with the four different L1s, the participants' accuracy scores on SU, DO, IO, OBL, GEN, and OCOMP RCs were compared. Table 6.2 presents the absolute frequency and the percentage frequency of the correct use of each RC type, modeled on the RC types in the NPAH, in the argumentative essays written by each learner group and the native English group. As the Total column in Table 6.2 indicates, the total number of RCs is not evenly distributed across the corpora. The native English speakers produced the largest number of RCs, whereas the Kurdish Sorani speakers produced the smallest number of RCs. OBL relatives are not represented in the Persian and Kurdish Sorani corpora. In each corpus, while SU and DO relatives are the most frequent RC types, IO and OCOMP relatives do not occur in the data. Figure 6.1 displays the similarities and differences in the percentage frequency of the use of RC types across the corpora employed in the present study. In terms of the use of different RC types, overall, Kurdish Sorani and Persian corpora, and Azerbaijani and English corpora appear to be quite similar. The German corpus seems to be more like the English one.

Table 6.2 *Frequency and percentage distribution of correctly used English RC types in each learner corpus and the native English corpus*

Corpus	SU	DO	IO	OBL	GEN	OCOMP	Total
Azerbaijani	79 (79%)	16 (16%)	–	3 (3%)	2 (2%)	–	100
Persian	66 (78.57%)	15 (17.85%)	–	–	3 (3.57%)	–	84
Kurdish Sorani	55 (80.88%)	11 (16.17%)	–	–	2 (2.94%)	–	68
German	114 (77.55%)	20 (13.60%)	–	13 (8.85%)	–	–	147
English	141 (77.05%)	31 (16.94%)	–	10 (5.46%)	1 (0.55%)	–	183

SU: Subject, DO: Direct object, IO: Indirect object, OBL: Oblique, GEN: Genitive, OCOMP: Object of comparison

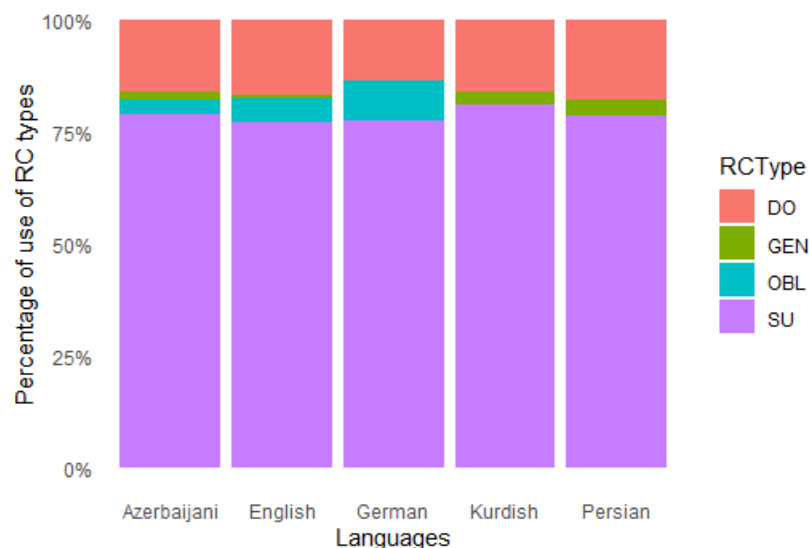


Figure 6.1 Percentage frequency of use of correctly formed subject, direct object, oblique, and genitive RCs in each corpus (Bars indicate mean accuracy scores, in percentage, on each RC type)

Table 6.3 presents the average number of RCs per language corpus and relative clause type. For each language corpus, the first row displays the mean of the frequency of use of each RC type extracted from the English essays used in the present study; that is, the sum of the absolute frequency of use of each RC type in that specific corpus divided by the total number of the participants. For example, the mean of 3.29 for SU RCs in Azerbaijani shows that, on average, any given Azerbaijani speaker produces 3.29 SU RCs. The second row for each language corpus in the table shows the standard deviation (SD).

Table 6.3 *Average number of RCs per language corpus and relative clause type*

Corpus		Subject	Direct Object	Oblique	Genitive
Azerbaijani	Mean	3.29	0.67	0.13	0.08
	SD	1.33	0.76	0.34	0.28
Persian	Mean	2.75	0.63	–	0.13
	SD	1.48	0.88	–	0.34
Kurdish Sorani	Mean	2.29	0.46	–	0.08
	SD	1.08	0.78	–	0.28
German	Mean	4.75	0.83	0.54	–
	SD	2.77	0.87	0.73	–

English	Mean	5.88	1.29	0.42	0.04
	SD	3.05	1.20	0.50	0.20

SD: Standard deviation

To estimate the probability that the differences between the means observed in the data occurred due to random variations or chance, the statistical differences were calculated. The aim was to statistically compare (i) the means of all RC types observed in each corpus to one another, and (ii) the mean of each RC type in each corpus to the same RC type in the other four corpora. Since there were more than two independent groups to compare, the researcher thought of using an ANOVA. To be able to do an ANOVA, some assumptions need to be fulfilled. One of the prerequisites for using an ANOVA is that the data has to be normally distributed and the variance needs to be constant. However, the data in the present study was not normally distributed and the assumption of homoscedasticity was not met. Furthermore, the data in the study was count data on which ANOVA cannot be done. For example, in Table 6.3, the mean of 0.67 for DO RCs in the Persian corpus shows that, on average, every Persian native speaker produces less than one DO RC, and the standard deviation of 0.88 indicates that the data can spread out to the negatives. However, in the natural world from which the data comes, zero is the lowest boundary and we cannot go into the negatives; we cannot have less than zero DO RCs. This means that there is a lower boundary of zero in the data, but ANOVA does not understand this. Thus, it was concluded that an ANOVA test cannot be used in the present study, but a non-parametric alternative test should be used instead. A non-parametric analysis does not assume anything about how the variables are distributed. The researcher first thought about doing a *Chi-square test of independence*. However, it was noticed that a Chi-square test cannot be employed in the study either, because the data violates one of the assumptions of this test, according to which, at least, 80% of the expected counts should be 5 or greater and all individual expected counts should be 1 or greater. Therefore, another non-parametric test was needed. There might be different ways to do the statistical analysis in the present study, but what the researcher did was an *Aligned Rank Transform (ART) ANOVA* using the package *ARTool* (Kay et al. 2021) in the statistical analysis software R (R Core Team 2021). Aligned Rank Transform is a non-parametric approach to factorial ANOVA that allows us to analyze both the main effects and the interaction of the variables. The ART approach is useful when the data of a study is not normally distributed or when

the homogeneity of variances assumption is violated (Feys 2016:367). Using the ART approach in the present study helps to figure out (i) how far the number of RCs, the dependent variable, depends on either the RC type or the first languages, and (ii) whether there is any interaction between the variable of RC type and the variable of the first language. The summary function in R showed that it is correct to use the ART command as all of the numbers were zero.

The results obtained from ART ANOVA showed a main effect for RC type, (F value=217.2200, $df=3$, $p<0.0001$), a main effect for the first language of the participants, (F value=28.5728, $df=4$, $p<0.0001$), and a significant interaction between RC type and first language, (F value=9.8527, $df=12$, $p<0.0001$). To identify the source of the main effects, *Tukey post hoc* comparisons using *art. con* function were conducted. Concerning the variable of RC type, post hoc comparisons showed statistically significant differences between all four types of RCs (SU, DO, OBL, and GEN). The p -values obtained for every two types of RC were less than 0.0001. The post hoc analyses that compared first languages showed that, overall, there was not a statistically significant difference in the total use of RCs between (i) the Kurdish Sorani and Persian corpora, (ii) the German and English corpora, and (iii) the Azerbaijani and Persian corpora. However, the overall use of RCs in the English and German corpora showed significant differences from the other three corpora (see Table 6.4).

Table 6.4 *Post hoc pairwise comparisons of first languages (Given values are the results of the Tukey comparisons)*

Corpus	Azerbaijani	Persian	Kurdish Sorani	German	English
Azerbaijani	-	0.30	0.00	0.02	0.00
Persian	0.30	-	0.08	0.00	0.00
Kurdish Sorani	0.00	0.08	-	0.00	0.00
German	0.02	0.00	0.00	-	0.30
English	0.00	0.00	0.00	0.30	-

Note: The significance level is 0.05

In addition to the post hoc analyses that compared the mean ranks of the total use of all RC types across different L1s, Tukey post hoc comparisons were done to separately analyze the variable of RC type in each corpus (see Table 6.5). The results showed that SU relatives, in all the corpora, had significantly higher mean ranks of use than DO, OBL, and GEN relatives. In the Azerbaijani and English corpora, DO relatives had significantly higher mean ranks of use than OBL and GEN relatives. In the Persian corpus, the mean rank of use of DO relatives was statistically higher than that of OBL relatives. In the Kurdish corpus, no significant difference was noticed between the mean ranks of use of DO and OBL relatives; moreover, no significant difference was observed between the mean ranks of use of DO and GEN relatives. In the German corpus, no significant difference was noticed between the mean ranks of use of DO and OBL relatives. In none of the corpora, except the German corpus, significant differences were noticed between the mean ranks of use of OBL and GEN relatives (see Table 6.5).

Table 6.5 *Post hoc pairwise comparisons of the mean ranks of use of RC types in each corpus (Given values are the results of the Tukey comparisons)*

Corpus	RC type	SU	DO	OBL	GEN
Azerbaijani	SU	-	0.00	0.00	0.00
	DO	0.00	-	0.02	0.00
	OBL	0.00	0.02	-	1.00
	GEN	0.00	0.00	1.00	-
Persian	SU	-	0.00	0.00	0.00
	DO	0.00	-	0.01	0.26
	OBL	0.00	0.01	-	0.99
	GEN	0.00	0.26	0.99	-
Kurdish Sorani	SU	-	0.00	0.00	0.00
	DO	0.00	-	0.14	0.58
	OBL	0.00	0.14	-	0.99
	GEN	0.00	0.58	0.99	-
German	SU	-	0.00	0.00	0.00
	DO	0.00	-	0.96	0.00
	OBL	0.00	0.96	-	0.01
	GEN	0.00	0.00	0.01	-
English	SU	-	0.00	0.00	0.00
	DO	0.00	-	0.01	0.00
	OBL	0.00	0.01	-	0.13
	GEN	0.00	0.00	0.13	-

Note: The significance level is 0.05

As Table 6.6 presents, concerning the interaction between the variable of RC type and the variable of first language, post hoc comparisons showed no significant difference in the mean ranks of use of SU relatives across the corpora. Concerning the mean ranks of use of DO relatives, significant differences were noticed just between the Kurdish Sorani and English corpora; however, it should be noted that the difference in the mean ranks of use of DO relatives between the Persian and English corpora closely approached the statistical significance level ($p=0.09$). Concerning OBL relatives, significant differences were observed in the mean ranks of use of OBL relatives between the German and Persian corpora, and the German and Kurdish Sorani corpora. The differences in the mean ranks of OBL relatives between the English and Persian corpora, and the English and Kurdish Sorani corpora were just above the statistical significance level ($p=0.059$). Finally, the results did not show any significant differences in the mean ranks of use of GEN relatives across the corpora.

Table 6.6 *Post hoc pairwise comparisons of the mean ranks of use of each RC type across different corpora (Given values are the results of the Tukey comparisons)*

Corpus		SU	DO	OBL	GEN
Azerbaijani	English	0.99	0.54	0.61	1.00
	German	1.00	0.99	0.32	0.99
	Kurdish	0.96	0.98	0.99	1.00
	Persian	0.99	0.99	0.99	1.00
Persian	English	0.34	0.09	0.059	0.99
	German	0.86	0.97	0.01	0.99
	Kurdish	1.00	0.99	1.00	1.00
	Azerbaijani	0.99	0.99	0.99	1.00
Kurdish Sorani	English	0.11	0.00	0.059	1.00
	German	0.53	0.58	0.01	0.99
	Persian	1.00	0.99	1.00	1.00
	Azerbaijani	0.96	0.98	0.99	1.00
German	English	1.00	0.98	1.00	1.00
	Kurdish	0.53	0.58	0.01	0.99
	Persian	0.86	0.97	0.01	0.99
	Azerbaijani	1.00	0.99	0.32	0.99
English	German	1.00	0.98	1.00	1.00
	Kurdish	0.11	0.00	0.059	1.00
	Persian	0.34	0.09	0.059	0.99
	Azerbaijani	0.99	0.54	0.61	1.00

Note: The significance level is 0.05

6.4.2 Incorrectly Formed RCs

In addition to the analysis of the correctly formed RCs in the corpora, the erroneously formed RCs in each corpus were inspected. The number and type of RCs that are not correctly formed in the argumentative essays written by each learner group and the native English group are shown, respectively, in Table 6.7 and Table 6.8. As Table 6.7 presents, only six sentences contained erroneously formed RCs in the data. The erroneously formed RCs in the Kurdish Sorani and Persian corpora occurred in DO relatives, and the only error in the German corpus was related to the wrong use of relative pronouns.

Table 6.7 *Frequency distribution of incorrectly formed English RCs in each corpus*

Language	SU	DO	IO	OBL	GEN	OCOMP	Total
Azerbaijani	–	–	–	–	–	–	–
Persian	–	2	–	–	–	–	2
Kurdish Sorani	–	3	–	–	–	–	3
German	1	–	–	–	–	–	1
English	–	–	–	–	–	–	–

SU: subject, DO: Direct object, IO: Indirect object, OBL: Oblique, GEN: Genitive, OCOMP: Object of comparison

Table 6.8 *Incorrectly formed RCs extracted from the Kurdish Sorani, Persian, and German Corpora*

Corpora	Incorrectly formed RCs in the data
Kurdish Sorani	*Prison is <i>a place</i> [that humans have made it] because he knew about his own evil nature.
	* <i>Everywhere</i> [that we take a look at it] draws the attention of the viewer and prove that we are surrounded by unique things.
	*So, air and water is polluted and the waste on the earth produces <i>different poisonous gases</i> [that people breathe them].
Persian	*For example, physics illustrates <i>the gravity laws</i> [that Isaac Newton found them in a span of time].

	*That is a shame that <i>the activities</i> [that we daily do them] make the world dirty.
German	*If you take the rain forest [who cannot cope with the pollution anymore] or other resources what will happen is that we consume and damage all the resources.

6.4.3 AH

As mentioned in chapter 5, according to Fox’s Absolute Hypothesis, absolute relatives (intransitive subject relatives and direct object relatives) are more accessible to relativization than transitive subject RCs. Fox’s analysis was conducted on spoken data and Fox clearly stated that there is a difference between written and spoken data. To test the Absolute Hypothesis and to examine whether Fox’s claim applies to written data as well, the present study followed her classification and classified SU relatives into two types: transitive subject relatives (TSU) and intransitive subject relatives (ISU). Table 6.9 below demonstrates the number and percentage of use of transitive and intransitive SU relatives and DO relatives in the argumentative essays in each learner corpus and the native English corpus. As Table 6.9 presents, in all the corpora, ISU and TSU subject relatives have higher percentage frequencies than DO relatives.

Figure 6.2 shows the similarities and differences in the percentage frequency of the use of ISU, TSU, and DO relatives across the corpora used in the present study. In terms of the use of ISU, TSU, and DO relatives, overall, the Azerbaijani, Kurdish Sorani, and Persian corpora appear to be more similar to one another. The German corpus is more similar to the English corpus. The difference in the percentage frequency of ISU and TSU subject relatives in the German and English corpora is higher than that in the other three corpora.

Table 6.9 *Frequency and percentage distribution of intransitive and transitive SU relatives and DO relatives in each corpus*

Language	ISU	TSU	DO	Total
Azerbaijani	40 (43.47%)	36 (39.13%)	16 (17.40%)	92
Persian	34 (41.97%)	32 (39.50%)	15 (18.51%)	81

Kurdish Sorani	29 (43.93%)	26 (39.39%)	11 (16.66%)	66
German	43 (32.09%)	71 (52.99%)	20 (14.92%)	134
English	50 (29.06%)	91 (52.90%)	31 (18.02%)	172

ISU: Intransitive subject, TSU: Transitive subject, DO: Direct object

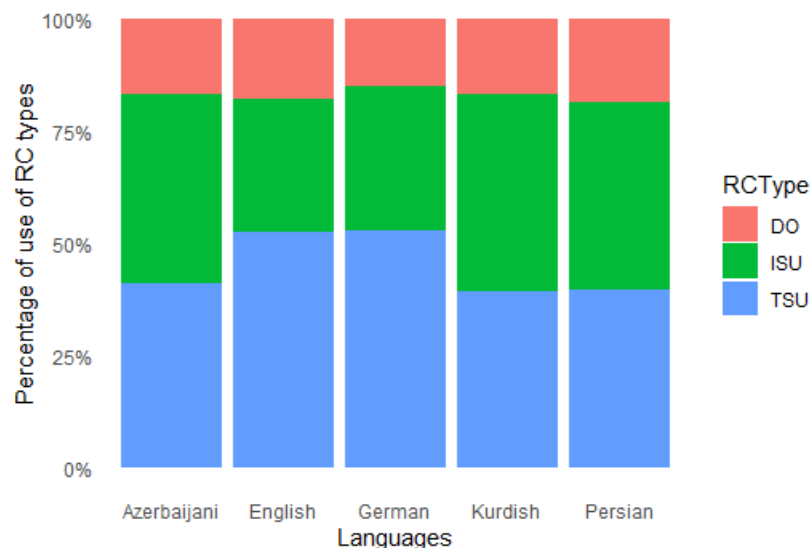


Figure 6.2 Percentage frequency of use of intransitive subject, transitive subject, and direct object relatives in each corpus (Bars indicate mean accuracy scores, in percentage, on ISU, TSU, and DO relatives) ISU: Intransitive subject, TSU: Transitive subject, DO: Direct object

Table 6.10 presents the average number of ISU, TSU, and DO relatives per language corpus and relative clause type. For each language corpus, the first row displays the mean of the frequency of use of each RC type extracted from the essays used in the study; that is, the sum of the absolute frequency of use of each RC type in that specific corpus divided by the total number of the participants. For example, the mean of 1.67 for ISU relatives in the Azerbaijani corpus shows that, on average, any given Azerbaijani speaker produces 1.67 ISU relatives. The second row for each language corpus in the table shows the standard deviation.

Table 6.10 Average number of ISU, TSU, and DO relatives per language corpus

Corpus		ISU	TSU	DO
Azerbaijani	Mean	1.67	1.63	0.67
	SD	0.92	1.13	0.76
Persian	Mean	1.42	1.33	0.63
	SD	1.28	0.87	0.88
Kurdish Sorani	Mean	1.21	1.08	0.46
	SD	1.28	0.83	0.78
German	Mean	1.79	2.96	0.83
	SD	1.56	1.78	0.87
English	Mean	2.13	3.79	1.29
	SD	1.19	2.64	1.20

SD: Standard deviation, ISU: Intransitive subject, TSU: Transitive subject, DO: Direct object

Like in the analysis in section 6.4.1, the ANOVA assumptions were not met in this analysis. Thus, the non-parametric *Aligned Rank Transform (ART) ANOVA* using the package *ARTool* (Kay et al. 2021) in the statistical analysis software R (R Core Team 2021) was used. The results of an ART ANOVA showed a main effect for RC type, (F value=45.6434, $df=2$, $p<0.0001$), a main effect for the first language of the participants, (F value=15.3583, $df=4$, $p<0.0001$), and a significant interaction between the two, (F value= 3.1033, $df=8$, $p=0.0024$).

To identify the source of the main effects, Tukey post hoc comparisons using *art. con* function were conducted. Concerning the total use of ISU, TSU, and DO relatives, the post hoc analyses showed no statistically significant differences between the Azerbaijani, Kurdish Sorani, and Persian corpora. In contrast, they all showed significant differences from the German and English corpora in terms of the total use of ISU, TSU, and DO relatives. No statistically significant difference was noticed in the total use of these three types of RCs between the German and English corpora (see Table 6.11).

Table 6.11 *Post hoc pairwise comparisons of first languages in terms of the overall use of ISU, TSU, and DO relatives (Given values are the results of the Tukey comparisons)*

Corpus	Azerbaijani	Persian	Kurdish Sorani	German	English
Azerbaijani	-	0.93	0.22	0.02	0.00
Persian	0.93	-	0.67	0.00	0.00
Kurdish Sorani	0.22	0.67	-	0.00	0.00
German	0.02	0.00	0.00	-	0.53
English	0.00	0.00	0.00	0.53	-

Note: The significance level is 0.05

In addition to the post hoc analyses that compared the mean ranks of the total use of all three RC types across different L1s, Tukey post hoc comparisons were conducted to separately analyze the use of each RC type in each corpus. As Table 6.12 shows, in none of the corpora, significant differences were noticed between the mean ranks of use of ISU and TSU relatives. Only in the German and English corpora, significant differences between the mean ranks of use of TSU and DO relatives were observed. In the Azerbaijani corpus, the mean ranks of use of TSU and DO relatives showed no significant difference, while those of DO and ISU were significantly different. Overall, the data in none of the corpora supported the Absolute Hypothesis.

Table 6.12 *Post hoc pairwise comparisons of the mean ranks of use of ISU, TSU, and DO relatives in each corpus*

Corpus	RC type	ISU	TSU	DO
Azerbaijani	ISU	-	1.00	0.02
	TSU	1.00	-	0.07
	DO	0.02	0.07	-
Persian	ISU	-	1.00	0.36
	TSU	1.00	-	0.26
	DO	0.36	0.26	-
Kurdish Sorani	ISU	-	1.00	0.42
	TSU	1.00	-	0.40
	DO	0.42	0.40	-
German	ISU	-	0.36	0.30
	TSU	0.36	-	0.00

	DO	0.30	0.00	-
English	ISU	-	0.94	0.31
	TSU	0.94	-	0.00
	DO	0.31	0.00	-

Note: The significance level is 0.05

Concerning the interaction between the variable of RC type and the variable of first language (see Table 6.13), post hoc comparisons showed significant differences in the use of TSU relatives only between (i) the Persian and English corpora, and (ii) the Kurdish corpus, and the English and German corpora.

Table 6.13 *Post hoc pairwise comparisons of the mean ranks of use of ISU, TSU, and DO relatives across different corpora*

Corpus		ISU	TSU	DO
Azerbaijani	English	0.99	0.13	0.77
	German	1	0.37	0.99
	Kurdish	0.77	0.95	0.99
	Persian	0.99	0.99	1
Persian	English	0.58	0.01	0.62
	German	0.99	0.07	0.84
	Kurdish	0.99	0.99	0.99
	Azerbaijani	0.99	0.99	1
Kurdish Sorani	English	0.12	0.00	0.17
	German	0.93	0.00	0.97
	Persian	0.99	0.99	0.99
	Azerbaijani	0.77	0.95	0.99
German	English	0.98	1	0.98
	Kurdish	0.93	0.00	0.97
	Persian	0.99	0.07	0.84
	Azerbaijani	1	0.37	0.99
English	German	0.98	1	0.98
	Kurdish	0.12	0.00	0.17
	Persian	0.58	0.01	0.62
	Azerbaijani	0.99	0.13	0.77

Note: The significance level is 0.05

Since TSU relatives with passive predicates occurred in the data in the present study, this type of RC was also marked in a separate table. Table 6.14 demonstrates the number and the percentage of use of transitive SU relatives with active and passive predicates in each corpus. As Table 6.14 shows, the percentage frequency of passive transitive subject relatives in the German corpus is quite similar to that in the English corpus, but different from the other corpora. The frequencies of passive TSU relatives in the German and English corpora are higher than those in the other three corpora. Figure 6.3 shows the similarities and differences in the percentage frequency of the use of TSU relatives with active and passive predicates across the corpora used in the present study. The figure displays that the percentage frequencies of passive TSU relatives in the Azerbaijani, Persian, and Kurdish corpora are lower than the percentage frequencies of active TSU relatives.

Table 6.14 *Frequency and percentage distribution of transitive SU relatives with active and passive predicates in each corpus*

Language	TSU relatives		Total
	Active	Passive	
Azerbaijani	36 (36%)	3 (3%)	39
Persian	26 (30.95%)	6 (7.14%)	32
Kurdish Sorani	25 (36.76%)	1 (1.47%)	26
German	49 (33.34%)	22 (14.96%)	71
English	61 (33.34%)	30 (16.40%)	91

TSU: Transitive subject

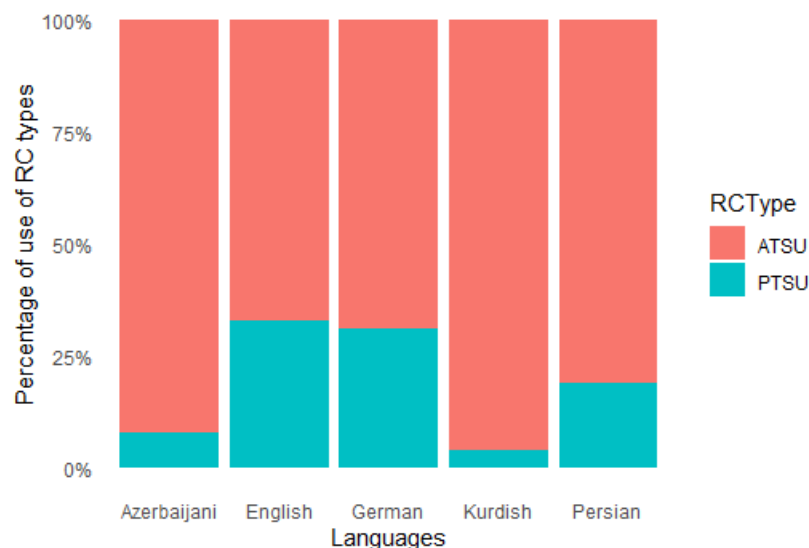


Figure 6.3 Percentage frequency of use of transitive subject relatives with active and passive predicates in each corpus (Bars indicate mean accuracy scores, in percentage)
 ATSU: Active transitive subject, PTSU: Passive transitive subject

Table 6.15 presents the average number of RCs per language corpus and TSU type. For each corpus, the first row displays the mean of the frequency of use of each TSU type extracted from the data, and the second row shows the standard deviation.

Table 6.15 Average number of active and passive TSU relatives per language corpus

Corpus		TSU		DO
		Active	Passive	
Azerbaijani	Mean	1.50	0.13	0.67
	SD	1.06	0.34	0.76
Persian	Mean	1.08	0.25	0.63
	SD	0.72	0.53	0.88
Kurdish Sorani	Mean	1.04	0.04	0.46
	SD	0.81	0.20	0.78
German	Mean	2.04	0.92	0.83
	SD	1.63	0.78	0.87
English	Mean	2.54	1.25	1.29
	SD	2.11	1.39	1.20

SD: Standard deviation, TSU: Transitive subject, DO: Direct object

Since the ANOVA assumptions were not met, the non-parametric ART ANOVA using the package ARTool (Kay et al. 2021) in the statistical analysis software R (R Core Team 2021) was used. The (*ART*) ANOVA showed a main effect for RC type, (F value=89.9329, $df=1$, $p<0.0001$), a main effect for the first language of the participants, (F value=12.3037, $df=4$, $p<0.0001$), and no significant interaction between the two, (F value= 1.3249, $df=4$, $p=0.2648$). Furthermore, Tukey post hoc comparisons were conducted to compare the mean ranks of use of each two RC types in each corpus. As Table 6.16 shows, in none of the corpora, significant differences were noticed between the mean ranks of use of passive and active TSU relatives, and DO relatives. While significant differences in the use of passive and active TSU relatives were observed in the Azerbaijani, Kurdish, and Persian corpora, these RCs displayed meaningful differences neither in the German nor in the English corpora.

Table 6.16 *Post hoc pairwise comparisons of the mean ranks of use of active and passive TSU relatives and DO relatives in each corpus (Given values are the results of the Tukey comparisons)*

Corpus	RC type	TSU-Passive	TSU-Active	DO
Azerbaijani	TSU-Passive	-	0.00	0.36
	TSU-Active	0.00	-	0.12
	DO	0.36	0.12	-
Persian	TSU-Passive	-	0.00	0.95
	TSU-Active	0.00	--	0.50
	DO	0.95	0.50	-
Kurdish Sorani	TSU-Passive	-	0.00	0.82
	TSU-Active	0.00	-	0.23
	DO	0.82	0.23	-
German	TSU-Passive	-	0.34	0.99
	TSU-Active	0.34	-	0.10
	DO	0.99	0.10	-
English	TSU-Passive	-	0.14	0.99
	TSU-Active	0.14	-	0.44
	DO	0.99	0.44	-

TSU: Transitive subject, ISU: Intransitive subject, DO: Direct object

Concerning the interaction between the variable of RC type and the variable of first language (see Table 6.17), post hoc comparisons showed significant differences only in the use of passive TSU relatives between (i) the English corpus, and the Azerbaijani, Persian, and Kurdish corpora, and (ii) the German corpus, and the Azerbaijani and Kurdish corpora.

Table 6.17 *Post hoc pairwise comparisons of the mean ranks of use of active and passive TSU relatives and DO relatives across different corpora*

Corpus		TSU- Passive	TSU- Active	DO
Azerbaijani	English	0.00	0.98	0.75
	German	0.01	0.99	0.99
	Kurdish	1.00	0.98	0.99
	Persian	0.99	0.99	0.99
Persian	English	0.03	0.40	0.46
	German	0.09	0.88	0.99
	Kurdish	0.99	1.00	0.99
	Azerbaijani	0.99	0.99	0.99
Kurdish Sorani	English	0.00	0.22	0.09
	German	0.00	0.72	0.90
	Persian	0.99	0.99	0.99
	Azerbaijani	1.00	0.98	0.99
German	English	1.00	0.99	0.98
	Kurdish	0.00	0.72	0.90
	Persian	0.09	0.88	0.99
	Azerbaijani	0.01	0.99	0.99
English	German	1.00	0.99	0.98
	Kurdish	0.00	0.22	0.09
	Persian	0.03	0.40	0.46
	Azerbaijani	0.00	0.98	0.75

TSU: Transitive subject, ISU: Intransitive subject, DO: Direct object

6.4.4 PDH

The information provided in section 6.4.1 was documented according to the NPAH, in which only the grammatical functions of the head nouns within the RCs were considered and no attention was given to Kuno's PDH, in which the position of the RCs in the matrix clauses (whether is center or right embedded) is taken into consideration. To test the PDH and to explore the frequency of use of center-embedded and right-embedded RCs in the corpora, the occurrence of each type was identified in each corpus (see Table 6.18). As the table shows, the percentage of use of right-embedded RCs was higher than that of center-embedded ones in the whole data in the present study. The (*ART*) ANOVA showed a main effect for RC type, (F value=145.152, df =1, p <0.0001), a main effect for the first language of the participants, (F value=15.552, df =4, p <0.0001), and a significant interaction between the two, (F value= 10.628, df =4, p <0.0001). The results obtained from an ART ANOVA confirmed the existence of statistical differences between right-embedded and center-embedded RCs in the Kurdish Sorani, German, and English corpora. In the Azerbaijani and Persian corpora, the statistical differences were just above the statistical significance level (see the last column of Table 6.18). Figure 6.4 also displays that the percentage frequencies of right-embedded RCs in all the corpora were higher than the percentage frequencies of center-embedded RCs.

Table 6.18 *Frequency and percentage distribution of center-embedded and right-embedded RCs in each corpus (Given values in the last column are the results obtained from the post hoc Tukey comparisons of center-embedded and right-embedded RCs in each corpus)*

Corpus	Center-embedded	Right-embedded	Total	P-value
Azerbaijani	39 (39%)	61 (61%)	100	0.056
Persian	30 (35.71%)	54 (64.28%)	84	0.055
Kurdish	15 (22.05%)	53 (77.94%)	68	0.00
German	31 (21.09%)	116 (78.91%)	147	0.00
English	54 (29.50%)	129 (70.50%)	183	0.00

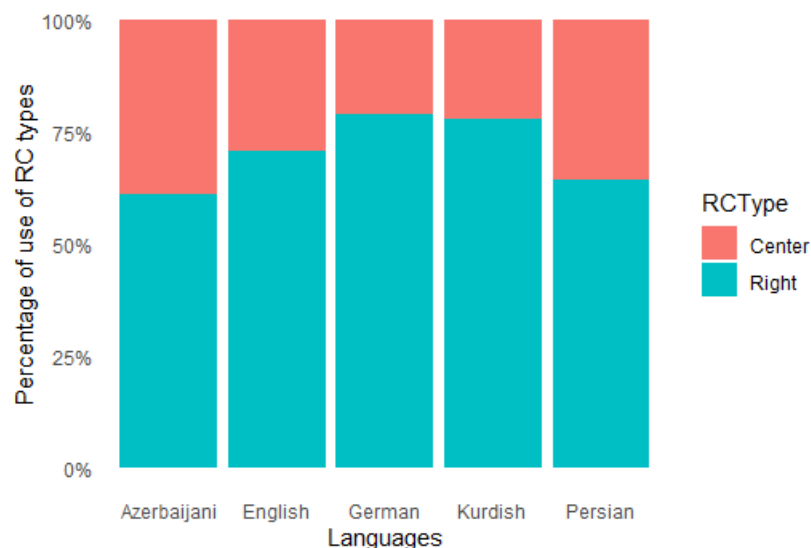


Figure 6.4 Percentage frequency of use of right-embedded and center-embedded relatives (Bars indicate mean accuracy scores, in percentage)

The results demonstrated that the RCs whose head nouns are in non-subject matrix positions (right-embedded RCs) outnumbered the RCs whose head nouns are in subject matrix positions (center-embedded RCs). Thus, the results of the present study support Kuno’s hypothesis and match the prediction made by the PDH, which assumes that center-embedded RCs are more difficult to access than right-embedded RCs.

The post hoc analyses that compared first languages in terms of the center-embedded and right-embedded RCs showed significant differences in the use of (i) right-embedded RCs between the English corpus, and the Azerbaijani, Persian, and Kurdish corpora, (ii) right-embedded RCs between the German corpus, and the Persian and Kurdish corpora, and (iii) center-embedded RCs between the English corpus, and the Kurdish corpus (see Table 6.19).

Table 6.19 *Post hoc pairwise comparisons of the mean ranks of use of center-embedded and right-embedded RCs across different corpora*

Corpus		Center-embedded	Right-embedded
Azerbaijani	English	0.81	0.03
	German	0.98	0.07
	Kurdish	0.06	0.99

	Persian	0.98	0.98
Persian	English	0.15	0.00
	German	1.00	0.00
	Kurdish	0.60	1.00
	Azerbaijani	0.98	0.98
Kurdish Sorani	English	0.00	0.00
	German	0.63	0.00
	Persian	0.60	1.00
	Azerbaijani	0.06	0.99
German	English	0.14	0.99
	Kurdish	0.63	0.00
	Persian	1.00	0.00
	Azerbaijani	0.98	0.07
English	German	0.14	0.99
	Kurdish	0.00	0.00
	Persian	0.15	0.00
	Azerbaijani	0.81	0.03

6.4.5 Additional Analysis of the Data

The main focus of the corpus study in this dissertation is on the analysis of the data compared to the hypotheses proposed on RC acquisition. Following these hypotheses, the study focused on the natural acquisition order of RCs, the difference between absolute RCs and transitive subject RCs, and the difference between right-embedded and center-embedded RCs. However, what has been completely ignored in this analysis so far is the use of RC markers and the impact of the animacy of the modified NPs on the use of RC types. Little attention has been given to these two points in L2 contexts. Therefore, it would be informative to devote a section to this and take one of the first steps to fill the gap in the relevant literature. This analysis is completely distinct from the hypotheses on RC acquisition but might provide interesting results. This section, additional analysis of the data, will first look at the marking of RCs and then at the effect of the animacy of the NPs on the use of RC types.

6.4.5.1 Marking of RCs

This section is devoted to measuring and comparing the frequency of use of the English relative markers, zero RCs, and reduced RCs (present participle and past participle RCs) by different L1 learners of English. All relative markers from the learner corpora and the native English corpus were identified and their frequencies were counted. Reduced and zero RCs were also extracted from the data. Table 6.20 shows the frequency and percentage distribution of the correctly used relative markers and reduced RCs in each corpus.

Table 6.20 *Frequency and percentage distribution of relative markers and reduced RCs in each corpus*

Languages	Who	Whom	Which	That	Whose	Zero	Present part.	Past part.
Azerbaijani	28 (28%)	2 (2%)	9 (9%)	52 (52%)	2 (2%)	2 (2%)	4 (4%)	1 (1%)
Persian	20 (23.80%)	-	10 (11.90%)	44 (52.38%)	3 (3.57%)	2 (2.38%)	3 (3.57%)	2 (2.38%)
Kurdish Sorani	23 (33.82%)	-	5 (7.35%)	34 (50%)	2 (2.94%)	2 (2.94%)	2 (2.94%)	-
German	25 (17.00%)	1 (0.68%)	57 (38.78%)	31 (21.09%)	-	17 (11.56%)	9 (6.12%)	7 (4.76%)
English	49 (26.78%)	1 (0.54)	17 (9.29%)	71 (38.80%)	1 (0.54%)	10 (5.46%)	13 (7.10%)	21 (11.47%)

Part.: Participle

The results obtained from the analysis of the relative markers and the reduced RCs disclosed interesting findings about the German corpus. Firstly, the German corpus showed significant differences from all the other corpora in terms of use of *which*. Secondly, the use of (i) RCs with zero markers, and (ii) past participle reduced RCs in the German corpus was significantly different from that in the Azerbaijani, Kurdish Sorani, and Persian corpora, but comparable to the English corpus. Figure 6.5 displays the similarities and differences in the percentage frequency of the use of different relative markers and reduced RCs across the corpora. The figure shows that the German corpus is notably different from all the other corpora in terms of the frequency of use of *which* and *that*.

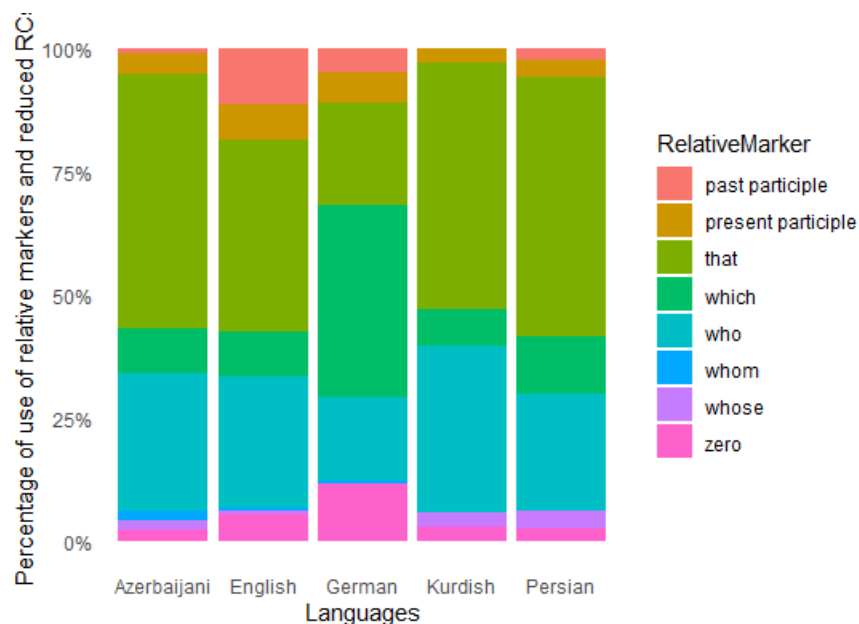


Figure 6.5 Percentage frequency of use of different relative markers and reduced RCs (Bars indicate mean accuracy scores, in percentage)

As Table 6.20 shows, the frequency of use of *which* in the German corpus is higher than that in the Azerbaijani, Persian, Kurdish, and English corpora. An ART ANOVA test using the package ARTool (Kay et al. 2021) in software R (R Core Team 2021), and Tukey post hoc comparisons using *art. con* function were conducted. The (*ART*) ANOVA showed a main effect for relative markers, (F value=124.1702, $df=6$, $p<0.0001$), a main effect for the first language of the participants, (F value=31.6501, $df=4$, $p<0.0001$), and a significant interaction between the two, (F value= 7.4489, $df=24$, $p<0.0001$). The results obtained confirmed that the mean ranks of use of *which* in the German corpus were statistically different from the other corpora employed in this study. No significant difference was noticed between the native English corpus and the Azerbaijani, Persian, and Kurdish corpora in terms of the frequency of use of *which*. In addition, in all corpora except the German corpus, *that* was the predominant relative marker. Tukey post hoc pairwise comparison of *that-which* showed statistically significant differences between the use of *which* and *that* in each corpus except in the German corpus. It should be noted that pairwise comparisons of the frequency of use of *that* between each pair of corpora in the data showed no significant differences.

6.4.5.2 Animacy Status of the Modified Noun Phrases

In addition to the analysis of the use of RC markers, this study aimed to examine whether there is any relation between the RC types used in the data and the animacy status of the modified NPs by the RCs. Table 6.21 presents the distribution of all the RC types with animate and inanimate NPs in each corpus. Furthermore, Table 6.22 displays the distribution of each RC type with animate NPs in each corpus used in the study. The results showed that SU relatives had the highest frequency of use of animate NPs in all the corpora compared to the other RC types. An ART ANOVA test using the package ARTool (Kay et al. 2021) in software R (R Core Team 2021) was conducted. The (*ART*) ANOVA showed a main effect for RC type, (F value=180.985, $df=7$, $p<0.0001$), a main effect for the first language of the participants, (F value=64.721, $df=4$, $p<0.0001$), and a significant interaction between the two, (F value=10.490, $df=28$, $p<0.0001$). Tukey post hoc comparisons using *art. con* function revealed that the mean ranks of use of subject relatives with animate and those of inanimate NPs were statistically different in the German and Persian corpora; however, no significant difference between subject relatives with animate and inanimate NPs was noticed in the other corpora. Regarding DO relatives, significant differences between the RCs with animate and inanimate NPs were observed in the Azerbaijani, German, and English corpora. The difference between DO relatives with animate and inanimate NPs was marginally significant ($p=0.08$) in the Persian corpus, and in the Kurdish corpus, no meaningful difference was noticed.

Table 6.21 *Frequency and percentage distribution of all RC types with animate and inanimate head nouns in each corpus*

Languages	Inanimate head nouns	Animate head nouns
Azerbaijani	64 (64%)	36 (36%)
Persian	58 (69.04%)	26 (30.95%)
Kurdish Sorani	42 (61.76%)	26 (38.23%)
German	115 (78.23%)	32 (21.77%)
English	106 (57.92%)	77 (42.07%)

Table 6.22 *Frequency and percentage distribution of each RC type with animate and inanimate head nouns in each corpus*

Languages	Subject		Direct Object		Oblique		Genitive	
	Animate	In animate	Animate	In animate	Animate	In animate	Animate	In animate
Azerbaijani	32 (32%)	47 (47%)	–	16 (16%)	2 (2%)	1 (1%)	2 (2%)	–
Persian	22 (26.19%)	44 (52.38%)	1 (1.19%)	14 (16.67%)	–	–	3 (3.57%)	–
Kurdish Sorani	24 (35.29%)	31 (45.58%)	–	11 (16.17%)	–	–	2 (2.94%)	–
German	31 (21.09%)	83 (56.46%)	–	20 (13.60%)	1 (0.68%)	12 (8.16%)	–	–
English	73 (39.90%)	68 (37.15%)	2 (1.09%)	29 (15.84%)	1 (0.54%)	9 (4.92%)	1 (0.54%)	–

Figure 6.6 displays the similarities and differences in the percentage frequency of the use of different RCs with animate and inanimate head nouns across the corpora. The figure shows that only in the English corpus, the frequency of subject relatives with animate NPs is higher than subject relatives with inanimate NPs. The frequency of subject relatives with inanimate NPs in the German corpus is higher than the same RC type in all the other corpora.

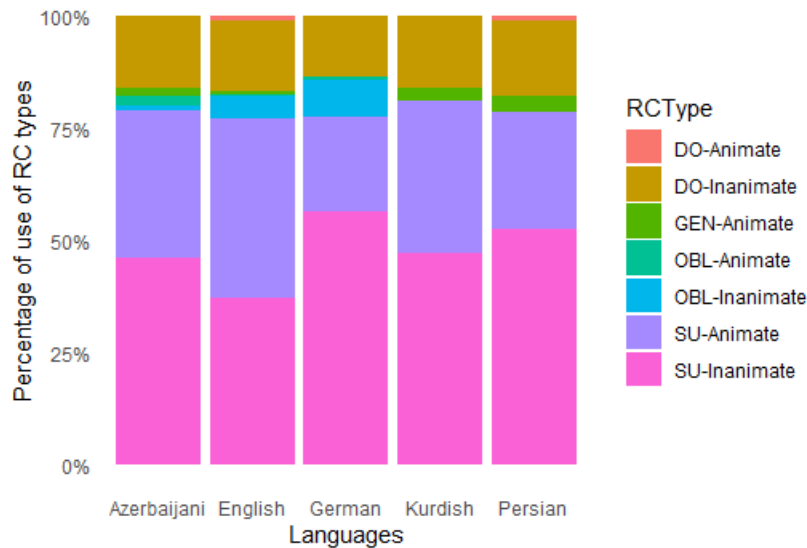


Figure 6.6 Percentage frequency of use of RC types with animate and inanimate head nouns in each corpus (Bars indicate mean accuracy scores, in percentage, on each RC type)

The pairwise comparisons showed significant differences in (i) the use of OBL inanimate RCs between the German corpus, and the Kurdish and Persian corpora, (ii) the use of DO inanimate RCs between the English corpus and the Kurdish corpus, and (iii) the use of SU animate RCs between the English corpus and the Persian corpus.

6.4.6 Summary of the Results

Table 6.23 summarizes the aggregate results obtained from the analyses of NPrel roles, Passive TSU relatives, AH, PDH, and the animacy status of the NPs, and compares them across the corpora used in this study. Each empty cell in the table indicates that there is no statistical difference between each pair of corpora in that specific cell, while the symbol *X* indicates a significant difference between each pair of corpora.

Table 6.23 *Comparison of the aggregate results obtained from the analyses of the NPrel roles, passive TSU relatives, AH, PDH, and the animacy status of the NPs across corpora*

Corpus		NPrel roles	AH	Passive TSU	PHD		Animacy of the NP
					Center-embedded	Right-embedded	
Azerbaijani	English			X		X	
	German			X			
	Kurdish						
	Persian						
Persian	English		X (TSU)	X		X	X (SU)
	German	X (OBL)				X	X (OBL)
	Kurdish						
	Azerbaijani						
Kurdish Sorani	English	X (DO)	X (TSU)	X	X	X	X (DO)
	German	X (OBL)	X (TSU)	X		X	X (OBL)
	Persian						
	Azerbaijani						
German	English						
	Kurdish	X (OBL)	X (TSU)	X		X	X (OBL)
	Persian	X (OBL)				X	X (OBL)
	Azerbaijani			X			
English	German						
	Kurdish	X (DO)	X (TSU)	X	X	X	X (DO)
	Persian		X (TSU)	X		X	X (SU)

	Azerbaijani			X		X	
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Note: Empty cells indicate that there is no statistical difference between each pair of corpora in that specific cell, while the symbol *X* indicates a significant difference between each pair of corpora.

As the summary of the results in Table 6.23 shows, the German-speaking participants of the study do not show any significant differences from the native English speakers. The Azerbaijani-speaking participants are the second group who performed very similarly to the native English speakers. Kurdish Sorani- and Persian-speaking participants performed differently from the native English speakers.

6.5 Discussion

6.5.1 NPAH

According to Keenan and Comrie's NPAH, the noun phrase in the subject position is the position most accessible to relativization, which is followed by the DO position and the other syntactic functions in the following order: SU > DO > IO > OBL > GEN > OCOMP (> = more accessible than). To investigate whether the results of the present study support the predictions of the NPAH, the RCs extracted from the data were modeled on the RC types in the NPAH. Identifying how frequently and how accurately each RC type was used in each corpus enables us to arrive at an order of accuracy of use of different RC types for each L1 group. Therefore, RCs extracted from each corpus were ranked according to the rate of their correct use in each corpus.

Concerning the occurrence of RC types used in the data, in the four learner corpora, similar to the native English corpus, the rate of use of subject relatives was considerably higher than the rate of use of other RC types. The high frequency of SU relatives in the data, which was statistically confirmed in all the corpora, matches the first prediction of the NPAH, which claims that the subject relative is the most accessible position to relativization and that all languages can relativize subjects.

As Table 6.2 presented, the second most frequent RC type in all the corpora in this investigation was DO relative. Consistent with the NPAH, the mean ranks of use of DO relatives were significantly higher than the mean ranks of use of OBL relatives in the Azerbaijani, Persian,

and English corpora. However, in the Kurdish and German corpora, no significant difference was noticed between the mean ranks of use of DO and OBL relatives (see Table 6.5). Excluding the German corpus, in none of the corpora, a significant difference was noticed between OBL relatives and GEN relatives. As the statistical results obtained from the comparison of the mean ranks of the RC types in each corpus in the present study showed, the results are partially consistent with the NPAH. The accessibility hierarchy proposed by the NPAH, from the highest to the lowest level of accessibility, is: $SU > DO > IO > OBL > GEN > OCOMP$, and the hierarchies formed based on the statistical analysis of each corpus in the present study are as follows:

In the Azerbaijani corpus: $SU > DO > OBL \approx GEN$

In the Persian corpus: $SU > DO > OBL \approx GEN$

In the Kurdish corpus: $SU > DO \approx OBL \approx GEN$

In the German corpus: $SU > DO \approx OBL > GEN$

In the native English corpus: $SU > DO > OBL \approx GEN$

A large number of studies on the acquisition of RCs “support the validity of the Noun Phrase Accessibility Hierarchy as a difficulty predictor of relative clauses and as a frequency predictor of use of relative clauses in written material” (Ito and Yamashita 2003:247). Likewise, in the present study, it was hypothesized that the frequency of use of each RC type in comparison with the other types can be used as a predictor of the difficulty level of RCs. As the analysis of the data in each learner corpus showed, SU relatives were the first most used RCs. Thus, the NPAH was borne out by the data only for SU relatives. This means that the influence of the RC type is in line with the results of several studies in L2 production (Doughty 1991; Eckman et al., 1988; Pavesi 1986; Gass 1979), as well as several studies in L1 processing by adults (Schelschraete and Degand 1998; King and Kutas 1995; King and Just, 1991; Frazier 1987; Frauenfelder et al. 1980; Ford 1983; Hakes et al. 1976).

Similar to many previous studies on RCs which contain few or no IO and OCOMP relatives, the results of the present study showed that IO and OCOMP relatives were absent in the data. The

absence of IO relatives might be explained by what Keenan and Comrie (1977:72) mention, which was stated in section 5.1.1.1. Furthermore, the absence of OCOMP relatives might be related to the very low frequency of this RC type in language use.

A closer look at the results obtained from the analysis of each corpus showed that the argumentative essays written by German learners of English contained the highest number of RCs compared to the other three learner corpora. Azerbaijani, Persian, and Kurdish Sorani groups ranked second, third, and fourth, respectively, with regard to the total number of RC usage. The results also displayed that the accessibility hierarchies of RCs in the Azerbaijani and Persian corpora were more similar to those in the native English corpus.

According to the results obtained from the statistical analysis of the data, one of the intriguing differences between the four corpora of Azerbaijani, Kurdish Sorani, Persian, and English, and the German corpus was the lower frequency of use of genitive relatives in the German corpus. This is quite surprising because while the German textbooks of English at schools in Germany cover genitive relatives, this type of RCs is not covered in the Iranian textbooks of English. The absence of genitive relatives in the German corpus might be related to the influence of L1. As in colloquial German *von*+ NP can replace a genitive, the German participants might not have used genitives in their writing; however, no example of *of*+NP that could be replaced by a genitive was found in the German data either. Therefore, the low frequency of use of GEN relatives by German learners of English remains an open question and would require further studies.

The first research question of the present study was how often and how correctly the native English speakers and the English learners with Azerbaijani, German, Kurdish Sorani, and Persian first languages use different types of RCs in their argumentative essays. The results presented in section 6.4.1 and the findings discussed in this section answered this research question.

6.5.2 Incorrectly Formed RCs

The analysis of the data demonstrated that erroneous RC constructions were rare in all corpora employed in the present study. Only one erroneous ISU was noticed in the German data. The only ISU error found in the German corpus was the incorrect use of *who* instead of *which* in referring to an inanimate head noun. No occurrence of wrong relatives was noticed in the Azerbaijani

corpus. However, 2 (2.38%) and 3 (4.41%) of erroneous DO relatives were found in the Persian and Kurdish Sorani data, respectively. A closer look at the essays showed that the DO errors in both corpora were all related to using resumptive pronouns in this type of RC. As resumptive pronouns are used in the structure of DO relatives in both Persian and Kurdish Sorani, the errors may reflect L1 transfer. However, since the number of errors in the data was not high, the errors found in the corpora cannot concretely be claimed as an indicator of a lack of competence; rather, they could simply be considered mistakes due to carelessness or other reasons. The very low number of errors in the corpora could be due to the participants' avoidance of employing more complex RC types. One of the factors that might account for avoidance in second language learning is "the intrinsic complexity of the circumvented feature" (Laufer and Eliasson 1993:39). This will be explained in more detail in section 8.2.1.

An interesting point regarding the type of RCs used in the corpora in this dissertation is related to the low frequency of non-restrictive RCs in each corpus. All the instances of non-restrictive RCs extracted from the data in the present study miss the essential commas. However, these RCs were not included in the table of the incorrectly formed RCs above, since, except for the punctuation, the construction of the RCs was correct. Table C1 in Appendix C presents the non-restrictive RCs used in each corpus in the study.

As Table C1 in Appendix C illustrates, the largest number of non-restrictive RCs were found in the Persian and the Azerbaijani corpora. The German corpus and the English corpus contained no instance of non-restrictive RCs. Closer inspection of the instances of the non-restrictive RCs extracted from all the corpora showed that most of the non-restrictive RCs, which needed to be introduced by the relative pronouns *who(m)* for human referents and *which* for non-human referents, were wrongly introduced by the relative marker *that* in each corpus. Another compelling finding was that 12 instances of the wrong use of commas in the construction of restrictive English RCs were found in the German corpus. This type of punctuation error might reflect L1 transfer, as commas are essential in the construction of German restrictive and non-restrictive RCs. Like in English, in all the other languages investigated in the present study, commas are only used in the construction of non-restrictive RCs.

6.5.3 AH

The results obtained from the analysis of the data compared to the predictions of the Absolute Hypothesis demonstrate whether the type of the verb in SU relatives changes the accessibility hierarchy of RCs in written data. As the NPAH does not make any distinction between transitive and intransitive SU relatives, the accessibility hierarchy of RCs in the NPAH can be summarized as follows: ISU + TSU > DO > OBL > GEN > OCOMP, while the hierarchy in the AH would be: ISU & DO > TSU > OBL > GEN > OCOMP. It should be noted that Fox (1987) found only 10 instances of TSU relatives in her spoken corpus and none of those instances of TSU relatives were of passive predicates.

As Table 6.12 presented, in none of the corpora in this study, statistically significant differences were observed between the mean ranks of use of TSU and ISU relatives. The results also showed that in the German and English corpora, the mean ranks of DO relatives were substantially lower than those of TSU relatives. Additionally, in the Azerbaijani corpus, DO relatives were substantially lower than ISU relatives. According to the results, in no corpus, absolute relatives (ISU and DO) were used more frequently than TSU relatives. As the data used in the present study was written data, and the Absolute Hypothesis had been proposed by Fox after the investigation of spoken data, it cannot be claimed that the results of the present study reject the Absolute Hypothesis, but the results show that the Absolute hypothesis is not supported by the written data of this study.

6.5.4 PDH

In the corpora used in the present study, right-embedded English RCs outnumbered center-embedded RCs. This implies that the results of the present study supported Kuno's PDH, according to which center-embedded RCs, which occur in a subject matrix position, are more difficult to access than right-embedded RCs, which occur in a non-subject matrix position.

Comparing the results obtained from the PDH analysis with those attained from the NPAH analysis might cause confusion. In SVO languages, like English, which usually have post-nominal RCs, center-embedded RCs are formed when the subject of the matrix clause is modified by a relative clause. On the one hand, according to the NPAH, the NPs in the subject position of RCs

are inherently more accessible to relativization than the NPs in other positions, and therefore, it is expected that SU relatives (center-embedded RCs) be the most frequently used type of RCs. On the other hand, the intervention of RCs poses more difficulty to the perception of center-embedded RCs compared to right-embedded ones; therefore, it is expected that right-embedded RCs are more frequent in language use. However, in SVO languages, center-embedded RCs (i.e., RCs with head nouns in subject matrix positions) have shown to be less common than all the other types (Quirk 1968:103; Romaine 2009:102-104; Graf 1996:52). This could be because subjects in main clauses "express given information" (Chafe 1994:85), and do not necessarily require further specification via an RC (Lattey and Moeck 1992:262). Furthermore, according to the principles of end-focus, given information usually goes before new information to prepare the ground for the importance of the final element. In addition, based on the principle of end-weight, lighter constituents tend to precede heavier constituents such as relative clauses, to facilitate the comprehension of information (Greenberg 1966:100; Leech et al. 2005:188-189; Leech 2005:65; Allan 1987:52-54; Hawkins 1994:238; Chafe 1994:85-91-92; Rohdenburg 1996:151). This explanation should clear up the confusion and indicate that the results gained from the NPAH and the PDH analyses are not contradictory, but complementary.

In this study, the frequency of use of right-embedded RCs in the Azerbaijani corpus was lower than that in the English corpus. The reason for this lower frequency might be explained as follows. As mentioned in chapter 3, the prototypical RCs in Azerbaijani are prenominal RCs, which tend to precede the head nouns. This means that there is a strong tendency of weight fronting in the syntactic structure of RCs in Azerbaijani. Thus, we can claim that in contrast to the principle of end-focus in SVO languages, according to which given information is presented before new information, the linear ordering in Azerbaijani RCs should be the front weight principle. As was mentioned above, in SVO languages, center-embedded RCs have shown to be less frequent in practice due to the end-weight principle. The results obtained from the English and German corpora in this study also supported this (see Table 6.17). What reinforces our claim is that in addition to the significant difference between the Azerbaijani and English corpora in terms of the use of right-embedded RCs, the statistical results show that the frequency of use of right-embedded RCs in the Azerbaijani and German corpora was marginally significant ($p=0.07$). Although the

difference between Azerbaijani and German does not reach statistical significance, with the *p*-value of 0.07, it goes in the direction that would be predicted by word order.

The second research question of the present study was whether the frequency of use of different RC types in each learner corpus conforms to the hierarchies proposed by the NPAH, the PDH, and/or the AH. The results presented in sections 6.4.1, 6.4.3, and 6.4.4 and the findings discussed in sections 6.5.1, 6.5.3, and 6.5.4 provided an answer to this question. In sum, according to the results obtained from this study, the NPAH was partially and the PDH was completely supported; however, the data in none of the corpora supported the Absolute Hypothesis.

6.5.5 Additional Analysis of the Data

6.5.5.1 Marking of RCs

Several different factors, such as the variety of English used in textbooks, and the relativization system of the first languages could account for the differences in the use of relative markers between the corpora in this study. The considerable difference in the use of *that* and *which* between the German corpus and the other three learners' corpora could be related to the difference between American and British English. American English is the dominant variety of English in the textbooks used in Iran. However, in Germany, British English is more frequently used in textbooks. Although in British English, restrictive relative clauses can be introduced by either *that* or *which* when they refer to things, restrictive *which* is more frequent in British English than American English. According to Huddleston and Pullum (2005:189) and Algeo (2006:113), Americans use restrictive *that* about twice as frequently as the British do. Many American grammarians recommend the sole use of *that* in restrictive RCs to balance the use of *which* in non-restrictive RCs (Garner 2023:901; Crystal 2009:635; Shaw 1987:233; Baker 1966:128; Copperud 1964:347; Strunk and White 2008:47; Evans and Evans 1957:505). Their recommendation has been more effective in American English than in British English. Perhaps another likely cause of the high frequency of use of *which* in the German corpus is the visual similarity of *which* to *welcher/welche/welches* and the fact that both English *wh*-relatives and German *w*-relatives are identical to interrogative pronouns. A question that might be raised here is why German-speaking learners of English do not seem to draw from the similarity between *that* and *das* in the same way.

That is, why German native speakers are influenced by the similarity between *which* and *welcher/welche/welches* and not, apparently to the same extent, by the similarity between *that* and *das*. This remains an open question for future research.

The results of Tukey post hoc pairwise comparisons showed significant differences between the mean ranks of use of *that-which* in the Azerbaijani, Kurdish, and Persian corpora, and the English corpus. However, no significant difference between *that-which* was noticed in the German corpus. The high frequency of use of *that* in the Azerbaijani, Kurdish, and Persian corpora might also be related to the relativization system of the learners' first languages, that is the use of a relative marker rather than a relative pronoun. Persian and Kurdish Sorani RCs are introduced by the invariant relative markers *ke* and *ka*, which are equivalent to *who*, *which*, or *that*, in English. These relative markers are used regardless of animacy, gender, syntactic function, or number of the nouns modified by the relative clause. As *that* can be used regardless of animacy, the Persian and Kurdish learners of English seem to find it easier to use; therefore, this might be the reason that they tend to use *that* more frequently than *which* and *who*. In the Azerbaijani language, participle suffixes in RCs are used regardless of the animacy, gender, or number of the noun modified by the relative clause, and this might be the reason that the Azerbaijani learners of English tend to use *that* in their English writings more frequently. According to the results, the higher frequency of *that* compared to *which* in the Azerbaijani, Kurdish Sorani, and Persian corpus could indicate that L1 affects the performance of the learners of English in the formation of English RCs.

The results of the present study demonstrated two more important differences between the German corpus and the other three learner corpora. Firstly, the German corpus contained a larger number of zero RCs. This was related to the higher frequency of DO relatives without relative markers in the German corpus compared to the other three corpora. The effect of the first language cannot account for this, because German does not allow the omission of relative pronouns. One important point to consider is that the series of German textbooks of English employed at schools in North Rhine-Westphalia cover zero relatives, whereas Iranian textbooks of English do not introduce this type of RC. However, to be able to make firm assumptions in this regard, further studies are required. Secondly, while no significant difference in the use of reduced RCs was noticed between the German and English corpora, the frequency of use of past participle RCs in

the Azerbaijani, Kurdish Sorani, and Persian corpora was significantly lower than their use in the native English corpus. This is quite intriguing because both German and Iranian textbooks of English cover participle relatives. These differences between the German corpus and the other three learner corpora seem to be interesting topics for future studies.

The fourth research question in this study was whether the content of textbooks of English employed at German and Iranian schools plays a role in the formation and the patterns of use of English RCs in the argumentative essays written by German and Iranian learners of English. According to the fourth prediction, we expected to find more genitive and zero relatives in the German corpus than in the other three learner corpora because only the German textbooks used in German schools cover these RC types. In addition, we expected to see a higher frequency of *which* in the German corpus due to the dominance of British English in the German context. Our prediction was partially confirmed because, in contrast to our expectancy, no instance of GEN relatives was found in the German corpus while some instances of this type of RCs were noticed in the other three learner corpora. Even though the statistical results attained from the Tukey post hoc comparisons did not show any significant differences in the mean ranks of use of GEN relatives across the corpora (see Table 6.6), we still believe that the presence of GEN relatives in the corpora collected from the Iranian learners of English seems to be a noteworthy point, which requires further investigation.

6.5.5.2 Animacy Status of the Modified Noun Phrases

One of the objectives of the present study was to explore whether there is any relation between the RC types used by L2 learners of English and the animacy status of the modified NPs by the RCs. Thus, the use of animate/inanimate NPs in subject and object RCs in the data was examined. It was assumed that the rate of occurrence of the animate and inanimate NPs in each RC type can display the preference of the language learners in using each RC type with animate/inanimate NPs. According to the results of several previous studies, subject relatives tend to occur in the conditions in which the NPs are animate, while object relatives usually occur in clauses that modify inanimate NPs. The present study examined whether subject and object relatives in the learner corpora and the native corpus display the same results. In this study, the results obtained from the English, German, and Azerbaijani corpora supported the findings of previous studies (see section 5.3),

which state that DO relatives mostly occur with inanimate NPs. However, the results attained from the Persian and Kurdish corpora failed to support it. Furthermore, except in the German and Persian corpora, the results obtained from the other corpora failed to support previous findings regarding the preference of the learners to use SU relatives with animate NPs rather than inanimate ones.

The fifth research question of the present study was whether the animacy status of the NPs within the RCs affects the frequency of use of subject and object RCs formed by L2 learners of English and native English speakers in their argumentative essay. Following our prediction, if the results of the study show that SU relatives mostly occur with animate head nouns, while DO relatives occur with inanimate head nouns, the results indicate animacy has a role in determining the distribution of subject and object relatives. The statistical results of the study supported our prediction for DO relatives only in the Azerbaijani, German, and English corpora, and our prediction for SU relatives only in the German and Persian corpora. Most previous studies on the relationship between subject and object RCs and the animacy status of the NPs have been conducted on East-Asian languages. Thus, the investigation of the relationship between the RC types and the animacy status of NPs requires additional studies in typologically different languages.

6.5.6 Effect of L1 on the Usage Patterns of English RCs

In general, the aggregate results of the present study showed that the German corpus was comparable to the English corpus. The only significant difference between the German and English corpora was related to the higher frequency of use of the relative marker *which* in the German corpus. The Azerbaijani corpus also exhibited comparability to the English and German corpora. Only two significant differences were observed in the comparison of the Azerbaijani corpus with the English and German corpora: (i) the lower frequency of right-embedded RCs in the Azerbaijani corpus compared to that in the English corpus, and (ii) the lower frequency of passive TSU relatives in the Azerbaijani corpus compared to that in the English and German corpora. Persian and Kurdish corpora showed many similarities to one another, but significant differences from the English and German corpora in the analysis of the NPAH, AH, PDH, passive TSU usage, and the animacy status of the NP. The similarities observed between the German and English corpora, and

those between the Persian and Kurdish corpora might be connected to the typological closeness of each pair. The most interesting finding of this study is related to the results attained from the analysis of the Azerbaijani corpus, which belongs to a typologically different classification, but showed comparability not only to the English and German corpora but also to the Persian and Kurdish corpora.

The third research question in this study was if syntactic properties of relative clauses in L1 or the strong L2 codetermine the usage patterns of English RCs. It was assumed that as soon as the four different L1 speaker groups behave differently from each other, the data has already shown that L1 affects their performance in English. As Table 6.23 displays, comparing the performance of each L1 speaker group to that of the native English speakers shows differences that are not for the other L1 speaker groups. The differences observed between the speaker groups show that there is an effect of the first language difference. This means that if we know the first language of the participants, we can make an educated guess whether they will perform similarly to the native English speakers. This provides an answer to the third research question.

6.6 An Alternative Perspective: Analysis of the Data Based on NPmat and NPrel Roles

6.6.1 Description

Study I in this dissertation aimed to check to what extent the NPAH, AH, and PDH are adequate to explain the data of the present study. All these hypotheses had some drawbacks. The NPAH on its own fails to address the relevance of the head noun within the matrix clause, and the adjacency of the head noun and relative pronoun or head noun and gap, which other theories such as LDH and SDH have shown to be relevant. The PDH appears not to have enough categories for the classification of RC types. In his study, Izumi (2003) tried to use a combined version of the NPAH and the PDH by placing different RC types outlined in the NPAH in two matrix positions of subject and object. However, the model proposed by Izumi fails to form a separate category for other matrix positions such as subject complements, predicative complements in existential sentences, and prepositional phrase objects. There were a considerable number of sentences extracted from the corpora of the present study that could not be accommodated in any category; among these were existential matrix clauses and clauses with predicate nominals. For this reason, the researcher

focused on a different categorization system of RCs, specifically the one used by Fox and Thompson (1990), which includes some of the NPrel roles and all the NPmat roles. Eventually, Fox and Thompson's system was used, but the NPrel roles which were failed to be covered in their data were added by the researcher. In developing the model for categorization in the present study, the researcher took the classification of RCs proposed by Keenan and Comrie (1975) and Kuno (1974), as well as the ones by Fox and Thompson (1990), Izumi (2003), and Diessel and Tomasello (2005) into account. This means that the syntactic functions of head nouns in the matrix clauses and their coreferent elements within the RC (either explicitly expressed or implicitly identifiable) were considered.

The syntactic functions of the head nouns within the matrix clause, NPmat roles, which were taken into account in this study were: subject (SU), direct object (DO), indirect object (IO), prepositional phrase object (PPO), predicate nominal (PN), and predicative complement in existential clause (EX) (Fox and Thompson's *Existential*). Examples 120-125, which are from the data examined in this dissertation, illustrate each type of NPmat role.

120) (SU): **Many people** [who are in prisons] have big financial problems.

121) (DO): Man manufactured **gigantic planes** [which are able to carry hundreds of people and loads of cargo].

122) (IO): They give **people** [who are not wealthy] more money.

123) (PPO): We live in **the modern world** [which is dominated by science and technology].

124) (PN): Pollution is an **environmental problem** [that endangers human's lives].

125) (EX): There are **several sources** [that cause water pollution].

In this study, the syntactic functions of the NPs within the RCs, NPrel roles, were: subject (SU), direct object (DO), oblique (OBL), and Genitive (GEN). Therefore, the RC types in the analysis are illustrated by two abbreviations which are separated with a hyphen. The first set of

letters in each abbreviation stands for the syntactic function of the NP in the matrix clause (NPmat), and the abbreviation following a hyphen represents the syntactic function of the NP within the RC (NPrel). This means that in each X-Y phrase, X is the NPmat role and Y is the NPrel role. In each corpus employed in the study, all the sentences containing RCs are extracted from the corpus, inserted into a table, and analyzed (see Appendix D). A snapshot of the table of analysis of the data in Study I in this dissertation is shown below (see Table 6.24). In each learner corpus, the first column on the left is the participant's ID column, in which the first number shows the ID number of the participant, the letters *F* or *M* specify the gender, and the number following the gender demonstrates the age of the participant. The second column shows the number of the essay topic on which the essay is written. The sentences containing RCs which are extracted from the essays appear in the third column. In each sentence presented in each table, the head noun is given in **italics boldface**, and the RC is given in brackets. The NPmat roles, which demonstrate the syntactic function of the head noun in the matrix clause, appear in the fourth column. The NPrel roles, which show the syntactic function of the relativized element within the relative clause, appear in the fifth column. The sixth column shows whether any relative marker has been used in the construction of the RC; and if so, which relative marker has been used. Finally, the last column shows whether the RC is located within the matrix clause (center-embedded) or is marginally adjoined to it (right-embedded).

Table 6.24 *A snapshot of the table of analysis of the data extracted from the corpora*

Student ID	Topic No.	Sentences Extracted from the Essays	NPmat Role	NPrel Role	Relative pronoun	Center/ Right embedded
1.M.23	6	<i>Plants and animals from this area</i> [which are genetically from nuclear radiation] can be dangerous for human beings	Subject	ISU	which	center

6.6.2 Results

As was mentioned earlier, the NPrel roles solely focus on the syntactic roles of NPs within the RC. This means that the results of the analysis of the NPrel roles fail to address the relevance of the noun phrase in the matrix clause, on which the relative clause is dependent. To examine the interaction between the syntactic roles associated with the RCs and their contexts of use, the NPmat roles in the data were examined. Table 6.25 presents the frequency and percentage distribution of each NPmat role in each corpus in this study.

Table 6.25 *Frequency and percentage distribution of the NPmat roles in each corpus*

NPmat roles	SU	PPO	DO	PN	EX	IO	Total
Azerbaijani	38 (38%)	23 (23%)	19 (19%)	14 (14%)	6 (6%)	-	100
Persian	28 (33.34%)	28 (33.34%)	17 (20.24%)	5 (5.95%)	6 (7.14%)	-	84
Kurdish Sorani	16 (23.52%)	23 (33.82%)	13 (19.12%)	4 (5.89%)	12 (17.65%)	-	68
German	24 (16.33%)	48 (32.65%)	35 (23.81%)	26 (17.69%)	14 (9.53%)	-	147
English	60 (32.79%)	61 (33.34%)	39 (21.31%)	14 (7.65%)	8 (4.37%)	1 (0.54%)	183

SU: Subject, DO: Direct object, IO: Indirect object, PPO: Prepositional phrase object, PN: Predicate nominal, EX: Predicative complement in existential clause

To calculate the statistical differences in the data, a non-parametric ART ANOVA test using the package ARTool (Kay et al. 2021) in software R (R Core Team 2021) was conducted. The (*ART*) ANOVA showed a main effect for the NPmat role, (F value=81.3883, $df=5$, $p<0.0001$), a main effect for the first language of the participants, (F value=20.8891, $df=4$, $p<0.0001$), and a significant interaction between the two, (F value=5.3478, $df=20$, $p<0.0001$). Figure 6.7 displays the distribution of NPmat roles in each corpus. As Figure 6.7 displays, the frequency of RCs with the NPmat role of subject in the German corpus is lower than that in the other corpora.

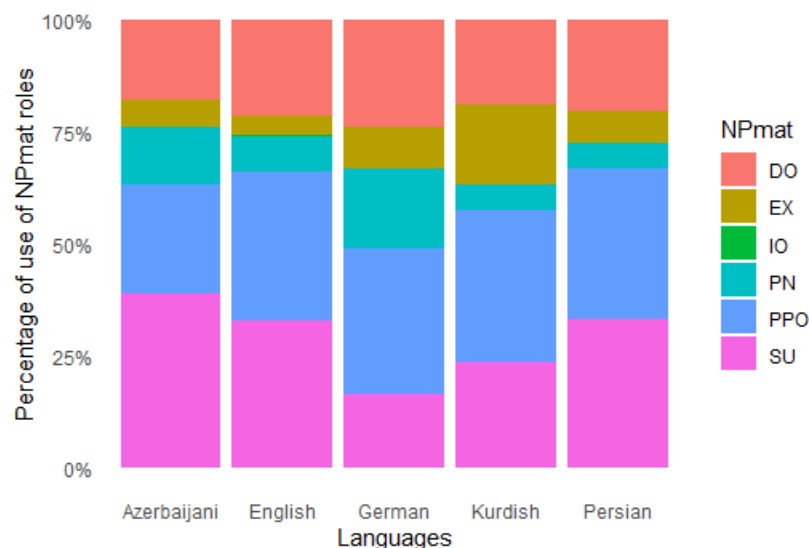


Figure 6.7 Distribution of the NPmat roles in each corpus (Bars indicate mean ranks of each NPmat role, in percentage, on each RC corpus)
(SU: Subject, DO: Direct object, IO: Indirect object, PPO: Prepositional phrase object, PN: Predicate nominal, EX: Predicative complement in existential clause)

In this analysis, Tukey post hoc comparisons using *art. con* function did not show any significant differences in the mean ranks of the NPmat roles between the Azerbaijani corpus, and the English, German, and Persian corpora. Concerning the mean ranks of use of all the NPmat roles, the Kurdish Sorani corpus and the Persian corpus demonstrated statistically similar results to each other. In terms of the NPmat roles, overall, the German corpus did not show significant differences from the English corpus except for SU NPmat roles. A comparison in the use of active and passive verbs in the matrix clauses with SU NPmat roles demonstrated that the difference between the German and English corpora in the use of RCs with the NPmat roles of SU cannot be related to the grammatical voice of verbs. Out of 60 instances of SU NPmat roles in the English corpus, only 8 instances occurred in passive sentences. Furthermore, in the German corpus, out of 24 instances, only 6 instances of SU NPmat roles occurred in passive sentences. Thus, even if the instances with the passive verbs are excluded from the analysis, the noticeable difference would remain.

One intriguing finding of this study was that the mean ranks of SU NPmat roles in the German, Persian, and Kurdish Sorani corpora were significantly lower than those in the English corpus. Furthermore, surprisingly, the mean rank of use of SU relatives in the Azerbaijani corpus was

significantly higher than that in the Kurdish Sorani corpus, but not different from the other corpora. Another finding was that the mean rank of PN NPmat roles in the German corpus was significantly higher than that in the Persian and Kurdish corpora. Additionally, the mean rank of DO NPmat roles in the German corpus was significantly higher than that in the Kurdish corpus.

Taking both the NPmat roles and the NPrel roles in the analysis of the RCs extracted from each corpus into consideration, the following results were obtained. The results of an (ART) ANOVA test of the RC types with the NPmat role of subject across the corpora showed a main effect for RC type, (F value=177.119, $df=3$, $p<0.0001$), a main effect for first language of the participants, (F value=39.789, $df=4$, $p<0.0001$), and a significant interaction between the two, (F value=11.453, $df=12$, $p<0.0001$). Each figure below shows the frequency of use of each RC type (NPrel role) in each NPmat role in all the corpora.

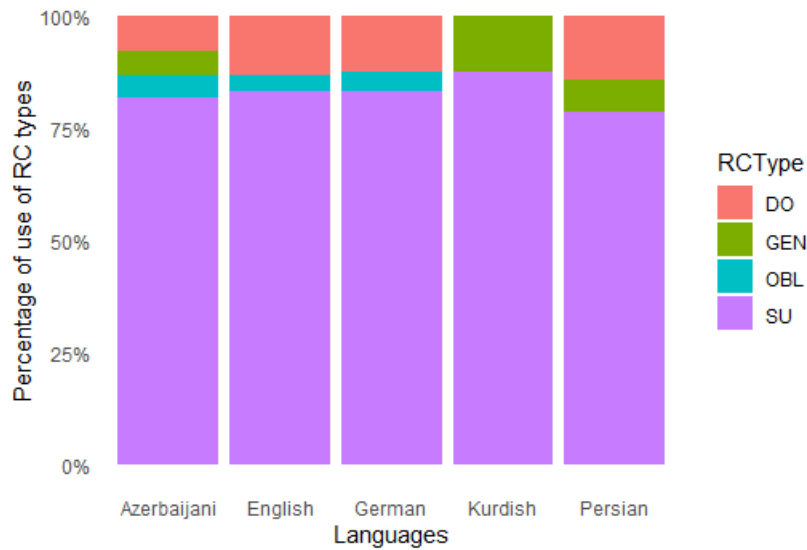


Figure 6.8 Frequency of use of each RC type with SU NPmat role across the corpora

As Figure 6.8 shows, there are differences between the different language corpora concerning the number of RC types that are used with SU NPmat roles. The post hoc pairwise comparisons showed statistically significant differences in the mean ranks of use of *SU NPmat role - SU NPrel roles* between (i) the Azerbaijani corpus, and the English and German corpora, and (ii) the English corpus, and the German, Persian, and Kurdish corpora.

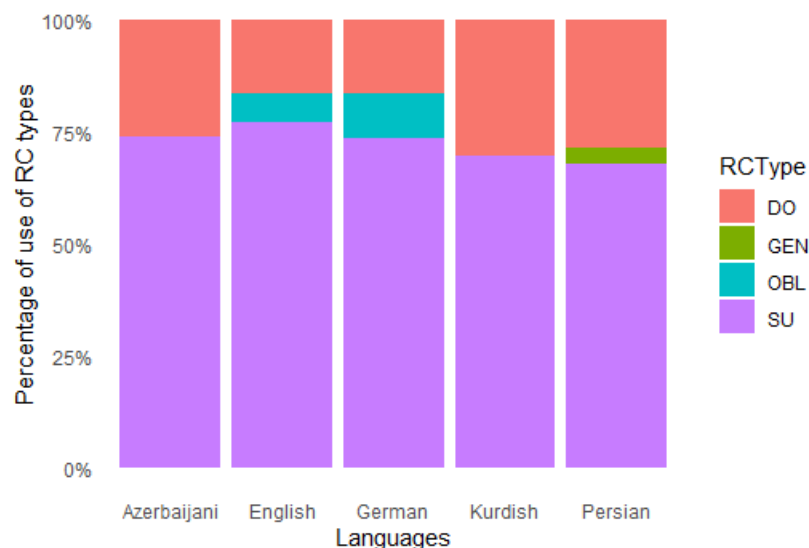


Figure 6.9 Frequency of use of each RC type with PPO NPmat role across the corpora

As Figure 6.9 shows, there are differences between the different language corpora with regard to the number of RC types that are used with PPO NPmat roles. The results of an (ART) ANOVA test of the RC types with PPO NPmat role across the corpora showed a main effect for RC type, (F value=131.6408, $df=3$, $p<0.0001$), a main effect for the first language of the participants, (F value=13.3103, $df=4$, $p<0.0001$), and a significant interaction between the two, (F value=7.7711, $df=12$, $p<0.0001$). The post hoc pairwise comparisons showed statistically significant differences in the mean ranks of use of *PPO NPmat role - SU NPreI roles* between the English corpus, and the Azerbaijani, Persian, and Kurdish corpora.

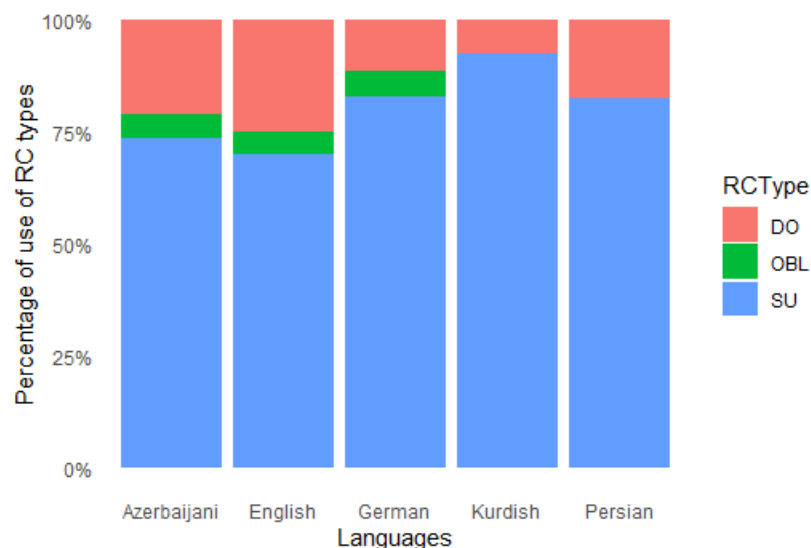


Figure 6.10 Frequency of use of each RC type with DO NPmat role across the corpora

As Figure 6.10 shows, there are differences between the different language corpora with regard to the number of RC types that are used with DO NPmat roles. The results of an (ART) ANOVA test of the RC types with DO NPmat role across the corpora showed a main effect for RC type, (F value=173.7245, $df=3$, $p<0.0001$), a main effect for the first language of the participants, (F value=28.9852, $df=4$, $p<0.0001$), and a significant interaction between the two, (F value=8.8322, $df=12$, $p<0.0001$). The post hoc pairwise comparisons showed statistically significant differences in the mean ranks of use of *DO NPmat role - SU NPrel roles* between the German corpus, and the Persian and Kurdish corpora.

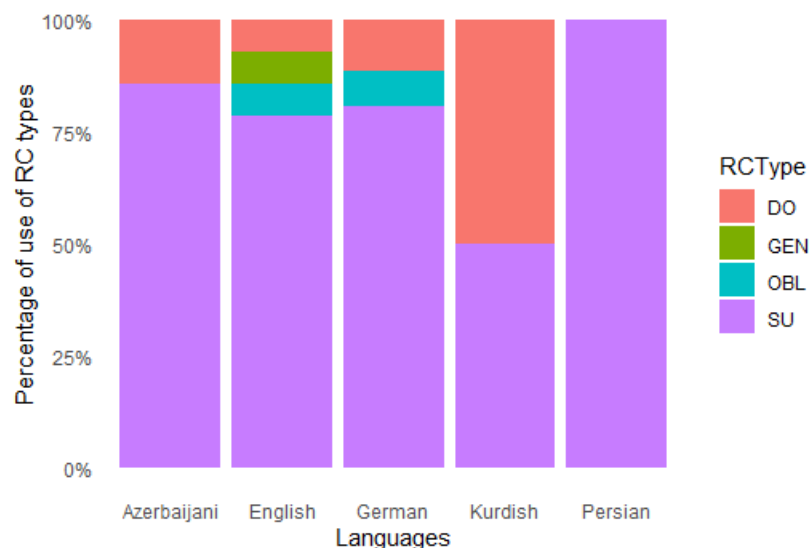


Figure 6.11 Frequency of use of each RC type with PN NPmat role across the corpora

As Figure 6.11 shows, there are differences between the different language corpora with regard to the number of RC types that are used with PN NPmat roles. The results of an (ART) ANOVA test of the RC types with PN NPmat role across the corpora showed a main effect for RC type, (F value=28.614, $df=3$, $p<0.0001$), a main effect for the first language of the participants, (F value=82.573, $df=4$, $p<0.0001$), and a significant interaction between the two, (F value=15.639, $df=12$, $p<0.0001$). The post hoc pairwise comparisons showed statistically significant differences in the mean ranks of use of *PN NPmat role - SU NPrel roles* between (i) the German corpus, and the English, Persian, and Kurdish corpora, and (ii) the Azerbaijani corpus and the Kurdish corpus.

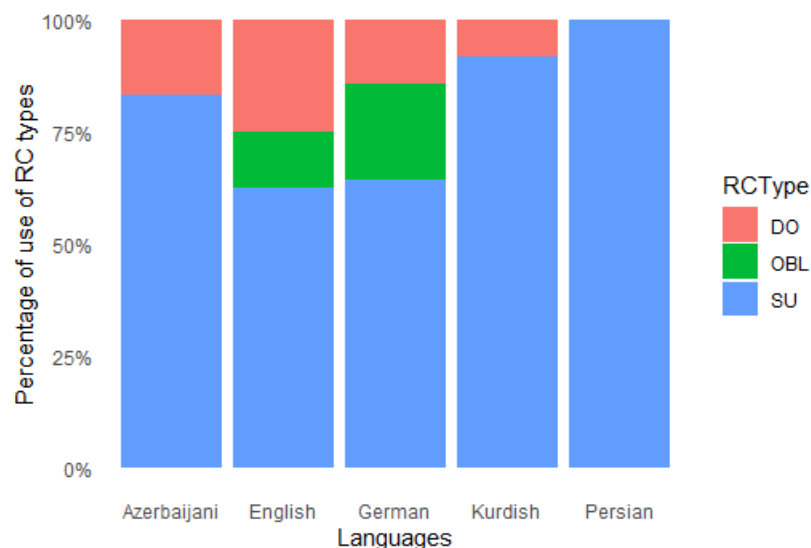


Figure 6.12 Frequency of use of each RC type with EX NPmat role across the corpora

As Figure 6.12 shows, there are differences between the different language corpora with regard to the number of RC types that are used with EX NPmat roles. The results of an (ART) ANOVA test of the RC types with EX NPmat role across the corpora showed a main effect for RC type, (F value=56.2763, $df=3$, $p<0.0001$), a main effect for the first language of the participants, (F value=29.6431, $df=4$, $p<0.0001$), and a significant interaction between the two, (F value=6.0529, $df=12$, $p<0.0001$). The post hoc pairwise comparisons showed statistically significant differences in the mean ranks of use of none of the NPrel roles with the NPmat role of EX in the corpora.

Table 6.26 summarizes the aggregate results obtained from the analyses of the NPrel roles, NPmat roles, and the interaction between the NPmat and NPrel roles, and compares the results across corpora. Each empty cell shows that there is no statistical difference between each pair of corpora represented in that specific cell, while the symbol X indicates a significant difference between each pair of corpora.

Table 6.26 *Comparison of the aggregate results obtained from the analyses of the NPrel roles, NPmat roles, and the interaction between the NPmat and NPrel roles across corpora*

Corpus		NPrel roles	NPmat roles	NPmat & NPrel roles
Azerbaijani	English			X (SU-SU & PPO-SU)
	German			X (SU-SU)
	Kurdish		X (SU)	X (PN-S)
	Persian			
Persian	English		X (SU)	X (SU-SU & PPO-SU)
	German	X (OBL)	X (PN)	X (DO-SU & PN-S)
	Kurdish			
	Azerbaijani			
Kurdish Sorani	English	X (DO)	X (SU)	X (SU-SU & PPO-SU)
	German	X (OBL)	X (PN & DO)	X (DO-SU & PN-S)
	Persian			
	Azerbaijani		X (SU)	X (PN-S)
German	English		X (SU)	X (SU-SU & PN-S)
	Kurdish	X (OBL)	X (PN & DO)	X (DO-SU & PN-S)
	Persian	X (OBL)	X (PN)	X (DO-SU & PN-S)
	Azerbaijani			X (SU-SU)
English	German		X (SU)	X (SU-SU & PN-S)
	Kurdish	X (DO)	X (SU)	X (SU-SU & PPO-SU)
	Persian		X (SU)	X (SU-SU & PPO-SU)
	Azerbaijani			X (SU-SU & PPO-SU)

Note: The empty cell shows there is no statistical difference, while the symbol *X* indicates a significant difference between each pair of corpora.

6.6.3 Discussion

According to the results obtained, in terms of the NPmat roles, the Azerbaijani corpus showed no significant difference from the native English corpus and the German corpus. The results attained from the German, Persian, and Kurdish data are also quite similar to that of the English corpus; however, they all had one common difference from the English corpus. These three corpora had a significantly lower frequency of use of SU NPmat roles compared to the English corpus. The reason for the lower frequency of SU NPmat roles in the Kurdish and Persian corpora compared

to the English corpus is not clear at this stage and remains an open question. However, the reason for the infrequency of use of SU NPmats in the German corpus might be explained as follows:

In terms of word order, the canonical SVO word order of the English language is maintained in English relative clauses whose NPmats have the syntactic function of subject (see my example 126). However, the word order in English RCs whose NPmats have the syntactic function of object or prepositional phrase object changes to OSV (see my example 127).

126) The woman [who is feeding the baby] is my mother.

127) I know the woman [whom the baby is watching].

The OSV word order in the above-mentioned English RCs is consistent with the word order in the same type of German RCs (see my example 128). Therefore, it seems that German learners of English tend to use these types of English RCs. In contrast, they seem to find English RCs with the NPmat role of subject (example 126) more difficult to use possibly for the following reason: the difference of this type of RCs in terms of word order with their L1. This could also provide an answer to the third research question because it shows that syntactic properties of relative clauses in L1 impact the usage patterns of English RCs.

128) Ich kenne den Mann [der den Jungen beobachtet].

I know the man [who is watching the boy].

The results attained from the analysis of the interaction of the NPmat roles and the NPrel roles in the analysis of the RCs in this study revealed no significant difference between the Azerbaijani and Persian corpora, and the Kurdish and Persian corpora, but showed significant differences between the English corpus and all the other corpora, and the German corpus and all the other corpora. These results show that the findings achieved by the analysis of the interaction of the NPmat and NPrel roles are different from the ones gained from the sole analysis of the NPrel roles. This calls for conducting further studies on typologically different languages considering both the NPmat and NPrel roles.

6.7 Summary of the Findings

In sum, the findings of the analysis of the learner corpora, collected from the Azerbaijani, German, Kurdish Sorani, and Persian learners of English, and the native English corpus used in Study I in this dissertation indicate that the syntactic function of the relativized element in the RC affects the acquisition of RCs and consequently the usage pattern of different types of RCs. This supports the results of previous studies devoted to the acquisition of RCs in L1 and L2 contexts. The results of the analysis of the RCs that occurred in the corpora used in the present study showed partial consistency with the predictions made by the NPAH and full consistency with the PDH. This means that processing considerations that are responsible for the natural patterns of comprehension affect the acquisition and, in turn, the use of RCs. Furthermore, the establishment of more extensive labeling, which included both the NPrel roles and the NPmat roles for the categorization of RCs, allowed us to accommodate all types of RCs extracted from the data in the present study, and draw additional conclusions. This study provided evidence that in addition to the NPrel role, which is influential in the accessibility hierarchy of RCs, the NPmat roles, the properties of RCs in L1, and the word order in L1 and the target language can affect the accessibility hierarchy of RCs and the acquisition of RCs in L2 settings.

In this study, the findings which are assumed to support the effect of L1 on the acquisition and use of English RCs are (i) the instances of the incorrect use of commas in the construction of restrictive English RCs by the German learners of English, (ii) the high frequency of use of *which* in the German corpus, which can be due to the visual similarity of *which* to *welcher/welche/welches* (iii) the wrong use of resumptive pronouns in English DO relatives formed by Persian and Kurdish Sorani learners of English, whose first languages allow pronoun retention, and (iv) the statistical differences in pairwise comparisons of *that-which* in each corpus in the data except in the German corpus; Persian and Kurdish Sorani RCs are introduced by the invariant relative marker *ke* and *ka*, which are used regardless of animacy, gender, syntactic function, or number of the noun modified by the relative clause. In Azerbaijani, too, participle suffixes in RCs are used regardless of the animacy, gender, or number of the noun modified by the relative clause. Therefore, the frequency of use of *that* in the Azerbaijani, Kurdish, and Persian corpora compared to the German corpus is higher than the frequency of use of *which*.

Furthermore, the results of the error analysis in the study suggest that L1 seems to be the main reason for syntax transfer. DO errors in both Kurdish Sorani and Persian corpora were all related to using resumptive pronouns in this type of RC. As resumptive pronouns are permitted in the structure of DO relatives in both Persian and Kurdish Sorani, the errors reflect L1 transfer. In contrast, no occurrence of wrong relatives was noticed in the Azerbaijani corpus. Resumptive pronouns are not allowed in DO relatives in Azerbaijani, as in English. That might be the reason that no error in this regard was found in the Azerbaijani corpus. However, since the number of errors in the data was not that high, the errors found in the corpora cannot concretely be claimed as an indicator of a lack of competence. The very low number of errors in the corpora could be due to the participants' avoidance of employing more complex RC types that they were not confident enough to use. Conducting further studies using different elicitation tasks will shed more light on this regard.

The results obtained from the analysis of the relative markers and reduced RCs disclosed interesting findings about the German corpus. Firstly, the German corpus showed noteworthy differences from all the other corpora in terms of use of *which*. Secondly, the German corpus showed significant differences in the use of (i) RCs with zero markers, and (ii) past participle reduced RCs from the Azerbaijani, Persian, and Kurdish corpora. In addition to the effect of L1, the variety of English used in textbooks of English employed in Germany could account for the differences between the German corpus and other learner corpora. British English is the dominant variety of English used in the textbooks of English in Germany, while American English is more frequently used in the textbooks of English in Iran.

The results also indicate that the typological closeness of the first language and the language being learned does not impact the acquisition and usage pattern of RCs in the target language. The aggregate results showed many similarities between the native English corpus and the German corpus, collected from German native speakers whose L1 is typologically close to English. However, the Azerbaijani corpus, collected from Azerbaijani-speaking learners of English whose L1 is distant from English, showed many common points with the native English corpus too. Furthermore, the Persian and Kurdish Sorani corpora, collected from Persian and Kurdish native speakers whose L1s are Indo-European and closer to the English language, demonstrated many differences from the native English corpus.

Another interesting finding of this study was related to the animacy status of the modified NPs. The results of this study did not support the previous findings regarding the preference of the language learners to use animate SU relatives rather than inanimate ones, and inanimate DO relatives rather than animate ones in the whole data.

Chapter Seven: Relative Clause Acquisition in the Classroom

7.1 Impact of Instruction on L2 Acquisition

De Graaff and Housen (2009:726) define L2 instruction as any thoughtful and deliberate attempt to promote language learning by employing the mechanisms of learning. The role of instruction in SLA has always been a controversial issue, and it has always been a question whether L2 instruction promotes and facilitates learning. Some scholars follow Long and Robinson's (1998) non-interventionist view: they assume that, similar to L1 acquisition, L2 acquisition is a process governed by a fixed natural order of acquisition. Therefore, they believe that L2 instruction does not make any significant difference in the natural order of learning (Breen and Candlin 1980; Krashen 1981, 1985, 1994; Krashen and Terrell 1983; Prabhu 1987; Schwartz 1993). In contrast, proponents of the interventionist view believe that L2 instruction can make differences in the order of acquisition in SLA (Rutherford and Sharwood-Smith 1988; Rod Ellis 1992, 1994, 1997, 2005; Larsen-Freeman and Long 2014; Long 1983, 1988; Norris and Ortega 2000).

Instruction can affect any one of the three basic dimensions of the L2 learning process, which are *the route*, *the rate*, and *the end state of learning* (Rod Ellis 2005; VanPatten and Cadierno 1993; VanPatten and Sanz 2014; Gass et al. 1999; Goldschneider and DeKeyser 2001; Klein 1986; Rod Ellis 1994; De Graaff and Housen 2009:728). These three dimensions provided an extensive framework for a series of investigations conducted on specific effects of instruction in the 1980s (Eckman, Bell, and Nelson 1988; Pavesi 1986; Pica 1983; Pienemann 1989; Rod Ellis 1994; Larsen-Freeman and Long 2014; Long 1983, 1988). Collectively, the results of the investigations conducted have led to some claims which are summarized in De Graaff and Housen (2009:728) as follows:

- (i) For the grammatical aspects of language, which are developmentally constrained by the universal/natural order of acquisition, instruction cannot dominate the natural route of acquisition. Both instructed and non-instructed learners proceed through the same orders of acquisition, at least when they are tested through spontaneous production tasks.

- (ii) If the instruction is provided at an appropriate time (within the learner's developmental reach), it can accelerate the rate of learning along the natural route of development. So, instructed learners precede the non-instructed ones.
- (iii) As far as the end state is concerned, learners who have received instruction attain higher levels of proficiency (particularly, higher levels of grammatical accuracy) than uninstructed learners. In general, instruction is sometimes essential. For example, to overcome the fossilization of specific grammatical structures or to learn the aspects of L2 that cannot be learned through mere exposure to L2 context.

Based on the psychological models of learning and the learners' central attention, two types of instruction, namely *form-focused instruction* and *meaning-focused instruction* are distinguished (Rod Ellis 2001; Norris and Ortega 2000; Williams 2005). In meaning-focused instruction, learners mainly focus on the communication of meanings. This type of instruction can be found in immersion programs (Johnson and Swain 1997) or the Natural Approach to L2 teaching (Krashen and Terrell 1983). De Graaff and Housen (2009:735) claim that L2 learners who have received meaning-focused L2 instruction, have reached higher levels of proficiency in receptive skills, while their productive skills, their ability to produce grammatically and lexically accurate sentences, and socio-linguistically appropriate discourse are limited. This might be due to paying much attention to communicating message content and neglecting lexis and grammatical forms. In another type of instruction, form-focused instruction, learners pay particular attention to language forms; this means that learners focus on "grammatical structures, lexical items, phonological features and even sociolinguistic and pragmatic features of language" (De Graaff and Housen 2009:736). While meaning-focused instruction is an implicit type of instruction, form-focused instruction is classified into implicit and explicit instruction. Implicit instruction leads to implicit learning. Implicit learning is learning without consciously knowing what is being learned. In implicit learning, knowledge of L2 is achieved through a largely subconscious and unintentional computational process by being substantially exposed to L2 (Nick Ellis 1993:290; De Keyser 2003:314; Hulstijn 2002:193). When children acquire linguistic competence in their native language, their learning is implicit. In a pre-determined, natural order, they acquire some grammatical structures earlier than others. The idea of the natural order of the acquisition in L1 has been extended to L2 acquisition in Krashen's theory of language acquisition. Thus, the natural

order of acquisition can be exclusively considered implicit learning. In contrast to implicit learning, explicit learning is defined as a “conscious, deliberative process of concept formation and concept linking” (Hulstijn 2002:206). In explicit language learning, learners consciously and deliberately attempt to master some language features.

The distinction between implicit and explicit form-focused instruction corresponds to Long’s (1991:45-46) well-known distinction between *Focus-on-Form instruction* (FonF) and *Focus-on-FormS instruction* (FonFs). FonF instruction, which focuses on meaning and communication, briefly and spontaneously draws learners’ attention to linguistic forms as they arise incidentally in lessons. However, FonFs instruction, which mainly emphasizes linguistic structures, involves the extraction of linguistic forms from contexts or communicative activities and focuses on the formal aspects of language. FonFs is a grammar teaching approach in which linguistic forms are explicitly taught following a structural syllabus (Ellis 2016:406). The main focus of teaching in the FonFs approach is on discrete grammatical rules, and in most of the class activities, “attention is intended to be selectively focused on linguistic form” (Ellis 2016:412).

Although not a large number of studies have compared implicit and explicit learning, and there are uncertainties about the usefulness of each kind of instruction, the studies conducted on adult learners in this regard (White 1985b, 1987a and b; Alanen 1995; De Graaff 1997; DeKeyser 1995; Robinson 1996b, 1997b; Norris and Ortega 2000, 2001; DeKeyser 2000; DeKeyser, 2003; Doughty and Long 2005) have provided evidence that explicit learning is more effective than implicit one.

7.2 Impact of Instruction on the Acquisition of L2 RCs

Studies that have been conducted on the effectiveness of instruction on the acquisition of L2 relative clauses have mostly looked at the projection from one instructed area to another. For example, Gass (1982) and Eckman et al. (1988) investigated the acquisition of RCs by L2 learners of English, and found a generalization pattern following instruction from more marked RCs, (lower in the hierarchy), to less marked RCs, higher in the hierarchy.

According to the NPAH, less marked RCs are easier to acquire than more marked RCs. This hypothesis has been regarded from the stance of learnability by several language researchers and they have proposed that language learners can make generalizations about less marked RCs if they receive instruction on more marked RCs. In addition to the aforementioned investigations into RCs, several studies have been conducted on the instructional implications of the NPAH in terms of projection. They were set up to investigate whether providing instruction on a more marked RC type would cause improvement in less marked RCs (Doughty 1988, 1991; Eckman, Bell, and Nelson 1988; Gass 1982; Pavesi 1986; Croteau 1995). They proposed that the order of teaching RCs might influence the learners' acquisition of RCs. They carried out several experiments to explore the effect of instructing different positions in the hierarchy proposed in the NPAH. Their findings supported unidirectionality from complex RCs to simple ones, as they discovered that L2 learners can form less marked RCs if they receive instruction on more marked RCs. This implies that less marked RCs do not need to be taught.

Hamilton (1994) questioned the unidirectional order of generalizations in the acquisition of RCs. He conducted a study on four groups of low-intermediate and intermediate adult learners of English at the University of South Carolina. Hamilton did not mention the native language of the participants of his study. Although the results of his study, which focused on four types of RCs, showed that the general pattern of generalization was unidirectional from the more marked types to the less marked types, some participants of his study performed better in producing RC types that were more marked. Hence, Hamilton argued that generalization can be cumulative in both directions (from lower to higher positions and from higher to lower positions) and that learners do not necessarily learn the positions instructed and positions higher than them. He claimed that when language learners receive instruction on one RC position, they can learn more than that particular position and that the learnability of RCs can be in any marked or unmarked direction. Likewise, Ammar and Lightbown (2005) did a study on Tunisian Arab learners of English. The results of their study suggested bidirectional generalization since they found evidence of generalization from more marked RCs to less marked ones, and in the other direction, from less marked RCs to more marked ones. A summary of the studies conducted in this area is provided in Table 7.1.

Table 7.1 *Summary of the studies on the effect of instruction on the acquisition of RCs*

Researcher	L1 of the learners	L2 of the learners	The effect of instruction
Gass (1982)	Arabic, Farsi, Italian, Russian, Spanish	English	unidirectional (from more marked RCs to less marked RCs)
Eckman et al. (1988)	Arabic, Spanish, Japanese, Korean	English	from more marked RCs to less marked RCs
Doughty (1991)	French, Italian, Japanese, Mandarin, Russian, Spanish, Turkish	English	from more marked RCs to less marked RCs
Croteau (1995)	French, English	Italian	from more marked RCs to less marked RCs
Hamilton (1994)	–	English	bidirectional (from lower to higher positions and from higher to lower positions)
Ammar and Lightbown (2005)	Arabic	English	bidirectional (from lower to higher positions and from higher to lower positions)

As the table shows, several studies report a unidirectional effect of instruction, but some studies note a bidirectional one. As the results of the studies are inconsistent, this area needs further investigation.

In a different type of study that explored the effect of types of instruction on the acquisition of RCs, Yabuki-Soh (2007) investigated the effect of three types of instruction (form-based, meaning-based, and a combination of form-meaning-based instruction) on the learning of Japanese relative clauses. She also examined the predictions of the NPAH and focused on the ability of L2 learners of Japanese to see whether instruction that focused on more marked RCs could facilitate

the learning of other RC types. The results of her study suggested that learners' attention to detailed analysis of form facilitates the learning of RCs as the form-based group outperformed the other two groups in both comprehension and sentence-combination tests. Furthermore, the findings of her study showed both consistency and inconsistency with the NPAH, as the result of the sentence-combination test did, but that of the comprehension test did not reflect the predictions of the NPAH.

It is important to note that most of the studies conducted on the effect of different factors on the acquisition of RCs have underestimated individual differences, and that "perhaps generalizations are not always driven by language-related issues but are mediated by an individual's capacities" (Gass and Lee 2007:333).

Chapter Eight: Study II: Impact of Focus-on-FormS Instruction on the Acquisition of RCs

As was stated in chapter 1, one of the objectives of this dissertation is to investigate whether the teaching of RCs through focus-on-formS instruction (i) impacts the performance of the L2 learners in the use of different RC types and (ii) leads to any changes in the accessibility hierarchy of RCs, predicted by the NPAH.

As was mentioned in chapter 7, in the field of the acquisition of RCs in L2 contexts, several studies have been conducted to examine whether instructing a certain position on the accessibility hierarchy of RCs affects the acquisition of positions higher in the hierarchy. Some investigators (Eckman et al. 1988; Gass 1982) attempted to study RCs from a learnability point of view to find out whether L2 learners can make generalizations about RCs in a unidirectional way from the marked RCs to the unmarked ones. In their studies, they provided learners with instruction on the lowest positions of the hierarchy to see if learners who benefited from the instruction on the lower positions performed better in the uninstructed higher positions of the hierarchy. Some other researchers opposed the unidirectionality of generalizations and suggested bidirectionality in the accessibility hierarchy of RCs, which means that learners can go in either the marked or the unmarked direction (Hamilton 1994). To the best of my knowledge, no studies have been conducted to explore whether giving a specific type of instruction on all positions in the hierarchy causes any changes in the universal accessibility hierarchy of RCs.

This chapter centers on the design of a study that mainly examines the potential effects of focus-on-formS instruction on the accessibility hierarchy of RCs in an L2 context, and presents the results attained. This experiment consists of two stages: a pre-test and a post-test. The Pre-test is dedicated to the examination of the Persian-speaking school graduates' command of English RCs by employing a sentence translation test. It aims to examine whether the hierarchy of use of RC types by the participants is consistent with the universal accessibility hierarchy of RCs predicted by the NPAH. Furthermore, the pre-test phase reports the results of a detailed analysis of the erroneous English RCs formed by Persian-speaking learners of English at different levels of proficiency. In addition, it identifies the English RC types that Persian native speakers avoid forming. The post-test phase is devoted to the examination of the performance of Persian-speaking learners of English in the use of RC types after receiving focus-on-formS instruction on RCs. This

phase compares the results obtained by the participants who received instruction (henceforth, the treatment group) to the results attained by the control group, who did not receive the instruction. Additionally, this section investigates whether providing Persian-speaking learners of English with focus-on-formS instruction on English RCs causes any changes in the accessibility order of RCs proposed by the NPAH.

8.1 Objectives of the Study

Several studies have been conducted to examine the predictions proposed by the NPAH. In addition, several studies have investigated the effect of the properties of RCs in the first language on the acquisition and formation of RCs in a second language. However, previous studies conducted on RC acquisition in L2 have mainly examined the accuracy rate of RC types formed by L2 learners. This means that the erroneous RC types and, particularly, the avoided RC types have been left less explored. Avoidance, in general, is much less researched than other aspects of acquisition and it is assumed that further exploration of the avoided types of RCs can provide new insights into RC acquisition. Besides this, typologically, Persian is a noteworthy language to study. Unlike English, which is a head-initial language with an SVO word order, Persian is an SOV language that is non-rigid in terms of the head-directionality parameter and features a mixture of head-final and head-initial structures. However, like in English, RCs in Persian postmodify the head nouns. All of these motivated us to conduct the present study which examines the formation of English RCs produced by Persian-speaking learners of English and precisely inspects the erroneous and avoided types of RCs in their performance.

The study addresses important theoretical questions regarding (i) the impact of general learnability, based on the assumption of a fixed universal order of acquisition of RCs, and (ii) the impact of prior linguistic knowledge on RC acquisition. In the pre-test phase, the study examines the performance of Persian school graduates (from three levels of proficiency) in producing six types of English RCs mentioned in the NPAH to explore the participants' command of English RCs before receiving focus-on-formS instruction. This phase qualitatively and quantitatively analyzes the avoided RC types and the erroneous RC types formed by the learners of English whose L1 is Persian to examine whether the errors could reveal more details about the acquisition of RCs in L2 contexts. The pre-test phase mainly aims to explore whether the errors Persian-

speaking learners of English make in the formation of English RCs (SU, DO, IO, OBL, GEN, OCOMP RCs) and the types of RCs they avoid producing reflect the impact of the universal order of acquisition of RCs or L1 transfer. Furthermore, the study intends to figure out whether the English proficiency levels of the L2 learners impact the types of errors they make or the types of RCs they avoid producing. The results of the pre-test phase can contribute to extending our knowledge about the extent to which the universal difficulty order of RCs and/or L1 linguistic transfer impact the performance of L2 learners in the production of L2 RCs. The post-test phase aims to investigate the potential effects focus-on-formS instruction might have on the performance of the L2 learners at each level of proficiency and on the accessibility hierarchy of RCs. The primary aim is to inspect whether the accessibility hierarchy of RCs predicted by the NPAH changes after receiving focus-on-formS instruction.

8.2 Research Questions and Predictions

To achieve the objectives, the present study posed the following research questions:

- (i) What are the most common error types in the construction of English RCs formed by Persian-speaking learners of English?
- (ii) What RC types do Persian-speaking learners of English mostly avoid forming?
- (iii) Can we explain why some RC types are avoided and why some erroneous RC types prevalently occur in the performance of Persian-speaking learners of English?
- (iv) Does giving focus-on-formS instruction on all positions on the accessibility hierarchy of RCs in the NPAH lead to any changes in the accuracy order of the RCs formed by Persian-speaking learners of English?

To answer the research questions, the following predictions are formulated in the study:

Prediction 1: The frequency of the erroneous RCs and that of the avoided types of RCs by Persian-speaking learners of English display the effect of (i) L1 transfer as well as (ii) the intrinsic complexity of the RC types on the acquisition of RCs. In the present study, if the most common errors in the performance of Persian-speaking learners of English manifest the properties of RCs in Persian, the results indicate that L1 transfer is the main reason for making the most common

erroneous RCs. Furthermore, if the most common erroneous RC types are connected to more marked RC types, the results indicate that more marked RCs are intrinsically more difficult to learn than less marked RCs. In addition, in the present study, if the most avoided RC types are connected to more marked RC types, the results indicate that avoidance mainly occurs in more marked RCs. This prediction is associated with the first 3 research questions in the current study.

Prediction 2: Giving focus-on-formS instruction on the RC types modeled in the NPAH affects the performance of the participants in the formation of RCs. If giving focus-on-formS instruction leads to changes in the accuracy order of the RCs formed by Persian-speaking learners of English, the results indicate that instruction affects the accessibility hierarchy of RCs. This prediction is connected to the fourth research question in the present study.

8.3 Method

8.3.1 Participants

The participants of the study were 147 Persian school graduates, 61 male and 86 female, aged between 17 and 19 from different schools in Iran. They were all native speakers of Persian who had finished their studies at school and were preparing for university entrance exams. They were learning English as their L2 and were volunteers to take part in the experiment. They were not paid for their participation and did not receive any benefits. They had all studied the same English school textbooks with the same syllabi, had not spent any time in English-speaking countries, had not had any in-person contact with native English speakers, and had not taken any extra English language courses. The input they had received on English RCs was, to a large extent, identical; their textbooks only contained subject and direct object relatives and their teachers at school had strictly followed the same topics included in the textbooks. A preliminary grammar placement test, developed by Cambridge University Press (see Appendix E), was conducted before the experiment. The placement test was provided by a language institute where the study was conducted. The reason for applying the placement test was to check the participants' general English proficiency and divide them into three levels of proficiency. The placement test consisted of 120 multiple-choice items and the allocated time was 40 minutes following the instructions for the test. 19 students out of 147 were excluded from the study because their scores in the placement

test did not reach 15% of the total score, which was determined to be the minimum score necessary for a participant to be included in the study. That left a final number of 128 participants, 72 female and 56 male. Based on their total score on the placement test, the participants were divided into three proficiency levels high, intermediate, and low. 21 students with scores above 80 were allocated to the high-proficiency group, 72 students whose scores were between 40 and 79 were assigned to the intermediate-proficiency group, and 35 students with scores between 20 and 39 were put into the low-proficiency group. To maintain the privacy of the individuals taking part in the study, the participants were told that they did not have to write their names on the answer sheets. They were also assured that even if they write their names, their answer sheets will be pseudonymized so that their names never occur anywhere in any result sheet or analysis sheet.

Out of the 128 participants of the pre-test, 92 volunteered to participate in the post-test. Out of the 92 participants in the current study, 52 participants (19 male and 33 female) were assigned randomly to form the treatment group and the other 40 participants (16 male and 24 female) formed the control group. Based on the scores acquired in the Cambridge Placement Test given to the 52 participants in the pre-test, 10 participants were categorized at a high-proficiency level, 28 at an intermediate-proficiency level, and 14 at a low-proficiency level. In the control group, 8 participants were categorized at a high-proficiency level, 22 at an intermediate-proficiency level, and 10 at a low-proficiency level. In the post-test, the only difference between the treatment group and the control group was that the participants of the treatment group received focus-on-forms instruction on all six types of RCs, as part of a grammar course taught by the researcher. Table 8.1 highlights the distribution of the participants in the pre-test and post-test concerning the three proficiency levels.

Table 8.1 *Distribution of the participants in the pre-test and post-test with regard to the three proficiency levels*

		High level	Intermediate level	Low level
Pre-test		21	72	35
Post-test	Treatment group	10	28	14
	Control group	8	22	10

8.3.2 Elicitation Tasks

The data elicitation task of the present study was a translation test (translation test 1, see Appendix F, Table F1). The test was constructed based on six types of RCs in the NPAH and consisted of 30 test sentences, five test sentences each for each particular type of RC. That is, 5 × SU, 5 × DO, 5 × IO, 5 × OBL, 5 × GEN, and 5 × OCOM (see examples 1-6 below for each RC type, respectively). The syntactic function of the noun phrase in the matrix clause (NPmat role) is not the focus of the NPAH; however, to ensure the homogeneity of the test items, all the NPs in the test items had the same NPmat role of a predicate nominal. The test sentences were in Persian and the participants were asked to translate the sentences into English. The order of the test sentences was randomized. Distractor items were not included in this experiment given the time-consuming task of this. On average, the participants worked for 40 minutes on the test; the inclusion of a large number of distracting items would have resulted in an unreasonably long experiment. The researcher is aware that because of not including distractor items in the test, the participants were probably aware of what the purpose of the experiment was, and that this might have some implications. For instance, this might influence the number of RCs avoided. For practical reasons regarding time and space, it was necessary to either decrease the number of test sentences, which would have affected the results dramatically in a negative way, or exclude distracting items. The latter was a more reasonable decision. A translation test was used to examine the participants' productive abilities because translation tests provide a limited but well-established tool to test focus-on-formS practice. Furthermore, employing the translation test in this study provided an opportunity to explicitly focus on the production of the rare types of RCs. There is no doubt that the employment of different elicitation measurements in any study might allow for the drawing of more precise conclusions. However, due to having difficulties finding participants interested in doing different types of tests, the present study was restricted to one type of elicitation measurement.

(1) In mard-i ast ke Sārā rā mi-shenās-ad.
 this man- DEM is REL Sara OM PRS-know-3SG
 ‘This is the man who knows Sara.’

(2) In mard-i ast ke Sārā oo rā mi-shenās-ad.
 this man- DEM is REL Sara him.RES OM PRS-know-3SG
 ‘This is the man whom Sara knows well.’

- (3) In mard-i ast ke Sārā be oo ketāb-i dād.
 this man- DEM is REL Sara to him.RES book-INDEF gave.3SG
 ‘This is the man to whom Sara gave a book.’
- (4) In mard-i ast ke shomā dishab darbārāre ye oo sohbat=kard-id.
 this man- DEM is REL you last night about him.RES talked-2PL
 ‘This is the man about whom you spoke last night.’
- (5) In pesar-i ast ke khāhar-ash dar kelās-e mā bud.
 this boy- DEM is REL sister-his in class-EZ our was
 ‘This is the boy whose sister was in our class.’
- (6) In dokhtar-i ast ke Mary az oo bāhush-tar ast.
 this girl- DEM is REL Mary than her clever-more is
 ‘This is the girl who Mary is smarter than.’

To investigate the potential effects of focus-on-formS instruction on the acquisition order of RCs, translation test 2 (see Appendix F, Table F2) was administered to the participants in the study and control groups. The structure of the second translation test was similar to the first translation test. It consisted of 30 test sentences, five for each of the six types of RCs ($5 \times$ SU, $5 \times$ DO, $5 \times$ IO, $5 \times$ OBL, $5 \times$ GEN, $5 \times$ OCOM), and the participants were asked to translate the test sentences from Persian into English. As in translation test 1, all the NPs in the test items in translation test 2 had the same NPmat role of a predicate nominal.

8.3.3 Analysis of RCs

For the analysis, the same procedure was used in the pre-test and the post-test. In the pre-test, to identify the level of the participants’ relativization ability in the formation of the six types of RCs in the NPAH, the first translation test was given to all 128 participants of the study. This means that each participant was assigned 30 test sentences. This procedure resulted in 3840 observations. Before the test, the participants were familiarized with the content of the test and were informed that they would be taking the test for research purposes. To complete the translation test, the participants were required to read each of the 30 Persian sentences and translate them into English within 40 minutes. After carrying out the test, the researcher counted and double-checked the

number of correctly translated RCs in each of the six types of RCs. In the analysis, each correct test sentence was given a score of 1. Since there were five test sentences for each of the six types of RCs, the performance of each participant in the correct formation of each type of RC was given a score between 0 and 5. Score 0 was given when no test sentence was correctly formed, while 5 was given when all five test sentences were correctly formed. Changes in tense, number, or definiteness as well as minor grammatical errors and lexical mistakes that did not affect the structure and content of the RCs were ignored in the scoring. That is, these errors were not counted as incorrect even though they were deviations from the source material. Incorrect were sentences like examples 7, 8, and 9, where the non-canonical word order of an object relative was changed to the canonical word order of a subject relative, a resumptive pronoun was used, or a relative pronoun (*whose* in this specific example) was missed, respectively.

- (7) * This is the man who knows Sara.
- (8) * This is the man who Sara knows him well.
- (9) * This is the man's son that had an accident.

Before the post-test, a grammar course designed by the researcher was offered to the treatment group to help them improve the level of their English grammar in general. Three weeks after the course finished, the course participants (the treatment group), as well as the control group members, took translation test 2, which consisted of 30 test sentences, five for each of the six types of RCs (5 × SU, 5 × DO, 5 × IO, 5 × OBL, 5 × GEN, 5 × OCOM). Students were asked to translate the test sentences from Persian into English. The experimental conditions in the pre-test and post-test were the same. The only difference was that the treatment group received instruction between pre-test and post-test, but the control group did not. At each level of proficiency, the number of participants who correctly translated the test sentences in each category of RCs was counted, and the mean of the correctly formed RCs for each category was calculated. The scores obtained by the treatment group were compared to the scores obtained by 40 test-takers in the control group, who had not received any instruction before completing translation test 2.

In both the pre-test and post-test, in addition to the analysis of the correctly formed RCs, an avoidance and error analysis was performed. The aim was to investigate whether the errors made by the Persian-speaking school graduates and the RC types they mostly avoid could reveal more

details about the acquisition of English RCs and the strategies the learners at different proficiency levels use in the acquisition of these structures. To do the error and avoidance analysis, the number of erroneously formed RCs and the number of avoided RCs (unanswered test sentences) were separately counted for each RC type in the pre-test and post-test. For the error analysis investigation, the errors found in the data for each RC type were grouped based on their type.

8.3.4 The Intervention: Training

The grammar course consisted of a total of 16 sessions: 15 sessions presenting the materials devised by the researcher besides doing exercises, and one session for general practice and revision. Each session lasted 90 minutes. All six types of RCs as well as other grammatical structures were included in the syllabus of the offered grammar course. Before the first session of the course, there was an introductory meeting to familiarize the participants with the rules of the class. The following grammatical structures were worked on in the grammar course: a selection of verb tenses was covered in five sessions, the active and passive voices in two sessions, subject-verb agreement in one session, quantifiers in one session, conditional sentences in one session, and six types of RCs in five sessions. Out of the five sessions presenting RCs, one session was dedicated to SU and DO relatives, and each of the other types of RCs (IO, OBL, GEN, and OCOM) was instructed in a separate session. The lessons were planned in a way that the amount of total exposure to each type of RC in the target language remained the same to see the real effect of the instruction. In each session of the course, the grammatical structures covered in the previous sessions were briefly reviewed by doing short tests. This helped the class participants recall the structures they had already learned. In the last session of the course, no new grammatical structure was presented; instead, the participants were assisted in developing their grammatical competence by practicing the grammatical structures instructed in the grammar course. In the grammar course, the students were provided with relevant focus-on-formS grammar exercises, which primarily focus on discrete linguistic forms, such as substitution drills, gap-fill exercises, sentence completion exercises, and sentence translation exercises on all six types of RCs for practice. The reason for choosing these exercises was to draw the learners' attention to the linguistic forms. In chapter 7, it was pointed out that FonFs is a grammar teaching approach that centers on the explicit teaching of isolated linguistic forms. It was also mentioned that the practice of linguistic items is drawn from a structural syllabus and that the inclusion of the exercises in line with this type of

syllabus plays an important role in this teaching approach. Consequently, the training phase included the relevant focus-on-formS grammar exercises, which agree with the assumptions of the FonFs and the structural syllabus. FonFs is usually realized in terms of the present-practice-produce (PPP) approach (Ur 1996). An important feature of the PPP is that it elicits the production of target forms to help learners learn them. The PPP approach includes controlled production exercises like drilling, gap-fills, and sentence completion, as well as meaning-based activities like sentence translation tasks. It should be noted that in the FonFs approach, when learners engage in meaning-based activities, they should be aware that the primary purpose of the activity is to practice target linguistic forms.

8.4 Results

The objectives of the present experiment in this dissertation were to (i) examine the Persian-speaking school graduates' command of English RCs at the three proficiency levels, (ii) set up a hierarchy of use of English RCs by Persian-speaking learners of English, (iii) explore the erroneous RCs and identify the common error types, (iv) identify the avoided RC types, and (v) investigate whether the accessibility hierarchy of RCs predicted by the NPAH, for which the natural processing of RCs is assumed to account, changes after receiving focus-on-formS instruction on RCs.

8.4.1 Pre-test

8.4.1.1 Analysis of the Correctly Formed RCs

To assess the Persian school graduates' competence in the formation of the six types of English RCs in the NPAH (SU, DO, IO, OBL, GEN, and OCOMP), all 128 participants of the pre-test took part in translation test 1 and translated 30 test sentences from Persian into English. Table 8.2 presents the absolute frequency of the correctly formed RCs in translation test 1 taken by the participants of the pre-test at the three levels of proficiency. The table also shows the proportions of the correctly formed RCs concerning all possible numbers of each RC type at each level of proficiency. To calculate the proportion of the correctly formed RCs, the sum number of occurrences of each RC type was divided by the total possible number of that RC type at each level of proficiency. The total possible number of each RC type at each level of proficiency was

calculated by multiplying the number of participants at each proficiency level by five, which is the number of test sentences for each RC type. For example, as there were 21 participants at the high proficiency level and every participant produced 5 sentences, there were 105 sentences in total for the high proficiency level. Therefore, the 103 correctly formed SU relatives represent 98.09% of that.

Table 8.2 *Frequency and proportion of the correctly formed English RC types in the pre-test (N=128) at the three levels of proficiency*

Proficiency levels (Number of participants)	SU	DO	IO	OBL	GEN	OCOMP
High level (N=21)	103 (98.09%)	91 (86.67%)	66 (62.86%)	69 (65.71%)	50 (47.62%)	42 (40%)
Intermediate level (N=72)	258 (71.67%)	191 (53.06%)	105 (29.17%)	75 (20.83%)	41 (11.39%)	14 (3.89%)
Low level (N=35)	69 (39.43%)	35 (20%)	4 (2.28%)	0 -	9 (5.14%)	0 -

SU: Subject, DO: Direct object, IO: Indirect object, OBL: Oblique, GEN: Genitive, OCOMP: Object of comparison; N: Number of participants at each proficiency level

In Figure 8.1, the left-hand panel illustrates the proportion of each correctly formed RC type to all the other correctly formed RC types at each level of proficiency in the pre-test. For example, at the low level of proficiency, the proportion of the correctly formed SU relatives is the highest, followed by DO relatives, GEN relatives, and IO relatives, respectively.

The proportion of the right-hand panel in Figure 8.1 displays the differences in the proportion of the correctly formed RC types at the three levels of proficiency in the pre-test. Each bar corresponds to the percentages given in Table 8.2, that is the percentage of the correctly formed RCs per RC type. As each bar shows, the sum of the percentages of 6 RC types, the maximum possible value for each bar would be 600 percent.

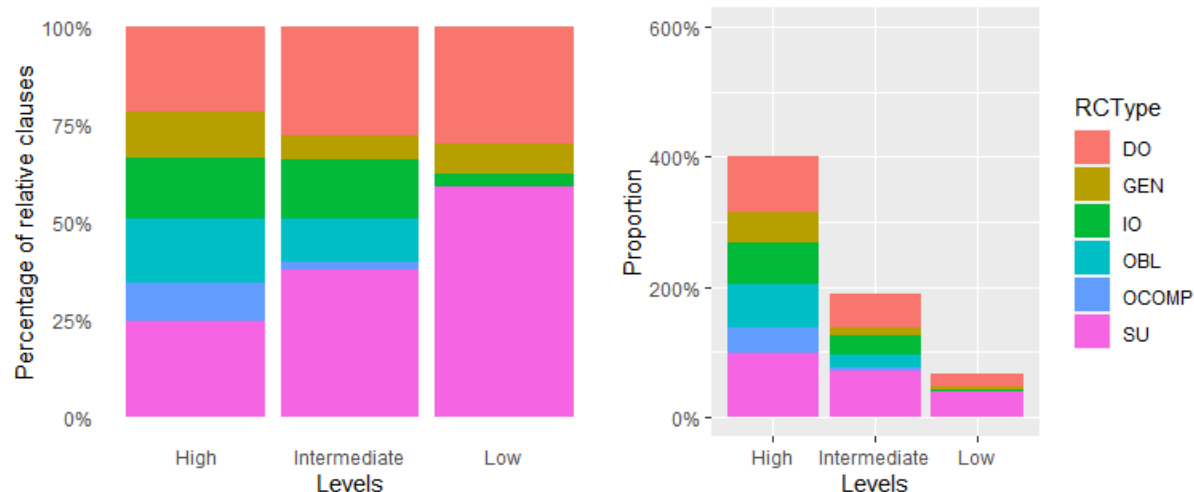


Figure 8.1 Proportion of the correctly formed RC types at the three levels of proficiency in the pre-test (Bars in the left-hand panel indicate the composition of each RC type in relation to all the other RC types at each level of proficiency. Bars in the right-hand panel indicate the sum of the correctly formed RC types, in percentage, at the three levels of proficiency. Each color in each bar corresponds to the percentage of the correctly formed RCs per RC type. The maximum possible value for the sum of the percentages of 6 RC types is 600 percent.)

SU: Subject, DO: Direct object, IO: Indirect object, OBL: Oblique, GEN: Genitive, OCOMP: Object of comparison

As was pointed out in section 5.1.1.1, IO and OBL relatives are structurally different but their NPs have identical semantic roles. However, in the analysis of the data in the current study, it was observed that nearly all the participants formed English IO relatives by using a prepositional phrase (only 2 participants formed 4 instances of IO relatives without using prepositions in the pre-test). Therefore, the researcher decided to follow the previous studies (Keenan and Comrie 1977; Izumi 2003; Diessel and Tomassello 2005; Ozeki and Shirai 2007; Yas 2012; Kim and O' Grady 2016) in which RCs with prepositional phrases that corresponded semantically to IOs were counted as correctly formed IO relatives.

Table 8.3 presents the average number of RCs per proficiency level and relative clause type. For each proficiency level, the first row displays the mean scores (out of 5) of the correctly formed RCs in the pre-test at the three levels of proficiency. For example, the mean of 4.90 for SU relatives at the high level of proficiency shows that, on average, any given participant at this level produces 4.90 SU relatives. The second row for each proficiency level in the table shows the standard deviation.

Table 8.3 Average number of RCs per proficiency level and relative clause type in the pre-test (N=128)

Proficiency levels		SU	DO	IO	OBL	GEN	OCOMP
High	Mean	4.90	4.33	3.14	3.29	2.38	2
	SD	0.30	1.35	2.35	2.17	2.36	1.97
Intermediate	Mean	3.58	2.65	1.45	1.04	0.57	0.19
	SD	2.19	2.31	2.12	1.92	1.32	0.76
Low	Mean	1.97	1	0.11	0	0.26	0
	SD	2.23	1.70	0.47	0	0.74	0

SU: Subject; DO: Direct object; IO: Indirect object; OBL: Oblique; GEN: Genitive; OCOMP: Object of comparison

To statistically compare the performance of the participants at the three proficiency levels in terms of the production of the correctly formed RCs, a non-parametric test of an *Aligned Rank Transform (ART) ANOVA* using the package *ARTool* (Kay et al. 2021) in the statistical analysis software R (R Core Team 2021) (for more details on this test, see section 6.4.1) was used. The reason for choosing this test was that a *Shapiro-Wilk's normality test* (Shapiro and Wilk, 1965; Razali and Wah, 2011) and visual inspection of the histograms showed that, in our data, the RC types were not normally distributed for the three proficiency levels (see Table 8.4 for skewness, Kurtosis, and their standard errors) (Cramer 1998; Cramer and Howitt 2004; Doane and Seward 2011).

Table 8.4 Skewness and Kurtosis measures obtained from Shapiro-Wilk's normality test per proficiency level and relative clause type

		Skewness	Standard error	Kurtosis	Standard error
Subject	High	-2.97	0.50	7.56	0.97
	Intermediate	-1.02	0.28	-0.90	0.55
	Low	0.42	0.39	-1.67	0.77
Direct Object	High	-2.14	0.50	4.42	0.97
	Intermediate	-0.15	0.28	-1.85	0.55
	Low	1.56	0.39	1.23	0.77
Indirect Object	High	-0.59	0.50	-1.68	0.97
	Intermediate	0.94	0.28	-0.95	0.55
	Low	3.98	0.39	14.75	0.77

Oblique	High	-0.66	0.50	-1.39	0.97
	Intermediate	1.45	0.28	0.33	0.55
	Low				
Genitive	High	-0.02	0.50	-2.10	0.97
	Intermediate	2.03	0.28	2.52	0.55
	Low	2.75	0.39	6.52	0.77
Object of Comparison	High	0.30	0.50	-1.40	0.972
	Intermediate	4.16	0.28	17.34	0.55
	Low				

The results obtained from ART ANOVA showed a main effect for RC type, (F value=54.423, $df=5$, $p<0.0000$), a main effect for the proficiency level of the participants, (F value=30.458, $df=2$, $p<0.0000$), and a significant interaction between the two, (F value=10.779, $df=10$, $p<0.0000$). To identify the source of the main effects, *Tukey post hoc* comparisons using *art. con* function were conducted. The results attained from the analysis of the variable of RC type at each proficiency level (see Table 8.5) showed that SU relatives had significantly higher mean ranks than all the other RC types. Higher mean ranks of SU relatives mean a higher number of correctly formed SU relatives. Only at the high and low intermediate levels, significant differences were not observed between SU relatives and DO relatives.

Table 8.5 *Post hoc pairwise comparisons of RC types at each proficiency level in the pre-test (Given values are the results of the Tukey comparisons)*

	RC type	SU	DO	IO	OBL	GEN	OCOMP
High level	SU	-	0.99	0.00	0.01	0.00	0.00
	DO	0.99	-	0.08	0.42	0.00	0.00
	IO	0.00	0.08	-	0.99	0.69	0.47
	OBL	0.01	0.42	0.99	-	0.20	0.09
	GEN	0.00	0.00	0.69	0.20	-	1.00
	OCOMP	0.00	0.00	0.47	0.09	1.00	-
Intermediate level	SU	-	0.00	0.00	0.00	0.00	0.00
	DO	0.00	-	0.00	0.00	0.00	0.00
	IO	0.00	0.00	-	0.70	0.00	0.00
	OBL	0.00	0.00	0.70	-	0.64	0.00
	GEN	0.00	0.00	0.00	0.64	-	0.89

	OCOMP	0.00	0.00	0.00	0.00	0.89	-
Low level	SU	-	0.15	0.00	0.00	0.00	0.00
	DO	0.15	-	0.053	0.00	0.28	0.00
	IO	0.00	0.053	-	1.00	0.99	1.00
	OBL	0.00	0.00	1.00	-	0.99	1.00
	GEN	0.00	0.28	0.99	0.99	-	0.99
	OCOMP	0.00	0.00	1.00	1.00	0.99	-

Concerning the interaction between the variable of RC type and the variable of proficiency level, the following results were obtained (see Table 8.6). As the table presents, post hoc comparisons demonstrated statistically significant differences in the mean ranks of all the RC types formed by the participants at the three proficiency levels, except for OBL, GEN, and OCOMP relatives between low and intermediate levels, and SU relatives between high and intermediate levels of proficiency.

Table 8.6 *Post hoc pairwise comparisons of each RC type at the three levels of proficiency in the pre-test (Given values are the results of the Tukey comparisons)*

		SU	DO	IO	OBL	GEN	OCOMP
High level	Intermediate level	0.19	0.01	0.01	0.00	0.01	0.00
	Low level	0.00	0.00	0.00	0.00	0.00	0.00
Low level	Intermediate level	0.00	0.00	0.02	0.17	1.00	1.00

8.4.1.2 Error and Avoidance Analysis in the Pre-test

In addition to the correctly formed RCs formed by the participants of the pre-test, the erroneously formed RCs as well as the avoided RCs were counted and analyzed. Table 8.7 presents the frequency and proportion of the erroneously formed RCs and the avoided RCs in the pre-test at the three levels of proficiency. Table 8.7 presents the absolute frequency of the erroneously formed RCs in translation test 1 taken by the participants of the pre-test at the three levels of proficiency. It also shows the proportions of the erroneously formed RCs in relation to all possible numbers of

each RC type at each level of proficiency. To calculate the proportion of the erroneously formed RCs, the sum number of occurrences of each RC type was divided by the total possible number of that RC type at each proficiency level. The total possible number of each RC type at each level of proficiency was calculated by multiplying the number of participants at each proficiency level by five, which is the number of test sentences for each RC type.

Table 8.7 *Frequency and proportion of the erroneously formed RCs and the avoided RCs in the pre-test (N=128) at the three levels of proficiency (The number of test sentences for each RC type was 5)*

proficiency levels (Number of participants)		SU	DO	IO	OBL	GEN	OCOMP
High level (N=21)	Avoided RCs	0	1 (0.95%)	10 (9.53%)	15 (14.28%)	29 (27.62%)	22 (20.96%)
	Erroneous RCs	2 (1.90%)	13 (12.38%)	29 (27.62%)	21 (20%)	26 (24.77%)	41 (39.04%)
Intermediate level (N=72)	Avoided RCs	31 (8.61%)	60 (16.67%)	129 (35.83%)	201 (55.83%)	266 (73.89%)	279 (77.5%)
	Erroneous RCs	71 (19.72%)	109 (30.28%)	126 (35%)	84 (23.34%)	53 (14.73%)	67 (18.62%)
Low level (N=35)	Avoided RCs	26 (14.86%)	63 (36%)	94 (53.71%)	112 (64%)	125 (71.43%)	116 (66.29%)
	Erroneous RCs	80 (45.72%)	77 (44%)	77 (39.42%)	63 (36%)	41 (23.43%)	59 (33.71%)

In each RC type, the errors were grouped according to their type (see Table 8.8). In Figure 8.2, the left-hand panel illustrates the proportion of each erroneously formed RC type to all the other RC types at each level of proficiency in the pre-test. For example, at the high level of proficiency, the proportion of the erroneously formed SU relatives is the lowest, followed by DO relatives, OBL relatives, GEN relatives, IO relatives, and OCOMP relatives, respectively.

The proportion of the right-hand panel in Figure 8.2 displays the differences in the proportion of the erroneously formed RC types at the three levels of proficiency. Each bar corresponds to the percentages given in the second rows at each proficiency level in Table 8.7, that is the percentage of erroneously formed RCs per RC type. As each bar shows, the sum of the percentages of 6 RC types, the maximum possible value for each bar would be 600 percent.

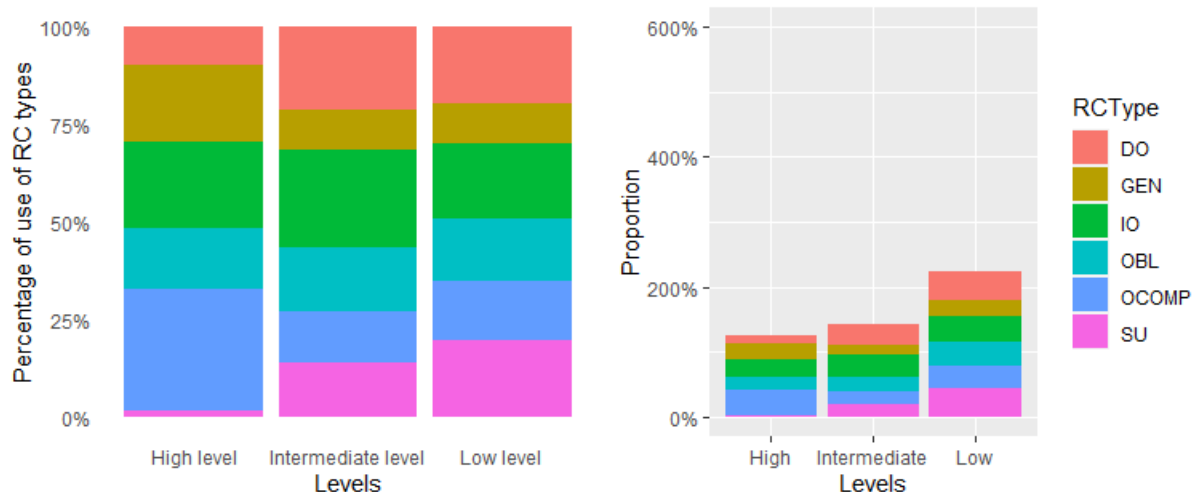


Figure 8.2 Proportion of the erroneously formed RC types at the three levels of proficiency in the pre-test (Bars in the left-hand panel indicate the composition of each erroneously formed RC type in relation to all the other RC types at each level of proficiency. Bars in the right-hand panel indicate the sum of the erroneously formed RC types, in percentage, at the three levels of proficiency. Each color in each bar corresponds to the percentage of the erroneously formed RCs per RC type. The maximum possible value for the sum of the percentages of 6 RC types is 600 percent.)

SU: Subject, DO: Direct object, IO: Indirect object, OBL: Oblique, GEN: Genitive, OCOMP: Object of comparison

In Figure 8.3, the left-hand panel illustrates the proportion of each avoided RC type to all the other RC types at each level of proficiency in the pre-test. For example, at the high level of proficiency, the proportion of avoided SU relatives is the lowest, followed by DO relatives, IO relatives, OBL relatives, OCOMP relatives, and GEN relatives, respectively.

The proportion of the right-hand panel in Figure 8.3 displays the differences in the proportion of the avoided RC types at the three levels of proficiency. Each bar corresponds to the percentages given in the first rows at each proficiency level in Table 8.7, that is the percentage of avoided RCs per RC type. As each bar shows, the sum of the percentages of 6 RC types, the maximum possible value for each bar would be 600 percent.

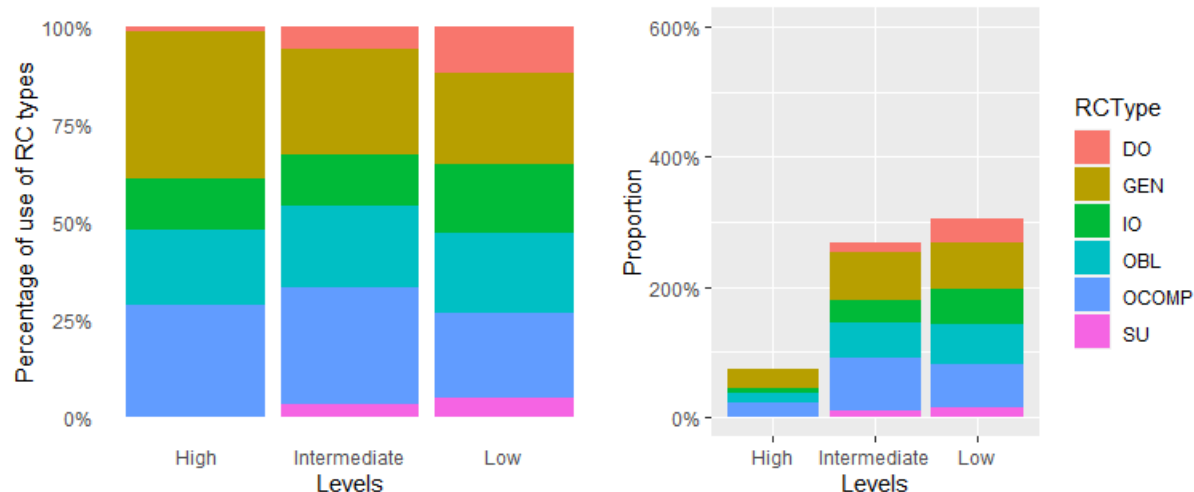


Figure 8.3 Proportion of the avoided RC types at the three levels of proficiency in the pre-test (Bars in the left-hand panel indicate the composition of each avoided RC type in relation to all the other RC types at each level of proficiency. Bars in the right-hand panel indicate the sum of the avoided RC types, in percentage, at the three levels of proficiency. Each color in each bar corresponds to the percentage of the avoided RCs per RC type. The maximum possible value for the sum of the percentages of 6 RC types is 600 percent.)

SU: Subject, DO: Direct object, IO: Indirect object, OBL: Oblique, GEN: Genitive, OCOMP: Object of comparison

Table 8.8 Frequency and percentage distribution of error types in each RC type in the pre-test (The numbers indicating the frequency of error types in each RC type are the sum of the erroneous RCs in each RC type at the three proficiency levels)

Error types	SU	DO	IO	OBL	GEN	OCOMP	Total
Using resumptive pronouns	8 (5.22%)	71 (38.70%)	149 (64.22%)	86 (51.19%)	27 (22.5%)	31 (18.56%)	372
Changing word order in the RC	1 (0.65%)	78 (39.19%)	39 (16.81%)	24 (14.28%)	--	76 (45.50%)	218
Missing relative markers	36 (23.53%)	3 (1.51%)	1 (0.43%)	2 (1.19%)	53 (44.17%)	1 (0.60%)	96
Missing relative clause	29 (18.95%)	19 (9.55%)	10 (4.31%)	2 (1.19%)	14 (11.67%)	19 (11.38%)	93
Missing the predicate of matrix clause	62 (40.52%)	11 (5.53%)	7 (3.01%)	--	--	12 (7.18%)	92
Wrong constituent order	10 (6.53%)	7 (3.52%)	16 (6.90%)	8 (4.76%)	3 (2.5%)	5 (3.00%)	49
Missing preposition	--	--	--	41 (24.40%)	--	--	41

Using wrong relative pronoun	3 (1.96%)	5 (2.51%)	9 (3.88%)	--	20 (16.67%)	--	37
Missing <i>than</i>	--	--	--	--	--	10 (6.13%)	10
Missing constituents in the relative clause	4 (2.61%)	5 (2.47%)	--	--	--	--	9
Using <i>from</i> instead of <i>than</i>	--	--	--	--	--	7 (4.29%)	7
Missing verb in the RC	--	--	--	--	--	5 (3.06%)	5
Placing preposition in a wrong place	--	--	--	5 (2.98%)	--	--	5
Forgetting noun after <i>whose</i>	--	--	--	--	3 (2.42%)	--	3
Using extra preposition	--	--	1 (0.45%)	--	--	--	1
Using extra verb in RC	--	--	--	--	--	1 (0.61%)	1

So far, the avoided types of RCs and the kinds of errors made by the Persian-speaking school graduates in each type of RC (SU, DO, IO, OBL, GEN, and OCOMP) at three levels of proficiency have been analyzed. One might argue that another factor that needs to be investigated is whether some test sentences show a particularly increased error rate. Therefore, the researcher checked whether all the errors related to each RC type occurred in the same test sentence of each RC type or were distributed among the 5 test sentences of each type. An investigation of the distribution of errors shows that errors can occur at the three proficiency levels for all 5 sentences regardless of RC types (see Appendix G for full details). Tables G1, G2, and G3 in Appendix G show the number and the percentage of errors at each test sentence of each particular RC type at the three proficiency levels. The results demonstrate that the errors in each RC type were distributed across all the test sentences of the same RC type.

8.4.2 Post-test

8.4.2.1 Analysis of the Correctly Formed RCs

In the post-test phase, the focus-on-formS instruction was given on all six types of RCs in the NPAH, and translation test 2 was performed three weeks after the instruction. The aim was to investigate whether the participants' performance in the formation of English RCs would differ after receiving instruction. The results of the post-test showed an improvement in the performance of the participants of the treatment group from translation test 1 to translation test 2 (see Table 8.9). To calculate the proportions of the correctly formed RCs in Table 8.9, the sum number of occurrences of each RC type was divided by the total number of test sentences in each RC type. The total number of test sentences was calculated by multiplying the number of participants at each proficiency level by five, which is the number of test sentences for each RC type.

Table 8.9 *Frequency and proportion of the correctly formed English RC types in the post-test taken by the treatment group (N=52) at the three levels of proficiency (The number of the test sentences for each RC type was 5)*

Proficiency levels (Number of participants)	SU	DO	IO	OBL	GEN	OCOMP
High level (N=10)	49 (98%)	48 (96%)	46 (92%)	45 (90%)	46 (92%)	38 (76%)
Intermediate level (N=28)	109 (77.86%)	91 (65%)	82 (58.58%)	74 (52.86%)	81 (57.86%)	49 (35%)
Low level (N=14)	32 (45.71%)	23 (32.88%)	21 (30%)	17 (24.28%)	20 (28.57%)	17 (24.28%)

SU: Subject, DO: Direct object, IO: Indirect object, OBL: Oblique, GEN: Genitive, OCOMP: Object of comparison

In Figure 8.4, the left-hand panel illustrates the proportion of each correctly formed RC type to all the other correctly formed RC types at each level of proficiency in the post-test. For example, at the intermediate level of proficiency, the proportion of the correctly formed SU relatives is the highest, followed by DO relatives, IO relatives, GEN relatives, OBL relatives, and OCOMP relatives, respectively.

The proportion of the right-hand panel in Figure 8.4 displays the differences in the proportion of the correctly formed RC types at the three levels of proficiency in the post-test. Each bar corresponds to the percentages given in Table 8.9, that is the percentage of correctly formed RCs per RC type. As each bar shows, the sum of the percentages of 6 RC types, the maximum possible value for each bar would be 600 percent.

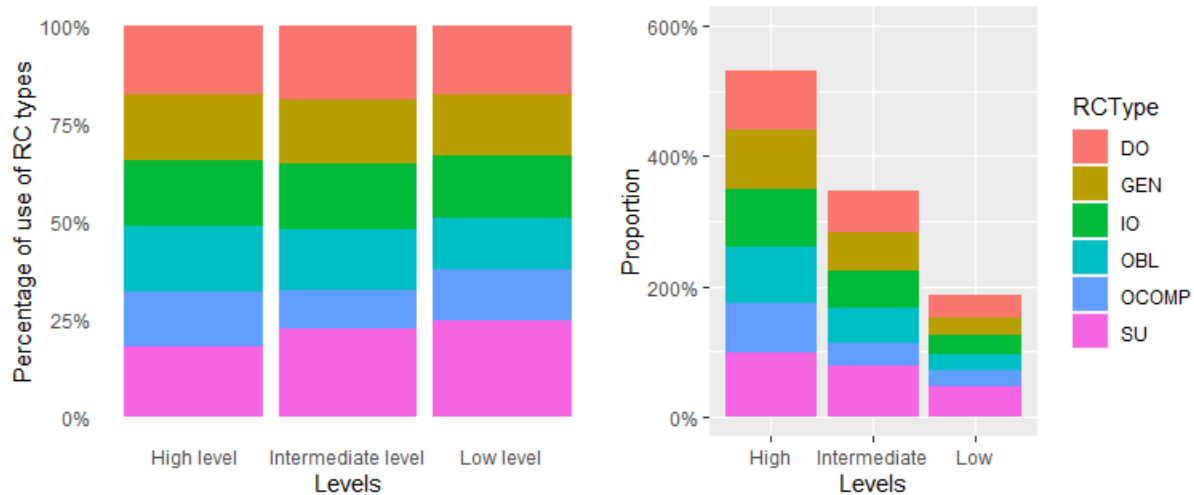


Figure 8.4 Proportion of the correctly formed RC types at the three levels of proficiency in the post-test (Bars in the left-hand panel indicate the composition of each RC type in relation to all the other RC types at each level of proficiency. Bars in the right-hand panel indicate the sum of the accuracy scores of RC types, in percentage, at the three levels of proficiency. Each color in each bar corresponds to the percentage of the correctly formed RCs per RC type. The maximum possible value for the sum of the percentages of 6 RC types is 600 percent.)

SU: Subject, DO: Direct object, IO: Indirect object, OBL: Oblique, GEN: Genitive, OCOMP: Object of comparison

As Figure 8.4 shows, the performance of the participants in the formation of the correctly formed RCs of each RC type improved at the three proficiency levels. However, the amount of increase was not the same for different RC types. In SU and DO relatives, the amount of increase was very low compared to IO, OBL, GEN, and OCOMP relatives. I will return to this later in this section. To statistically compare the performance of the treatment group (N=52) with that of the pre-test group (N=128), an Aligned Rank Transform (ART) ANOVA test using the package ARTool (Kay et al. 2021) in the statistical analysis software R (R Core Team 2021) was used. To identify the differences, Tukey post hoc comparisons using *art. con* function were conducted. Table 8.10 compares the performance of the participants in the pre-test with that of the treatment

group in the post-test at the three levels of proficiency in terms of the correctly formed RCs. As the results show, GEN relatives at the high proficiency level in the post-test slightly approached the significance level and were higher than GEN relatives in the pre-test ($p=0.056$). At the intermediate proficiency level, IO, OBL, GEN, and OCOMP relatives significantly improved in the post-test compared to the pre-test. At the low proficiency level, IO, OBL, and OCOMP RCs showed statistically significant improvement in the post-test compared to the pre-test.

Table 8.10 *Comparison of the performance of the participants of the pre-test (N=128) with the performance of the treatment group in the post-test (N=52) in the formation of each RC type at the three levels of proficiency (Given values are the results of Tukey comparisons)*

Proficiency levels	SU	DO	IO	OBL	GEN	OCOMP
High level	1.00	0.99	0.78	0.96	0.056	0.39
Intermediate level	0.99	0.96	0.01	0.01	0.00	0.01
Low level	0.99	0.73	0.02	0.052	0.25	0.052

The performance of the participants of the treatment group (N=52) was also compared to that of the control group (N=40). The results mainly showed that the treatment group, who had received instruction on all types of RCs in the grammar course, gained better scores than the control group, who had not received any instruction. Since the data was not normally distributed, a non-parametric test of an Aligned Rank Transform (ART) ANOVA was used to statistically compare the performance of the treatment group and the control group in the formation of the RC types. The p-values obtained from Tukey post hoc comparisons using *art. con* function showed significant differences in the use of GEN relatives between the treatment group and the control group at the high and intermediate proficiency levels and a significant difference in the use of OCOMP relatives at the high proficiency level (see Table 8.11).

The results reported in Tables 8.11 and 8.13 demonstrate that the treatment group did not significantly outperform the participants of the pre-test and the control group in the formation of SU and DO relatives. This does not mean that the instruction did not affect them. The reason is that the participants, especially at the high level of proficiency, had already performed well on these two RC types, which means they knew them well and they could not make it any better.

Table 8.11 *Pairwise comparison of the performance of the treatment group (N=52) and the control group (N=40) at the three levels of proficiency in the formation of each RC type (Given values are the results of Tukey comparisons)*

Proficiency levels	SU	DO	IO	OBL	GEN	OCOMP
High level	0.99	0.99	0.31	0.25	0.04	0.04
Intermediate level	1.00	0.99	0.38	0.38	0.01	0.27
Low level	0.99	1.00	0.47	0.55	0.43	0.55

SU: Subject, DO: Direct object, IO: Indirect object, OBL: Oblique, GEN: Genitive, OCOMP: Object of comparison

At the beginning of the present study, it was predicted that giving focus-on-formS instruction on all six types of RCs affects the performance of the participants in the formation of RCs. The results displayed improvement in the performance of the treatment group compared to the pre-test group and the control group in the formation of RCs. Now that the results have shown the instruction affects the performance of the treatment group, one might ask how we can be confident that the control group is not different from the pre-test group. To make sure that the scores obtained by the control group in the post-test (N=40) are comparable to the scores obtained from the pre-test (N=128), Tukey post hoc comparisons using *art. con* function were conducted. Table 8.12 shows the statistical values related to the comparison of the performance of the participants of the pre-test with the performance of the control group in terms of the correctly formed RCs at the three levels of proficiency.

Table 8.12 *Pairwise comparison of the performance of the participants of the pre-test (N=128) with the performance of the control group (N=40) in the formation of each RC type at the three levels of proficiency (Given values are the results of Tukey comparisons)*

Proficiency levels	SU	DO	IO	OBL	GEN	OCOMP
High level	0.99	1.00	0.99	0.99	1.00	0.99
Intermediate level	0.99	0.99	0.99	0.99	0.99	0.99
Low level	0.47	0.57	1.00	1.00	0.99	1.00

SU: Subject, DO: Direct object, IO: Indirect object, OBL: Oblique, GEN: Genitive, OCOMP: Object of comparison

The statistics affirmed the comparability of the results; the obtained p-values, presented in Table 8.12, showed a high degree of conformity between the results attained from the pre-test group and the control group. Thus, according to the aggregate results, it could be claimed that the performance of the Persian school graduates in the formation of English RCs grew considerably after receiving focus-on-formS instruction.

To examine the possibility of any changes in the accessibility hierarchy of RCs proposed in the NPAH after receiving the focus-on-formS instruction, the proportions of the correctly formed RCs in the post-test taken by the treatment group and the control group were calculated (see Table 8.13). Then, for each group, the differences between the proportions of the adjacent RC types were calculated by subtracting the amount of the proportion of each RC type from its preceding adjacent type. Tables 8.14 and 8.15 show the differences between the proportions of the adjacent RC types in the control group and the treatment group, respectively. As the tables present, there is one RC type that stands out in the treatment group. There is an unexpectedly high improvement in the correctly formed GEN relatives. This potentially contradicts the accessibility hierarchy because according to the accessibility hierarchy, we would expect that every adjacent RC type has fewer correctly formed RC types compared to the previous one.

Table 8.13 *Proportion of the correctly formed English RCs in the performance of the treatment group (N=52) and the control group (N=40)*

Proficiency levels		SU	DO	IO	OBL	GEN	OCOMP
High	Treatment group (N=10)	98%	96%	92%	90%	92%	76%
	Control group (N=8)	95%	90%	67.5%	60%	50	35%
Intermediate	Treatment group (N=28)	77.86%	65%	58.58%	52.86%	57.86%	35%
	Control group (N=22)	77.27%	57.27%	33.63%	26.36%	17.27%	5.45%
Low	Treatment group (N=14)	45.71%	32.88%	30%	24.28%	28.57%	24.28%
	Control group (N=10)	44%	28%	2%	0	0	0

Table 8.14 Calculation of the differences between the proportions of the correctly formed adjacent RC types in the control group (N=40)

Proficiency levels	SU-DO	DO-IO	IO-OBL	OBL-GEN	GEN-OCOMP
High	5.00%	22.50%	7.50%	10.00%	15.00%
Intermediate	20.00%	23.64%	7.27%	9.09%	11.82%
Low	16.00%	26.00%	2.00%	0.00%	0.00%

Table 8.15 Calculation of the differences between the proportions of the correctly formed adjacent RC types in the treatment group (N=52)

Proficiency levels	SU-DO	DO-IO	IO-OBL	OBL-GEN	GEN-OCOMP
High	2.00%	4.00%	2.00%	-2.00%	16.00%
Intermediate	12.86%	6.42%	5.72%	-5.00%	22.86%
Low	12.83%	2.88%	5.72%	-4.29%	4.29%

Figures 8.5 and 8.6 illustrate the data presented in Tables 8.14 and 8.15, respectively. As figure 8.6 shows, in the treatment group, at all the levels of proficiency, GEN relatives showed deviation from the accessibility hierarchy in the NPAH. The bars in Figure 8.6 display that GEN relatives compared to OBL relatives at the three levels of proficiency are in the wrong direction; that is, OBL-GEN relatives are negative in the treatment group. In contrast, in the control group, there is no bar in the negative direction, which means no RC type in the hierarchy is bigger than the preceding RC type.

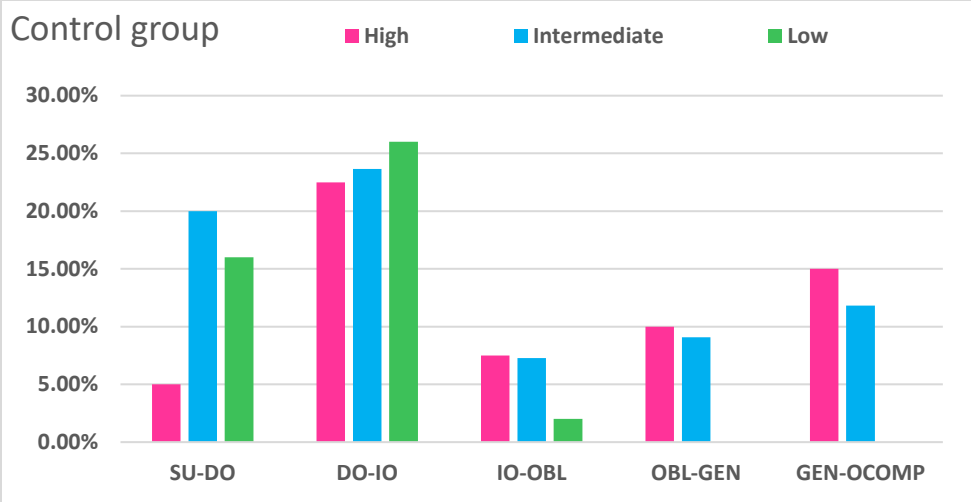


Figure 8.5 Differences between the proportions of the correctly formed adjacent RC types in the control group

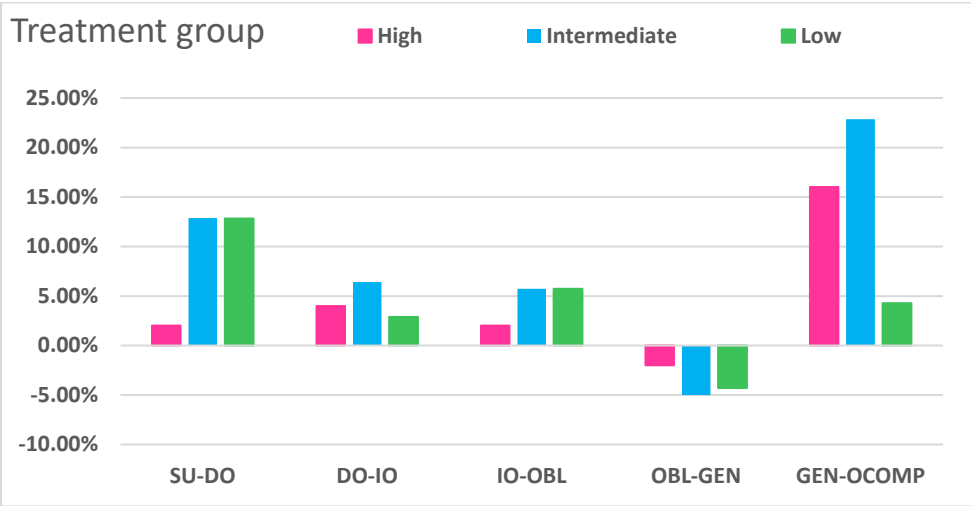


Figure 8.6 Differences between the proportions of the correctly formed adjacent RC types in the treatment group

Conducting Tukey post hoc comparisons using *art. con* function showed no significant difference between OBL-GEN relatives in the treatment group (see Tables 8.16 and 8.17). However, in the treatment group, the results showed a significant difference between GEN-OCOMP relatives at the intermediate proficiency level and a large increase in the difference between GEN-OCOMP relatives at the high proficiency level. Thus, the growth of GEN relatives

in the performance of the treatment group and its deviation from the hierarchy seems to be an important point, which requires further extensive studies.

As Table 8.15 presents, in terms of the number of correctly formed RCs, the differences between less-marked adjacent RCs in the treatment group are not huge. According to Table 8.17, in the treatment group, except in SU-DO relatives at the intermediate level, the participants produced roughly similar numbers of the correctly formed RCs for the less-marked RCs. This means that there is no accessibility hierarchy for the treatment group anymore: contrary to the accessibility hierarchy, the less-marked RC types (SU-DO and DO-IO relatives) do not yield fewer correct sentences than those higher up in the hierarchy. This suggests that the instruction influenced the accessibility hierarchy.

Table 8.16 *Post hoc pairwise comparisons of adjacent RC types at the three levels of proficiency in the control group (Given values are the results of the Tukey comparisons)*

	SU-DO	DO-IO	IO-OBL	OBL-GEN	GEN-OCOMP
High	1.00	0.58	0.99	0.99	0.99
Intermediate	0.01	0.00	0.99	0.86	0.80
Low	0.81	0.02	1.00	1.00	1.00

SU: Subject, DO: Direct object, IO: Indirect object, OBL: Oblique, GEN: Genitive, OCOMP: Object of comparison

Table 8.17 *Post hoc pairwise comparisons of adjacent RC types at the three levels of proficiency in the treatment group (Given values are the results of the Tukey comparisons)*

	SU-DO	DO-IO	IO-OBL	OBL-GEN	GEN-OCOMP
High	1.00	0.99	0.99	0.99	0.37
Intermediate	0.02	0.99	0.98	0.99	0.00
Low	0.58	0.99	0.99	0.99	0.99

SU: Subject, DO: Direct object, IO: Indirect object, OBL: Oblique, GEN: Genitive, OCOMP: Object of comparison

8.4.2.2 Error and Avoidance Analysis in the Post-test

Like what was done for the analysis of the data in the pre-test, in addition to the correctly formed RCs, the erroneously formed and the avoided RCs in the data collected from the treatment group in the post-test were analyzed. Table 8.18 presents the frequency and percentage distribution of the erroneously formed RCs and the avoided RCs in translation test 2 taken by the treatment group at the three levels of proficiency. In each RC type, the errors were grouped according to their type (see Table 8.19). Figures 8.7 and 8.8 show the proportion of the erroneously formed RC types and the avoided RC types, respectively, at the three levels of proficiency in the post-test.

Table 8.18 *Frequency and proportion of erroneously formed RCs and avoided RCs in the post-test taken by the participants of the treatment group at the three levels of proficiency (The number of test sentences for each RC type was 5)*

		SU	DO	IO	OBL	GEN	OCOMP
High level (N=10)	Avoided RCs	0	0	0	0	0	5 (10%)
	Erroneous RCs	1 (2%)	2 (4%)	4 (8%)	5 (10%)	4 (8%)	7 (14%)
Intermediate level (N=28)	Avoided RCs	12 (8.58%)	25 (17.86%)	20 (14.29%)	35 (25%)	53 (37.86%)	67 (47.86%)
	Erroneous RCs	19 (13.58%)	24 (17.14%)	38 (27.14%)	31 (22.14%)	6 (4.28%)	24 (17.14%)
Low level (N=14)	Avoided RCs	10 (14.29%)	16 (22.86%)	24 (34.29%)	28 (40%)	44 (62.86%)	47 (67.14%)
	Erroneous RCs	28 (40%)	31 (44.28%)	25 (35.71%)	25 (35.71%)	6 (8.57%)	6 (8.57%)

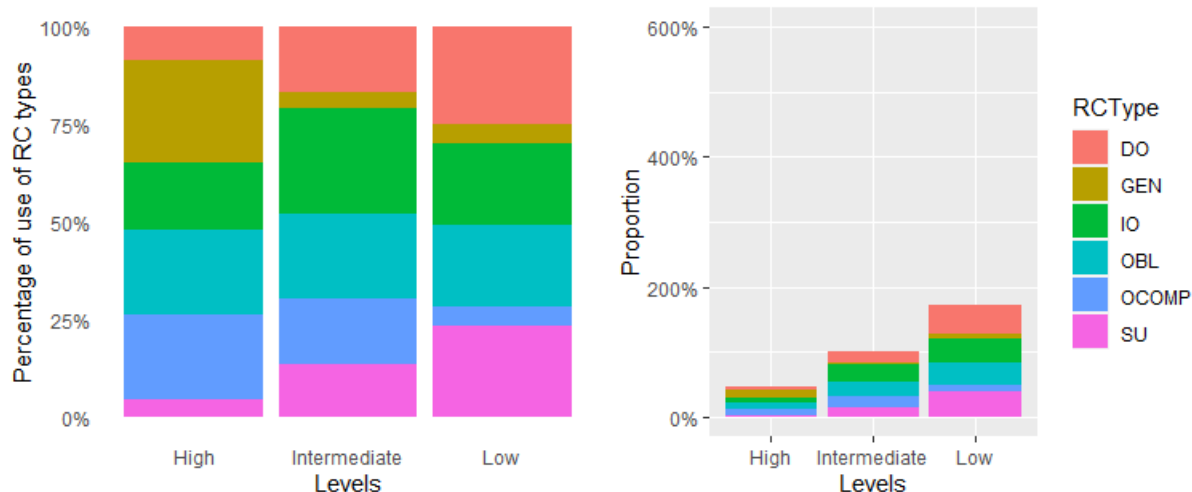


Figure 8.7 Proportion of the erroneously formed RC types at the three levels of proficiency in the post-test (Bars in the left-hand panel indicate the composition of each erroneously formed RC type in relation to all the other RC types at each level of proficiency. Bars in the right-hand panel indicate the sum of the erroneously formed RC types, in percentage, at the three levels of proficiency. Each color in each bar corresponds to the percentage of the erroneously formed RCs per RC type. The maximum possible value for the sum of the percentages of 6 RC types is 600 percent.)

SU: Subject, DO: Direct object, IO: Indirect object, OBL: Oblique, GEN: Genitive, OCOMP: Object of comparison

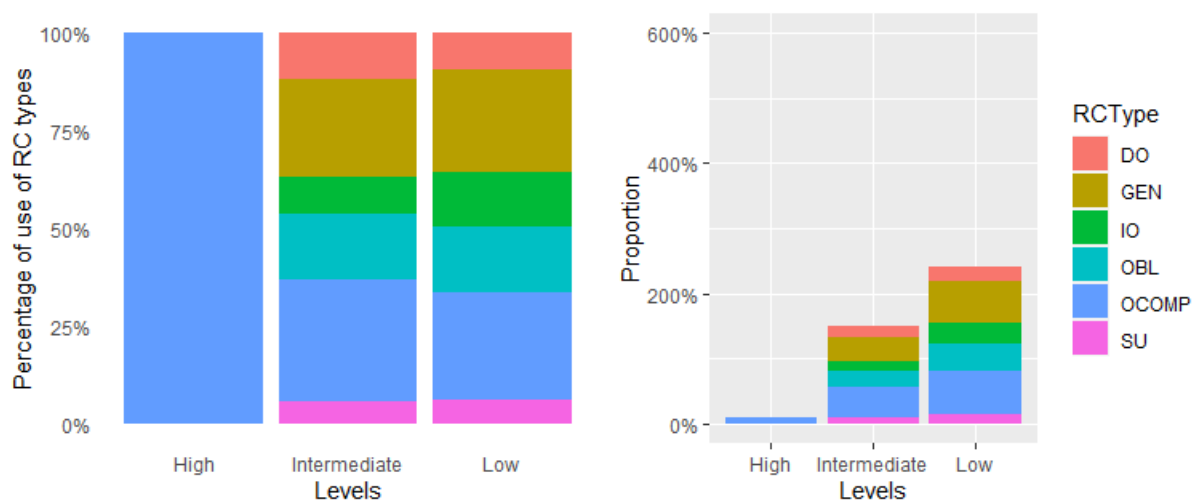


Figure 8.8 Proportion of the avoided RC types at the three levels of proficiency in the post-test (Bars in the left-hand panel indicate the composition of each avoided RC type in relation to all the other RC types at each level of proficiency. Bars in the right-hand panel indicate the sum of the avoided RC types, in percentage, at the three levels of proficiency. Each color in each bar corresponds to the percentage of the avoided RCs per RC type. The maximum possible value for the sum of the percentages of 6 RC types is 600 percent.)

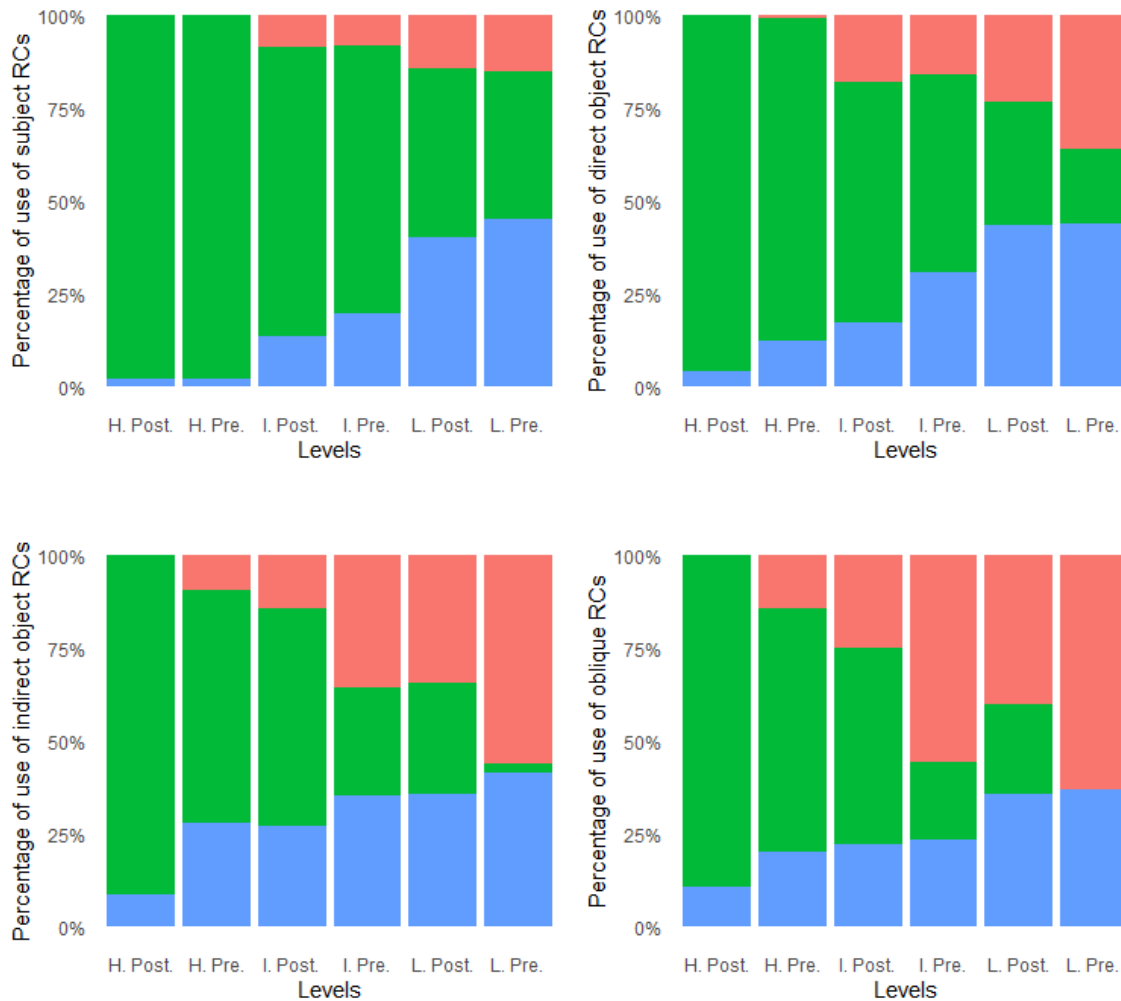
SU: Subject, DO: Direct object, IO: Indirect object, OBL: Oblique, GEN: Genitive, OCOMP: Object of comparison

Table 8.19 *Frequency and proportion of error types in each RC type in the post-test taken by the treatment group (The numbers indicating the frequency of error types in each RC type are the sum of the erroneous RCs in each RC type at the three proficiency levels)*

	SU	DO	IO	OBL	GEN	OCOMP	Total
Using resumptive pronouns	2 (4.16%)	25 (43.86%)	30 (44.78%)	17 (27.86%)	5 (27.78%)	2 (5.71%)	81
Changing word order in RC	1 (2.08%)	27 (47.37%)	18 (26.86%)	10 (16.39%)	--	21 (60%)	77
Missing relative markers	28 (58.33%)	--	--	--	1 (5.56%)	--	29
Missing matrix clause	9 (18.75%)	3 (5.26%)	8 (11.94%)	4 (6.55%)	--	4 (11.43%)	28
Using extra preposition	--	--	6 (8.95%)	14 (22.95%)	2 (11.11%)	--	22
Wrong constituent order	2 (4.17%)	2 (3.51%)	4 (5.97%)	5 (8.20%)	--	5 (14.28%)	18
Missing constituents in the relative clause	3 (6.25%)	--	1 (1.49%)	--	6 (33.33%)	--	10
Wrong relative markers	3 (6.25%)	--	--	1 (1.63%)	4 (22.22%)	--	8
Missing preposition	--	--	--	8 (13.11%)	--	--	8
Missing <i>than</i>	--	--	--	--	--	3 (8.57%)	3
Wrong preposition	--	--	--	2 (3.28%)	--	--	2

Tables H1-H6 in Appendix H and Figure 8.9 below compare the proportion of the test sentences on SU, DO, IO, OBL, GEN, and OCOMP relatives, respectively, which remained unanswered, or were formed correctly or erroneously by the participants of the pre-test (N=128) and the treatment group in the post-test (N=52). In all the bar charts in Figure 8.9, going from right to left (from the pre-test to the post-test), we observe that regardless of proficiency level and RC type, the number of the correctly formed RCs increases whereas the number of the erroneously formed and avoided RCs decreases. This is particularly striking for the RC types lower in the accessibility hierarchy (i.e., IO, OBL, GEN, OCOMP relatives). For example, the participants at the low level of proficiency did not form any correctly formed OBL and OCOMP RCs in the pre-

test, but in the post-test, they formed correct OBL and OCOMP RCs. In this figure, the green parts in the bars, which demonstrate the percentage of the correctly formed RCs, are always larger in the post-test than in the pre-test. In contrast, the erroneously formed RCs, illustrated with the blue color, and the avoided RCs, with the coral color, are smaller in the post-test than in the pre-test. Since both the coral and blue colors get smaller and the green color gets bigger, the results demonstrate an improvement in the post-test compared to the pre-test.



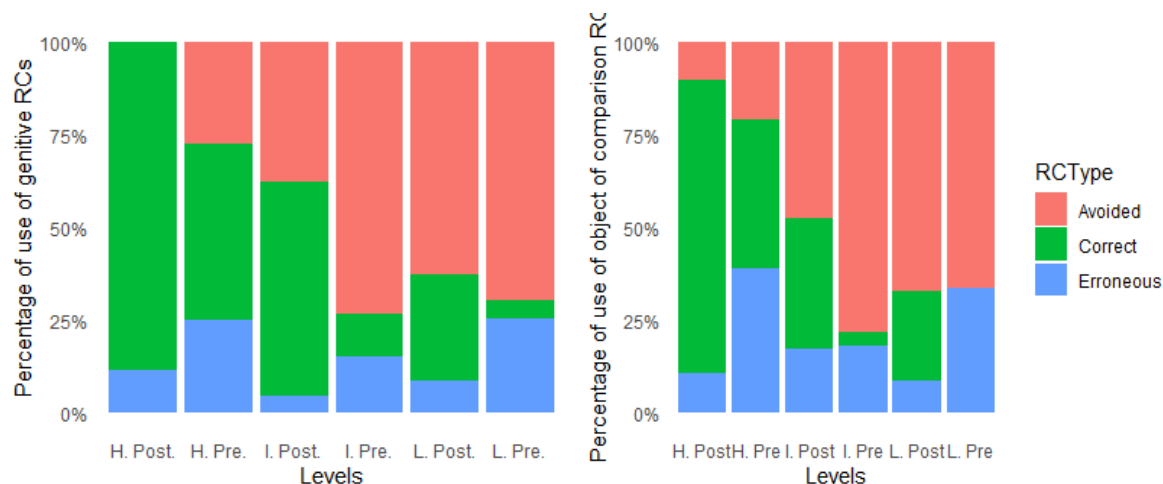


Figure 8.9 Comparison of the proportion of the correctly formed, the erroneously formed, and the avoided subject, direct object, indirect object, oblique, genitive, and object of comparison relatives, respectively, in the pre-test (N=128) and the treatment group in the post-test (N=52) at the three levels of proficiency (H: High; I: Intermediate; L: Low; Post: Post-test; Pre: Pre-test)

8.4.3 Summary of the Results

Tables 8.20 and 8.21 summarize the aggregate results obtained from the analyses of the correctly formed, erroneously formed, and avoided RCs in the pre-test and post-test in this study. In Table 8.20, the symbol \approx indicates that there is no statistical difference between the two adjacent RC types at that specific level of proficiency in that specific test, while the symbol $>$ indicates a significant increase and the symbol $<$ a significant decrease between the two adjacent RC types. In Table 8.21, each empty cell indicates that there is no statistical difference between the pre-test and post-test in that specific cell, while the symbol $>$ indicates a significant increase and the symbol $<$ a significant decrease in the post-test compared to the pre-test.

Table 8.20 Comparison of the accessibility hierarchies obtained from the correctly formed, erroneously formed, and avoided RCs at the three levels of proficiency in the pre-test and post-test

	Levels of Proficiency	Correctly formed RCs	Erroneously formed RCs	Avoided RCs
Pre-test	High	SU \approx DO \approx IO \approx OBL \approx GEN \approx OCOMP	SU \approx DO \approx IO \approx OBL \approx GEN \approx OCOMP	SU \approx DO \approx IO \approx OBL \approx GEN \approx OCOMP

	Intermediate	SU > DO > IO ≈ OBL ≈ GEN ≈ OCOMP	SU ≈ DO ≈ IO ≈ OBL ≈ GEN ≈ OCOMP	SU ≈ DO < IO > OBL > GEN ≈ OCOMP
	Low	SU ≈ DO ≈ IO ≈ OBL ≈ GEN ≈ OCOMP	SU ≈ DO ≈ IO ≈ OBL ≈ GEN ≈ OCOMP	SU ≈ DO ≈ IO ≈ OBL ≈ GEN ≈ OCOMP
Post-test	High	SU ≈ DO ≈ IO ≈ OBL ≈ GEN ≈ OCOMP	SU ≈ DO ≈ IO ≈ OBL ≈ GEN ≈ OCOMP	SU ≈ DO ≈ IO ≈ OBL ≈ GEN ≈ OCOMP
	Intermediate	SU > DO ≈ IO ≈ OBL ≈ GEN > OCOMP	SU ≈ DO ≈ IO ≈ OBL ≈ GEN ≈ OCOMP	SU ≈ DO ≈ IO ≈ OBL ≈ GEN ≈ OCOMP
	Low	SU ≈ DO ≈ IO ≈ OBL ≈ GEN ≈ OCOMP	SU ≈ DO ≈ IO ≈ OBL > GEN ≈ OCOMP	SU ≈ DO ≈ IO ≈ OBL ≈ GEN ≈ OCOMP

Note: The symbol ≈ indicates that there is no statistical difference between the two adjacent RC types at that specific level of proficiency in that specific test, while the symbol > indicates a significant increase and the symbol < a significant decrease between the two adjacent RC types.

Table 8.21 *Demonstration of changes in each RC type at each proficiency level for the correctly formed, erroneously formed, and avoided RCs in the post-test compared to the same RC type at the same proficiency level in the pre-test*

			SU	DO	IO	OBL	GEN	OCOMP
Post-test	Correctly formed RCs	High					>	
		Intermediate			>	>	>	>
		Low			>	>		>
	Erroneously formed RCs	High						
		Intermediate						
		Low						
	Avoided RCs	High						
		Intermediate				<	<	<
		Low						

Note: Empty cells indicate that there is no statistical difference between the post-test and the pre-test at that specific type of RC at that specific proficiency level, while the symbol > indicates a significant increase and the symbol < a significant decrease in the post-test compared to the pre-test.

8.5 Discussion

8.5.1 Pre-test

As the absolute frequencies and the proportions of the correctly formed RC types in the pre-test show (see Table 8.2), at the three levels of proficiency, the occurrence frequencies of the correctly formed SU and DO relatives were the highest. While some of the participants at the two higher levels of proficiency correctly formed some of the test sentences containing more marked RCs (IO, OBL, GEN, and OCOMP relatives), the occurrence of these RC types was much lower in comparison with the less marked ones (SU and DO relatives). The substantial differences between the occurrence of the less marked RCs and more marked RCs at the three levels of proficiency could be due to a variety of reasons such as the absence of less marked RCs in the input and the content of Iranian textbooks of English, the learners' avoidance of using more marked RCs, or the intrinsic higher difficulty level of these RC types. This will be expanded below.

To make a more informed assessment of the performance of Persian-speaking learners of English in the production of RCs in the pre-test, the type of errors the learners made and the type of RCs they avoided were closely analyzed. The results showed a noticeable growth in the number of erroneously formed RCs from less marked RCs to more marked ones. A closer inspection of the error patterns revealed that the three most common error types in the performance of Persian-speaking learners of English were related to:

- (i) using resumptive pronouns in the construction of English RCs, for example, (**This is the man that Sara gave him a book*),
- (ii) changing non-canonical RCs to canonical ones, for example, (**This is the boy who met my sister*) instead of (*This is the boy who(m) my sister met*),
- (iii) missing relative markers, for example, (**This is the student got a good mark*) instead of (*This is the student who got a good mark*).

Using resumptive pronouns may reveal a negative transfer from L1. Unlike in English, resumption is allowed in the structure of object relatives in Persian. That is, the differences in the construction of RCs between the learners' first language (Persian) and the target language (English) are the main reasons for this type of error. Changing non-canonical word order to

canonical word order supports the *Word Order Difference Hypothesis*, according to which non-canonical word order causes more difficulty than canonical word order (MacDonald and Christiansen 2002:40). Changing non-canonical word order to canonical indicates a type of avoidance strategy employed by Persian-speaking learners of English: avoidance of more marked types of RCs, which are intrinsically more difficult to learn and use than the less marked ones. Learners alter the more marked RC type, DO relative, to the less marked one, SU relative. The third most common type of error, omission of relative markers does not seem to show L1 transfer, because the relative marker *ke* in Persian cannot be omitted from the sentence. The aggregate results obtained from the analysis of errors in all RC types in the present study suggest that both L1 transfer and the universal accessibility hierarchy of RCs account for the erroneous English RCs formed by Persian-speaking learners of English.

In addition, the results obtained from the analysis of the avoided types of RCs demonstrated that from more marked RCs to less marked ones, the number of test sentences that remained unanswered substantially increased, especially at the intermediate and low levels of proficiency. The learners seem to have avoided translating the test sentences because they might have found these RC types more difficult than SU and DO relatives. This highlights the learners' avoidance of forming more marked RCs. Furthermore, less-proficient learners used the avoidance strategy significantly more than more-proficient learners. The question that needs to be raised here is why Persian-speaking learners of English have such a high tendency to avoid more marked RCs. This avoidance might be determined by either the higher frequency distributions of less marked RC types in input, or the inherent difficulty of more marked RCs, which has been highlighted in the hypotheses on the natural order of acquisition of RCs. Based on the aggregate results attained, the first prediction, according to which the frequency of the erroneous RCs and that of the avoided types of RCs by Persian-speaking learners of English display the effect of L1 transfer and the intrinsic complexity of the RC types, is confirmed.

The findings of the present study regarding Persian's avoidance of more marked English RCs, and their use of resumptive pronouns in the construction of English RCs can shed some light on the results of Study I in this dissertation too. According to the results of Study I, the participants of the corpus study, including Persian-speaking learners of English, produced a few examples of erroneous DO relatives containing resumptive pronouns. Furthermore, they avoided using more

marked RC types in their essays. The results of Study I and the results obtained from the pre-test in Study II suggest that L2 learners of English prevalently avoid using more marked RCs due to the higher inherent difficulty of the more marked ones.

Another important finding of the pre-test was that some participants at the high level and a few participants at the intermediate and low levels of proficiency could produce RCs that were not covered in the grammar sections of their textbooks at all. This raises the question of how they could have acquired these constructions. The formation of the untaught constructions might be related to various reasons. One possibility is that the participants at higher proficiency levels could have picked these constructions up unintentionally. For instance, these constructions might have occurred in the texts of the books they have read, they might have been used by their English teachers, or might have been used in the movies, TV programs, or games that they have watched. Another possibility is that the participants at higher levels of proficiency might have been able to extend their knowledge of the formation of the less marked RCs (SU and DO relatives) to the formation of more marked RCs.

As was mentioned above, the analysis of the RCs in the pre-test (see Table 8.2) showed that SU and DO relatives had the highest frequency of correctly formed RCs. Having noticed the obvious differences between the participants' performance in producing the correctly formed SU and DO relatives, and the correctly formed IO, OBL, GEN, and OCOMP relatives, the researcher decided to examine whether the Persian school graduates at the three levels of proficiency would have performed better with the latter four types of RCs if they had received instruction on all six types of RCs. Instruction causes language development and the level of accuracy in the formation of RCs might change after receiving instruction. However, the question is whether instruction can make any changes in the accessibility hierarchy of RCs. To answer this question and to investigate the potential effects instruction of all six types of RCs might have on the learners' performance and the accessibility hierarchy of RCs, the post-test was conducted. Post-test (translation test 2), which comprised the six types of RCs and was very similar to the pre-test (translation test 1) in terms of structure, was administered to the participants in the treatment group (the participants who received instruction on RCs in a grammar course) and the participants in the control group.

8.5.2 Post-test

The main objective of the post-test phase was to examine the possibility of any changes in the accessibility hierarchy of the NPAH after receiving the focus-on-formS instruction on all types of RCs. Table 8.9 and Figure 8.4 which demonstrate the percentage distribution of the correctly formed English RCs in the post-test taken by the treatment group at the three levels of proficiency after receiving the instruction show that the results are not completely consistent with the accessibility hierarchy in the NPAH. In the treatment group, the genitive relatives, at all three levels of proficiency, even at the low proficiency level, increased in an unusual pattern that does not match the accessibility hierarchy proposed by the NPAH. Furthermore, the less-marked adjacent RC types did not show significant differences for the treatment group. This suggests that instruction neutralizes, to some extent, the accessibility hierarchy.

In previous studies on RCs, rather mixed results have been obtained for the genitive relatives. Several studies on the acquisition of RCs in SLA (Gass 1979, 1982; Diessel and Tomasello 2005; Rahmany, Marefat, and Kidd 2011) have shown that genitive relatives deviate from the hierarchy in the NPAH. The growth in the formation of genitive relatives in the post-test of this study might be explained by the higher frequency of GEN relatives in corpora compared to the other RC types. According to Fajri and Okwar (2020), genitive relatives are more frequent in use compared to IO and OBL relatives, and the growth of the genitive relative might be determined not only by the effect of instruction but also by the general frequency of this construction in most of the corpora. Fajri and Okwar investigated the frequency of use of English relative pronouns in the Brown Family corpus which consists of Lancaster (1931), LOB corpus (1961), and FLOB corpus (1991), which are representative of written British English, and Brown corpus (1961) and Frown corpus (1992), which are representative of the American variety.

In this study, apart from receiving instruction, nothing changed in the condition of conducting the pre-test and the post-test, and all the other factors were controlled. In the grammar course, the teacher devoted the same amount of time to all six types of relatives and provided the same type of exposure to all of them. In addition, there is no similarity between the structure of genitive relatives in English and Persian. Therefore, based on the aggregate results, the instruction seems to be the reason for the deviation of genitive relatives and the changes in the hierarchy. Thus, the

second prediction, according to which giving focus-on-formS instruction on all types of RCs affects the accessibility hierarchy of RCs, is supported.

One of the surprising findings of Study I in this dissertation (see section 6.4) was related to the higher frequency of use of genitive relatives in the Azerbaijani, Kurdish Sorani, and Persian corpora compared to the native English corpus. It was speculated that different factors such as input frequency might account for the higher frequency of GEN relatives in the three learner corpora. According to the results obtained from the post-test phase in Study II, it is conjectured that receiving instruction on genitive relatives may cause a change in the hierarchy of relativization. To provide more evidence that external factors like input and instruction account for the acquisition order of RCs in L2, particularly for GEN relatives, further similar studies on larger scales and typologically different languages are required. The results of such studies may shed some more light on the deviation of genitive relatives in the accessibility hierarchy in L2 acquisition.

8.6 Summary of the Findings

In sum, the results of the analysis of the translation tests taken by Persian-speaking learners of English in Study II in this dissertation display that forming English RCs with resumptive pronouns and changing non-canonical RCs to canonical RCs are the most common erroneous types of RCs. These errors are interpreted as evidence of the impact of L1 transfer and the intrinsic complexity of RCs. The analysis of the test sentences left unanswered shows that the participants avoid more marked RC types. This indicates avoidance is mainly linked to the universal acquisition difficulty of more marked RCs.

The post-test phase of the study examines the potential effects of focus-on-formS instruction on the accessibility hierarchy of RCs. This phase compares the results obtained from the treatment group, who received instruction, to the results attained from the control group. The results conform with the accessibility hierarchy except for the genitive relatives. This suggests that receiving focus-on-formS instruction on genitive relatives may cause a change in the accessibility hierarchy of RCs.

Chapter Nine: Conclusion and Implications of the Studies

Linguists find relative clauses intriguing partly because of their universality in languages of the world, partly due to their high frequency in everyday use of language, and partly because of their unique syntactic properties (Izumi 2003:286). This dissertation focused on the linguistic properties of RCs in English and four other languages: Azerbaijani, German, Kurdish Sorani, and Persian. Furthermore, it explored the formation and use of English RCs by learners of English with the above-mentioned first languages. In this dissertation, two studies on relative clauses were carried out.

The first study in this dissertation was conducted to investigate the patterns of use of different types of English RCs in the argumentative essays written by native English speakers, and four groups of English learners with typologically different first languages: Azerbaijani, German, Kurdish Sorani, and Persian. The study explored the frequency of use of RC types in the learner corpora and the native English corpus to set up a hierarchy of use of RCs in each corpus. The study compared the hierarchies obtained from the analysis of each corpus to the hierarchies proposed by the hypotheses concerning the acquisition of RCs, which are based on different rationales. The results of the analysis of RC occurrence in the data supported the NPAH, which predicts the accessibility hierarchy of RCs by focusing on the syntactic position that is relativized. The results obtained were partially supported by the statistical analysis as the statistics demonstrated that SU relatives were in the first place of the accessibility hierarchy of relativization.

The results of the study also supported the PDH, which predicts the ease of RCs by focusing on the position of RCs in the matrix clause. Thus, according to the results, the NPAH and the PDH are not incompatible but are complementary to one another. This finding is in line with that of the study carried out by Izumi (2003). The AH, which was proposed by Fox, was not confirmed by the results of the corpus study. It was suggested that this probably relates to the fact that Fox used spoken data for her analysis, but the written data was used in the present investigation.

In Study I, since not all the RC types used in the data could be properly accommodated in the NPAH, the PDH, and the AH, the categorization system of RCs was expanded following the model proposed by Fox and Thompson (1990). This categorization system of RCs took the syntactic role of the NPs in matrix clauses and the syntactic role of their coreferents within the RCs into account.

Study I also contributed to the understanding of the similarities and differences in the performance of the learners of English with different L1s in the use of RC types. The study compared the learner corpora with the native English corpus in terms of the frequency of use of different RC types, reduced RCs, relative markers, and RCs with animate and inanimate head nouns. Whereas some similarities in the use of RCs were noticed between the native corpus and the learner corpora, the results depicted several differences in the employment of different types of English RCs in the essays written by English learners and native English speakers. The differences were attributed to the impact of L1 and input frequency.

Interestingly, all the learner corpora in Study I showed common points with the native English corpus regarding the frequency of use of subject relatives. In general, the Azerbaijani and German corpora showed the highest similarity to the native English corpus. One major difference between the German corpus and all the other corpora in the study was the prevalence of the use of the relative pronoun *which* in the German data, which could be related to the dominance of British English in the German education setting. The analysis of the learner corpora also revealed that the total number of RCs in the German corpus was much higher than the number of RCs in the other three learner corpora. It was discussed that this might be attributed to the inefficiency of the Iranian textbooks of English in covering the topic of English relativization and the shortcomings of these textbooks in providing sufficient and appropriate exercises to practice English relative clauses.

In addition to the above-mentioned findings, Study I highlighted the influence of the L1 of the learners of English on the performance of the learners in the formation and use of English RCs. Although the number of errors in the structure of RCs in the learner corpora was low, a closer look at the errors showed the effect of L1 transfer. The low number of errors in the formation and use of RC types in the essays written by L2 learners of English was assumed to be related to the avoidance strategy employed by the learners. The results displayed that the L2 learners avoided more marked RC types as they found them more complex to use. Regarding the type of errors in

the data, the analysis showed similarity between the Kurdish and Persian corpora, in which all the errors concerned the use of resumptive pronouns in object relatives, which shows L1 transfer.

In the second study in this dissertation, in addition to the role of the universal difficulties of the complex structures of RCs, the influence of the type of instruction on the accessibility of RCs was examined. Study II was conducted to investigate the effect of focus-on-formS instruction on the performance of L2 learners of English in the formation of RCs, and on the accessibility hierarchy in the NPAH by employing two translation tests. The results obtained from the first test, which was given to a group of Persian-speaking learners of English who had only received instruction on the first two positions (i.e., subject and object relatives) in the accessibility hierarchy, were compatible with the accessibility hierarchy in the NPAH. To investigate the potential effects of focus-on-formS instruction on the accessibility hierarchy, a grammar course including all types of RCs in its syllabus was offered to the study group, and the second test was administered thereafter. The results revealed a significant difference in the performance of the participants in the correct formation of RCs after receiving the focus-on-formS instruction. Furthermore, the results conformed with the accessibility hierarchy in the NPAH except for the genitive relatives, which demonstrated an unusual pattern. The results revealed that the focus-on-formS instruction caused greater growth in the acquisition of genitive relatives compared to the other relatives. These findings call for further research on a larger scale on typologically different languages, to track the effects of input and different types of instruction on the accessibility hierarchy of RCs in SLA, and on the development of the performance of L2 learners in forming RCs, particularly GEN relatives. The results of study II can also lead to the improvement of textbooks of English used in Iranian schools, highlight the importance of instruction on the acquisition of RCs, and help L2 learners improve their learning of English RCs.

I believe the analysis which was carried out in this dissertation on the use of English relative clauses in the performance of several groups of English language learners makes a valuable contribution to the understanding of the issues related to RC acquisition. Like many investigations on linguistic features in L2 contexts, the studies in this dissertation were brought about by pedagogically-driven needs of specific groups of L2 learners in particular places. The findings of this research can be used for pedagogical purposes as they can be applied to teaching grammar and writing and designing teaching materials. English teachers can consider the types of errors

language learners make when they form English RCs, as well as the RC types they tend to overuse or underuse. Then, teachers can attempt to fulfill a great deal of what language learners need to refine in their use of English RCs. Furthermore, the textbooks of English might be revised. To have a good command of relativization, the learners should be provided with appropriate input in their textbooks. Iranian textbooks of English cover subject, object, and participle relatives; however, they do not introduce the distinction between restrictive and non-restrictive RCs and do not cover genitive and zero relatives. It would be very helpful for the learners if the textbooks were to be revised so that they covered the differences between restrictive and non-restrictive RCs, more marked RC types like genitive relatives, and zero relatives.

The linguistic universal factors and human cognitive mechanisms are generally considered to have significant roles in the acquisition of RCs by adult learners. The analysis of the erroneous and avoided RC types in this study revealed that, in addition to the intrinsic universal factors, the linguistic properties of the previously learned language(s) influence the acquisition of RCs in L2. Cross-linguistic influence is more complex in L3 acquisition than L2 acquisition because it involves not only all the processes associated with L2 acquisition but also more complicated relationships between the other languages the learner already knows (Puig-Mayenco et al. 2020:33). This calls for further studies on the impact of multilingualism on the acquisition of RCs in additional languages. Conducting such studies would create a greater awareness of similarities and differences between languages, and would help scholars gain new insights regarding language acquisition in plurilingual settings, which is an important issue in this era.

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Appendices

Appendix A

According to the Ministry of Schools in North Rhine-Westphalia (Ministerium für Schule und Bildung 2020), <https://www.schulministerium.nrw.de/BiPo/VZL/lernmittel>, the textbooks of English are the following:

Table A1. *The textbook series of English employed in German schools in North Rhine-Westphalia in Germany*

School Grade	Textbook Series		
5th grade	Green Line 1	English G Access 1	Camden Town 1
6th grade	Green Line 2	English G Access 2	Camden Town 2
7th grade	Green Line 3	English G Access 3	Camden Town 3
8th grade	Green Line 4	English G Access 4	Camden Town 4
9th grade	Green Line 5	English G Access 5	Camden Town 5

* Green Line series are published by Ernst Klett, English G Access series by Cornelsen, and Camden Town series by Diesterweg

Appendix B

LEARNER PROFILE

Text code: (do not fill in)

Essay:

Title:

Approximate length required: -500 words +500 word

Conditions: timed untimed

Examination: yes no

Reference tools: yes no

What reference tools?

Bilingual dictionary:

English monolingual dictionary:

Grammar:

Other(s):

Surname: First name:

Male Female Age:

Nationality:

Native language:

Father's first language:

Mother's first language:

Language(s) spoken at home: (if more than one, please give the average % use of each)

Education:

Primary school - medium of instruction:

Secondary school - medium of instruction:

Current studies:

Current year of study:

Institution:

Medium of instruction:

English only
Other language(s) (specify)
Both

Years of English at school:
Years of English at university:

Stay in an English-speaking country:
Where?

How long? When?

Other foreign languages in decreasing order of proficiency:

I hereby give permission for my essay to be used for research purposes.

Date:

Signature:

Appendix C

Table C1. *Non-restrictive RCs in each learner corpus and the native English corpus*

Azerbaijani	The increase in greenhouse gases [that is due to the fault of the human being] has caused the global warming.
	Air pollution [which is one of the worst types of pollution] is caused by both natural and human-based causes.
	Therefore, it is highly recommended that universities around the world should offer applied courses [that are more useful than theoretical ones].
	The word equality [that we frequently find in the literature] is a symbolic term.
	Trees [that basically purify the air] are constantly cut down and the drop in the number of trees makes environmental problems.
	The earth is getting warmer, and we do not experience cold winters [that we used to have some years ago].
	The damage to blood circulation system [that is crucially important] is one of the serious harms to the body because as a result, the heart, lungs, and other organs cannot perform well.
	Whereas some people believe that modernism has not left any place to fantasize or imagine the impossible, others concur with the opposite view [that emphasizes the power of dreaming].
	It might be owing to different reasons such as growing inclination toward materialism, or getting drowned in hectic routine schedule [that is a consequence of modern times].
	The modern world [that is based on development industrialization] has created the supposition of human's dominance upon the universe.
Kurdish Sorani	To avoid air pollution, anyone can play a small role and reduce the amount of dioxide carbon [that is the main pollutant in the air].
	Without doubt, pollution is one of the most important problems [which everyone can simply notice].
	Unfortunately this system is only limited to a few countries and many countries still have the traditional system of prison [which are not useless].

	<p>Although one of the reasons of pollution and the polluted world is natural and is out of our control, vast amount of pollution is by <i>humans</i> [who are always making water, air, and soil polluted].</p>
	<p><i>The second attitude</i> [that is crucial] is having peace of mind.</p>
	<p>Therefore, many anti-pollution efforts should be made to fight against <i>pollution</i> [that endangers life].</p>
<p>Persian</p>	<p>On the one hand technology and machines make life easier, on the other hand they are the major reason for <i>pollution</i> [that is getting out of human's control].</p>
	<p>They want to recognize the planet's environmental problems and come up with solutions to save <i>the Earth</i> [that is the home for all of us].</p>
	<p><i>The modern life</i> [which is an outcome of science and technology] has ruined a large part of mankind's soul.</p>
	<p>Prisoners have the tendency to change to <i>worse people</i> [that nobody can imagine].</p>
	<p>This does not happen unless people with governments understand the point of saving <i>the world</i> [that is in a big danger].</p>
	<p>At first, <i>our ancestors</i> [who were uncivilized] did not know anything about space traveling and other modern technologies.</p>
	<p>However, most of the universities cannot prepare students for the real world because they just offer <i>theoretical courses</i> [that are not enough for training a student].</p>
	<p>If you are exposed to very high levels of air pollutants, you may experience irritation of the eyes, nose and throat, coughing and breathing problems and have a greater risk of <i>heart attacks</i> [that can cause death].</p>
	<p><i>Environmental pollution</i> [that is the result of man's activities] is the main reason of the changes in the environment.</p>
	<p>It would be devastating for them to find out that they have not got the required practical prerequisites and have just learned <i>the theories</i> [that are not sufficient].</p>

Appendix D

Table D1. Sentences containing RCs extracted from the Azerbaijani corpus

Student ID	Topic No.	Sentences Extracted from the Essays	NPmat Role	NPre Role	Relative Pronoun	Center/ Right Embedded
1.M.23	3	This is a <i>very negative issue</i> [which roots in the unawareness of parents and school teachers].	Predicate Nominal	ISU	which	right
		<i>Large number of cutting-edge technological advances</i> [that we have in this era] did not exist a few years ago.	Subject	DO	that	center
		<i>People</i> [whose brains have the ability to go further in imagination] will make the world more advanced.	Subject	Gen	whose	center
	6	The increase in greenhouse gases [that is due to the fault of the human being] has caused the global warming.	Subject	ISU	that	center
		All the actions [that we take] must be effective enough.	Subject	DO	that	center
2.F.21	3	There were <i>many intelligent people</i> [who had an important role in industrialization and the development in different fields] existed.	Predicative Complement in Existential Clause	TSU	who	right
		On the contrary, big dreams and creative imaginations do exist in <i>the mind of the people</i> [who live in prosperous technological places].	Prepositional Phrase Object	ISU	who	right
	6	<i>Air pollution</i> [which is one of the worst types of pollution] is caused by both	Subject	ISU	which	center

		natural and human-based causes.				
		They mix with water vapor and form <i>acid rain</i> [which is very harmful].	Direct Object	ISU	which	right
		There are <i>other types of pollution</i> [that humans cause too].	Predicative Complement in Existential Clause	DO	that	right
3.F.32	5	Academic centers and universities are places to help knowledge seekers not only gain more knowledge but also learn <i>real-world practical skills</i> [that are beneficial].	Direct Object	ISU	that	right
		After passing the entire courses, university students get their university degrees in <i>different fields</i> [they have studied].	Prepositional Phrase Object	DO	zero	right
		If the universities offer applied courses, <i>the university graduates</i> [that have learned how to handle things practically] will be able to do their tasks properly at work.	Subject	TSU	that	center
		Therefore, it is highly recommended that universities around the world should offer <i>applied courses</i> [that are more useful than theoretical ones].	Direct Object	ISU	that	right
	6	<i>Most of the elderly people and children</i> [about whom we concern] feel breathless because of the polluted air.	Subject	OBL	whom	center
		Although establishment of the big companies and industrial development is very important for the countries to be more	Prepositional Phrase Object	DO	that	right

		prosperous, there should be security control on any actions [that they take].				
4.M.24	1	Those [who have studied history] know that prison has always played a considerable role in crime control.	Subject	TSU	who	center
	4	People [who have a special talent] can benefit from the world.	Subject	TSU	who	center
5.M.23	1	Prison system has a particular set of advantages and disadvantages [that governments should consider].	Direct Object	DO	that	right
		To some extent, I agree that convicts [who can be threatening] are not welcome in any community.	Subject	ISU	who	center
	3	In fact, compared to past, the world is a better place [that enables people to think much more deeply and to dream more vividly].	Predicate Nominal	TSU	that	right
		We can imagine things [that are not in real world].	Direct Object	ISU	that	right
		The proof to this claim is the new useful devices [we observe every day].	Predicate Nominal	DO	zero	right
6.F.29	1	The people [who do wrongs] are sent to prisons.	Subject	TSU	who	center
		When we think of prison, the first things [that come to our minds] are fence, long walls, bad behavior, and violent actions.	Subject	ISU	that	center
	6	Polluted environment brings a lot of problems [that affect human's health and the quality of life].	Direct Object	TSU	that	right

		Thousands of animals die every day by <i>the pollutants</i> [that humans release to the environment via cars, factories, and industries].	Prepositional Phrase Object	DO	that	right
		We are <i>humans</i> [who have the ability to think and decide].	Predicate Nominal	TSU	who	right
7.F.24	1	<i>People</i> [who are in prison] need rehabilitation and support from the government and psychologists to be able to make big changes in their lives.	Subject	ISU	who	center
	6	Life is full of <i>natural beauties</i> [that we like], but we have always been polluting the environment and destroying the nature.	Prepositional Phrase Object	DO	that	right
		Studies show that noise pollution negatively affects the life of <i>workers</i> [who endure the sound of 125 decibels at work].	Prepositional Phrase Object	TSU	who	right
8.F.32	4	The word <i>equality</i> [that we frequently find in the literature] is a symbolic term.	Subject	DO	that	center
		<i>People</i> [who are in higher positions] do not like to think about equality.	Subject	ISU	who	center
	5	Universities are <i>places</i> [that provide better educational opportunities] for those who want to learn more in different fields of study.	Predicate Nominal	TSU	that	right
		Universities are places that provide better educational opportunities for <i>those</i> [who want to learn more in different fields of study].	Prepositional Phrase Object	TSU	who	right

9.F.24	4	The group of people [who have a good position in society] can easily make every impossible case possible.	Subject	TSU	who	center	
		For instance, in case of employing a person for a special career, the administrator uses his power and may employ an unskilled friend instead of a person [who is skillful] but doesn't have a powerful supporter.	Prepositional Phrase Object	ISU	who	right	
	6	Pollution [that menaces mankind] is a very crucial subject.	Subject	TSU	that	center	
		Pollution is a serious problem [which is mainly caused by people] who are not attentive and wary.	Predicate Nominal	TSU passive	which	right	
		Pollution is a serious problem which is mainly caused by people [who are not attentive and wary].	Prepositional Phrase Object	ISU	who	right	
		Trees [that basically purify the air] are constantly cut down and the drop in the number of trees makes environmental problems.	Subject	TSU	that	center	
	10.M.26	3	They believe that those [whose life is governed by groundbreaking equipment] live in more comfort because they can also have the opportunity to use technology and make their dreams come true.	Subject	Gen	whose	center
			People use technology and find new entertainments [that are amazing such as simulation of emotions in 3D sounds and 3D graphics].	Direct Object	ISU	that	right

		In conclusion, industrialized modern style of living exist because <i>some ambitious people</i> [who were eager to have an easier life] thought about unique possibilities.	Subject	ISU	who	center
	4	However, in most of the developing countries providing facilities for disabled people is not considered at all and people with disabilities always need <i>someone</i> [on whom they can rely].	Direct Object	OBL	whom	right
11.F.25	5	<i>People</i> [who enter the universities and study in a specific field] will be able to draw better sketches for the future.	Subject	ISU	who	center
		Most of the courses are <i>theoretical concepts</i> [that students find difficult to comprehend and grasp].	Predicate Nominal	DO	that	right
		<i>Most university degrees</i> [that are theoretical] cannot prepare students for the real world.	Subject	ISU	that	center
	6	<i>Heart and lung diseases and various types of cancers</i> [endangering many lives] are basically caused by pollution.	Subject	TSU	Reduced (present participle)	center
		The earth is getting warmer, and we do not experience <i>cold winters</i> [that we used to have some years ago].	Direct Object	DO	that	right
		They design <i>many plans</i> [that are useful for the environment].	Direct Object	ISU	that	right
12.F.29	3	In spite of <i>the technological advancement and noticeable improvement</i>	Prepositional Phrase Object	DO	that	center

		[that human has achieved with the help of technology], imagination is still considered very important.				
		Therefore, anyone is looking for ways [that bring peace and calmness].	Prepositional Phrase Object	TSU	that	right
	5	The first one is a person [who has allocated several years of his life to studying at a university and might have learnt a lot theoretically].	Predicate Nominal	TSU	who	right
		The second one is an experienced person [who has learned a skill by practice and doing several tasks].	Predicate Nominal	TSU	who	right
		Majority of employers would rather employ educated people [who have some experience at work too].	Direct Object	TSU	who	right
		They think that people [who have been at the universities and have gained some practical experience] are the best choices to get the jobs.	Subject	ISU	who	center
13.M.22	1	The ones [who are for rehabilitation point to some specific strategies and special techniques in order to make the wrongdoer feel sorry about the wrong action he or she has done].	Subject	ISU	who	center
		There are some criminals [who deserve to be kicked out and treated the worst].	Predicative Complement in Existential Clause	TSU	who	right
	6	Water pollution stems from the industrial factories [that	Prepositional Phrase Object	TSU	that	right

		release their waste into the water sources].				
		Noise is another <i>type of pollution</i> [which is very serious].	Predicate Nominal	ISU	which	right
		There are different <i>kinds of pollution</i> [that are hazardous] but all types could be avoided if we pay more attention.	Predicative Complement in Existential Clause	ISU	that	right
14.F.31	1	<i>Violent criminals</i> [committing serious crime] should not return to the society.	Subject	TSU	Reduced (present participle)	center
		I believe that <i>the people</i> [having the potential to commit horrible crime] are very likely to do wrongs all the time.	Subject	TSU	Reduced (present participle)	center
		In this way, <i>those</i> [who are in need of help] will receive social support and can live like a normal member of the society after coming back to the community.	Subject	ISU	who	center
	6	Especially <i>children</i> [living in such unhealthy weather] will probably suffer from various health problems later.	Subject	ISU	Reduced (present participle)	center
		It is enough to carefully look around and find the factories with huge amount of waste and <i>many vehicles</i> [that release a lot of smoke to the air].	Direct Object	TSU	that	right
15.F.22	3	We live in <i>a world</i> [ruled by science and industry].	Prepositional Phrase Object	TSU passive	Reduced (past participle)	right
		<i>The earth</i> [on which people live in convenience and ease] owes the imagination and the strength of the mind.	Subject	OBL	which	center

		There are a lot of <i>similar examples</i> [that prove the effect of dreaming and imagination on human's life].	Predicative Complement in Existential Clause	TSU	that	right
	6	<i>The damage to blood circulation system</i> [that is crucially important] is one of the serious harms to the body because as a result, the heart, lungs, and other organs cannot perform well.	Subject	ISU	that	center
		On the other hand, mental damages are caused by <i>pollution</i> [that influences human life].	Prepositional Phrase Object	TSU	that	right
16.M.32	3	Whereas some people believe that modernism has not left any place to fantasize or imagine the impossible, others concur with <i>the opposite view</i> [that emphasizes the power of dreaming].	Prepositional Phrase Object	TSU	that	right
		Just a quick search in the Internet can demonstrate <i>the number of current inventions</i> [that were once just impossible dreams].	Direct Object	ISU	that	right
	4	But, <i>the notion</i> [which may come true about our time] is the agony that is the result of the ever increasing gap between the poor and rich.	Subject	ISU	which	center
		But, the notion which may come true about our time is <i>the agony</i> [that is the result of the ever increasing gap between the poor and rich].	Predicate Nominal	ISU	that	right
17.M.32	3	It might be owing to different reasons such as growing inclination toward materialism, or getting	Prepositional Phrase Object	ISU	that	right

		drowned in <i>hectic routine schedule</i> [that is a consequence of modern times].				
		<i>The modern world</i> [that is based on development industrialization] has created the supposition of human's dominance upon the universe.	Subject	ISU	that	center
	4	All the characters stand for the real figures in the government [that was initially established based on the purpose of liberating human from Tsar's oppression]	Prepositional Phrase Object	TSU passive	that	right
		<i>This is something</i> [which is clearly observable nowadays] exists in most of the countries today.	Predicate nominal	ISU	which	right
18.F.24	3	Nowadays, some people are imagining <i>some far reaching actions</i> [that might sound impossible at the present time].	Direct Object	ISU	that	right
	6	Moreover, there are <i>many factories</i> [that dump toxic waste materials into the lakes and seas].	Predicative Complement in Existential Clause	TSU	that	right
19.M.23	1	_____				
	3	People can communicate with <i>other people</i> [who live in remote places].	Prepositional Phrase Object	ISU	who	right
20.M.23	1	Numerous people in many countries in the world are suffering from hunger, poverty, and <i>many other problems</i> [that we even do not know].	Prepositional Phrase Object	DO	that	right

	4	That would be perfect to be able to have <i>a society</i> [that provides all the inhabitants the same facilities].	Direct Object	TSU	that	right
21.F.31	5	In many states, most of the universities offer <i>theoretical courses</i> [that students do not find functional].	Direct Object	DO	that	right
		This is sad that <i>the number of practical courses</i> [that make university students ready for the real life jobs] are limited.	Subject	TSU	that	center
	6	Cars, coal industries, and factories are the main sources of <i>pollution</i> [that is becoming out of control].	Subject	ISU	that	right
		Water pollution is <i>another kind of pollution</i> [that endangers our life and all animals' life on land or in the sea].	Predicate Nominal	TSU	that	right
22.F.30	1	Most of the wrongdoers are <i>disadvantaged people</i> [who live in poverty and experience many difficulties].	Predicate Nominal	ISU	who	right
		Most of them live in <i>very hard conditions</i> [that can make anyone sad].	Prepositional Phrase Object	TSU	that	right
	6	People live on the earth and their life is closely connected to <i>the environment</i> [that surrounds them].	Prepositional Phrase Object	TSU	that	right
		<i>Many children and people</i> [who live in villages] die because of polluted air or dirty drinking water.	Subject	ISU	who	center
23.M.23	1	<i>Wrongdoers</i> [who are in prison] are kept far from	Subject	ISU	who	center

		their family and friends and their social relationship fails becomes broken.				
	6	The pollutants cause <i>diverse types of pollution</i> [that put humans and the environment at risk].	Direct Object	TSU	that	right
		But today we hear <i>many unwanted noises</i> [that human-made devices make].	Direct Object	DO	that	right
24.M.29	1	<i>Every moral progress</i> [that is in the world] has been consistently opposed by the organized religion headquarters of the world.	Subject	ISU	that	center
	4	This manifesto by <i>the leaders</i> [who control the government in the novel] is a comment on the dissimulation of the governments that proclaim the absolute equality of their citizens, but give power and privileges to a small elite.	Prepositional Phrase Object	TSU	who	center
		This manifesto by the leaders who control the government in the novel is a comment on the dissimulation of <i>the governments</i> [that proclaim the absolute equality of their citizens, but give power and privileges to a small elite].	Prepositional Phrase Object	TSU	that	right
		The mere possession of power tends to produce <i>love of power</i> [which is very dangerous] because the only way to have the power is in preventing others from their rights.	Direct Object	ISU	which	right

Table D2. Sentences containing RCs extracted from the German corpus

Student ID	Topic No.	Sentences Extracted from the Essays	NPmat Role	NPrel Role	Relative pronoun	Center/ Right embedded
1.F.23	1	This law says that <i>people</i> [who commit drug offences] could be punished with a therapy instead of going to prison	Subject	TSU	who	center
		In contrast to that the child-rapist would talk about <i>the mistake</i> [he made] with a psychologist	Prepositional Phrase Object	DO	zero	right
		In contrast to that the child-rapist would talk about the mistake he made with a psychologist and maybe <i>other patients in a group therapy</i> [who committed the same or similar crimes]	Prepositional Phrase Object	TSU	who	right
	6	Even today we still struggle with <i>the inherited waste of the last generation</i> [who was not aware of the consequences arising out of their actions]	Prepositional Phrase Object	ISU	who	right
		Even today we still struggle with the inherited waste of the last generation who was not aware of <i>the consequences</i> [arising out of their actions]	Prepositional Phrase Object	ISU	Reduced (present participle)	right
		Pollution is not only <i>an insidious danger with fridges, spray cans and deodorants</i> [which gave off Fluorochlorinated hydrocarbon (CFC) to the atmosphere]	Predicate Nominal	TSU	which	right
		<i>Plants and animals from this area</i> [which are genetically from nuclear radiation] can be dangerous for human beings	Subject	ISU	which	center
		To <i>people</i> [who live at the coast] such a tragedy is an economic catastrophe	Prepositional Phrase Object	ISU	who	center

		Another kind of pollution [which also affects the human mankind right away] are collisions of trucks with hazardous materials that can be dangerous or even mortal	Subject	TSU	which	center
		Another kind of pollution which also affects the human mankind right away are collisions of trucks with hazardous materials [that can be dangerous or even mortal]	Prepositional Phrase Object	ISU	that	right
		There are also types of pollution [which we do not think of or do not even know about in European countries]	Predicative Complement in Existential Clause	OBL	which	right
		Pollution always seems to be a danger [that strikes the people in the future]	Predicate Nominal	TSU	that	right
		As some examples [that are presented above] show pollution can also have immediate effects to humanity	Subject	TSU passive	that	center
2.F.22	1	It probably depends on the extent of the crime [a person committed]	Prepositional Phrase Object	DO	zero	right
	3	Dreaming fulfills human needs [which cannot be fulfilled]	Direct Object	TSU Passive	which	right
3.F.22	2	Every human being has needs and desires [which have to be taken into account]	Direct Object	TSU Passive	which	right
		It is a different case with jobs [that are not traditionally well paid jobs]	Prepositional Phrase Object	ISU	that	right
		It is a different case with jobs that are not traditionally well paid jobs but [which are crucial for a society as well]	Prepositional Phrase Object	ISU	which	right
		Another factor [you have to take into account] are jobs that	Subject	DO	zero	center

		are very well paid but do not have a comparable value for society				
		Another factor you have to take into account are jobs [that are very well paid]	Predicate Nominal	ISU	that	right
		Manager jobs are totally overpaid if you take a look on the contribution [they have for the society] they live in	Prepositional Phrase Object	DO	zero	right
		Manager jobs are totally overpaid if you take a look on the contribution they have for the society [they live in]	Prepositional Phrase Object	OBL	zero	right
	1	There are plenty of school or apprenticeship programs [which can be attended]	Predicative Complement in Existential Clause	TSU Passive	which	right
4.M.24	1	To judge people because of the crimes [they may have committed] is a very questionable thing to do	Prepositional Phrase Object	DO	zero	center
		I am glad that I am not forced to decide whether a human should be punished for something bad [he did]	Prepositional Phrase Object	DO	zero	right
		There is no doubt that people [who committed crimes] should be brought before the court	Subject	TSU	who	center
		Maybe there are parents [who are able to forgive the murderer some day in the future]	Predicative Complement in Existential Clause	TSU	who	right
		The most important thing you need beside a helping psychologist is a legal system [that works] and that you can believe in	Predicate Nominal	ISU	that	right
		the most important thing you need beside a helping psychologist is a legal system	Predicate Nominal	OBL	that	right

		that works and [that you can believe in]				
		I think it might be human to rehabilitate people [who committed crimes]	Direct Object	TSU	who	right
		I can understand the victims [think ing of revenge] and claiming a hard punishment	Direct Object	TSU	Reduced (present participle)	right
		It has to be accepted by everyone, beginning with the people [liv ing in the society]	Prepositional Phrase Object	ISU	Reduced (present participle)	right
	3	The internet and especially online social networking services seem to know about things [happ ening in our lives]	Prepositional Phrase Object	ISU	Reduced (present participle)	right
		These are the things [which distinguish us from the machines]	Predicative Complement in Existential Clause	TSU	which	right
		we lose these abilities we will also lose the only abilities [that keep us alive] when life is hardest	Direct Object	TSU	that	right
5.F.24	1	Such dangers are normally classified as criminal acts and persons [committ ing them] are criminals	Subject	TSU	Reduced (present participle)	center
		There is a whole system [impos ed on a person] to successfully function in a society	Predicative Complement in Existential Clause	TSU Passive	Reduced (past participle)	right
		All those [who fail to follow the laws] are labeled as dangerous and should be isolated from “normal” citizens	Subject	ISU	who	center
		Property crimes for example are mostly committed by young people [com ing from	Prepositional Phrase Object	ISU	Reduced (present participle)	right

		unsuccessful family and social background]				
		Their life is financially difficult and normally they do not have a chance to develop <i>their emotional intelligence</i> [which cannot help to control primitive emotions and instincts]	Direct Object	ISU	which	right
	2	There exists <i>a minimum standard of living</i> [which is a minimum amount of money] necessary to fulfill basic needs of an individual	Predicative Complement in Existential Clause	ISU	which	right
		There exists a minimum standard of living which is <i>a minimum amount of money</i> [necessary to fulfill basic needs of an individual]	Predicate Nominal	ISU	zero	right
		There are always <i>more “prestigious” professions in any country</i> [which include mostly intellectual work as well as responsibility], and those which are not so well-paid and include mostly physical activities	Predicative Complement in Existential Clause	TSU	which	right
		There are always more “prestigious” professions in any country which include mostly intellectual work as well as responsibility, and <i>those</i> [which are not so well-paid and include mostly physical activities]	Predicative Complement in Existential Clause	ISU	which	right
6.F.23	3	Facebook is a pretty good counterexample to consider the risks of <i>a society</i> , [dominated by science and technology]	Prepositional Phrase Object	TSU Passive	Reduced (past participle)	right
	6	Our earth is <i>the only planet in the universe</i> , [which has an environment suitable for life]	Predicate Nominal	TSU	which	right

7.M.24	2	A reward should rather depend on the effort [a person took to support the community]	Prepositional Phrase Object	DO	zero	right
		I think a man's salary and woman's salary ought to relate to the effort [a person makes] in order to participate in a society	Prepositional Phrase Object	DO	zero	right
		Talent is an ability [which cannot be acquired by any means]	Predicate Nominal	TSU Passive	which	right
		Is there any invisible scale [to which the contribution of a professor gets a high score]	Predicative Complement in Existential Clause	OBL	which	Right
		I do not see any other ground [on which a reward could be justified]	Direct Object	OBL	which	right
	6	Environment activist want to raise awareness and show pictures of rivers [tinged in red, black or green]	Direct Object	TSU Passive	Reduced (past participle)	right
		The color leads to the death of fishes, plants and even humans [who ate contaminated fishes or drank poisoned water]	Prepositional Phrase Object	TSU	who	right
		I could name many more [that show how we pollute our nature without thinking about it]	Direct Object	TSU	that	right
		If you take the rain forest [who cannot cope with the pollution anymore] or other resources what will happen is that we consume and damage all the resources	Direct Object	ISU	who	center
8.F.23	3	They provide opportunities for follow-up communication with parents [concerning own little imaginative stories]	Prepositional Phrase Object	TSU	Reduced (present participle)	right
		They provide opportunities for follow-up communication with	Direct Object	TSU	which	right

		parents concerning <i>own little imaginative stories</i> [which may additionally motivate the children to use their own imagination and fantasy]				
		Being driven <i>by the idea of something</i> [which currently only exists in someone's imagination] is the best motivation people can have in terms of conceptualizing a utopia	Prepositional Phrase Object	ISU	which	center
		Being driven by the idea of something which currently only exists in someone's imagination is <i>the best motivation</i> [people can have in terms of conceptualizing a utopia]	Predicate Nominal	DO	zero	right
	5	These kind of degree courses like teaching degrees or management for tourism degrees require <i>a training and an education</i> [which should be rather close to reality]	Direct Object	ISU	which	right
		<i>The application of the theories</i> [learned at the university] can be seen as the foundation for all kind of jobs involving the permanent contact with and the examination with people	Subject	TSU Passive	Reduced (past participle)	center
		The application of the theories learned at the university can be seen as the foundation for <i>all kind of jobs</i> [involving the permanent contact with and the examination with people]	Prepositional Phrase Object	TSU	Reduced (present participle)	right
9.M.24	1	To rehabilitate prison inmates is a not an all new and social way to get <i>people</i> , [who are in prison for committing a crime, back into society]	Direct Object	ISU	who	right
		<i>Some convicts</i> , [who are jailed for some less cruel offenses like	Subject	TSU Passive	who	center

		burglary or not paying their parking tickets], might be easily rehabilitated				
		Most of them would agree on the opinion that some criminals should be locked up forever, like <i>murderers, rapists or those</i> [who would go on harming their social environment]	Prepositional Phrase Object	ISU	who	right
		Another fact to think about is that there first must be established <i>a system</i> [which is able to rehabilitate the convicts first]	Predicate Nominal	TSU	which	right
	4	We all would want to be equal, but that seems to be <i>an ideal aim</i> [which is not necessarily achieved by mankind]	Predicate Nominal	TSU Passive	which	right
		Regarding the first point, childhood, <i>everyone</i> , [who has a sibling], knows, that children are not always treated equally by their parents	Subject	TSU	who	center
		Equality is <i>a good aim</i> [that is not easy to achieve], but nevertheless it is not impossible	Predicate Nominal	ISU	that	right
10.F.22	1	Currently there is <i>a court proceeding</i> , [in which six men are charged with murder]	Predicative Complement in Existential Clause	OBL	in which	right
		The justice has to follow <i>uniquely defined laws</i> , [which hand out just punishments]	Direct Object	TSU	which	right
	3	We live in <i>a modern world with high technology</i> , [which enable thousands of opportunities]	Prepositional Phrase Object	TSU	which	right
		We can fly to <i>the places</i> [we are dreaming of]	Prepositional Phrase Object	OBL	zero	right
		It's <i>the imagination</i> [which makes our dreams come true]	Predicate Nominal	TSU	which	right

		They are working hard for higher technology , [which realizes these visions]	Prepositional Phrase Object	TSU	which	right
		All these opportunities , [which are in the modern world], are the greatest gift for realizing our dreams	Subject	ISU	which	center
11.F.23	5	A great deal of the texts [read at university] seems to be far too complicated for future lessons	Subject	TSU Passive	Reduced (past participle)	center
		On the other hand, one has to bear in mind that the university education [one has to do] serves to make the future teachers experts of their subjects	Subject	DO	zero	center
	6	Pollution is a topic [that concerns everybody who lives on our planet]	Predicate Nominal	TSU	that	right
		Pollution is a topic that concerns everybody [who lives on our planet]	Direct Object	ISU	who	right
		Pollution is a very broad topic [that is always of interest] and that can be found on the news very often	Predicate Nominal	ISU	that	right
		Pollution is a very broad topic that is always of interest and [that can be found on the news very often]	Predicate Nominal	TSU Passive	that	right
		The first type of pollution [that comes to mind] is the pollution of our closest environment	Subject	ISU	that	center
		It is all over the news that space is polluted by a lot of debris [which increases the rate of collusion] which in turn threatens the satellites	Prepositional Phrase Object	TSU	which	right
		It is all over the news that space is polluted by a lot of debris which increases the rate of	Direct Object	TSU	which	right

		collusion [which in turn threatens the satellites]				
12.F.25	3	There is rapid development of technology and science [which is almost drowning us with innovations]	Predicative Complement in Existential Clause	TSU	which	right
		People had pictures in their minds [which helped creating]	Direct Object	TSU	which	right
	6	As adult we have to mind laws [which protect nature]	Direct Object	TSU	which	right
		One example is the fine dust particles , [which are continuously blown into the air by industry]	Predicate Nominal	TSU Passive	which	right
		This is another kind of pollution [which is in most cases not visible to the human eye]	Predicate Nominal	ISU	which	right
		The reason is that plants are creating oxygen [which we need to breathe]	Direct Object	DO	which	right
		Nature is a precious gift [which we should not take for granted]	Predicate Nominal	DO	which	right
13.M.24	1	I would agree if I could think of an ultimate rehabilitation [which guarantees success]	Prepositional Phrase Object	TSU	which	right
	5	It offers an environment [in which people can develop theoretical skills] which help them to acquire knowledge	Direct Object	OBL	in which	right
		It offers an environment in which people can develop theoretical skills [which help them to acquire knowledge]	Direct Object	TSU	which	right
14.M.22	5	Everyone [who is complaining about too much theory in university courses and asking for more practical education] should therefore consider vocational training instead	Subject	ISU	who	center

		Not only these “soft skills” can be helpful for your life but also <i>the so called “higher thinking skills”</i> [which we are supposed to gain during our course of studies.]	Subject	DO	which	right
	6	<hr/>				
15.F.25	1	Except for <i>some people</i> [who suffer from mental disorder] everyone should bear the consequences for his or her actions	Prepositional Phrase Object	ISU	who	center
	6	There has been <i>a whole range of inventions</i> [that significantly facilitate our daily life]	Predicative Complement in Existential Clause	TSU	that	right
		This is <i>only one possible scenario</i> [emphasizing the momentous consequences] pollution may have	Predicate Nominal	TSU	Reduced (present participle)	right
		This is only one possible scenario emphasizing <i>the momentous consequences</i> [pollution may have]	Direct Object	DO	zero	right
16.F.24	3	Our everyday-life takes place in <i>a rather fast moving world</i> [which seems to be rational in its functioning]	Prepositional Phrase Object	ISU	which	right
		Following one’s dreams means to develop <i>fascination, courage and passion</i> [which contribute to our happiness]	Direct Object	ISU	which	right
		Not only in our jobs we meet <i>challenges</i> [that can easily overcharge us and create rush]	Direct Object	TSU	that	right
		<i>Groundbreaking discoveries from technology and science and from numerous other fields</i> [which are taken for granted today], are results of creative imagination	Subject	TSU Passive	which	center

	5	University education should provide students with <i>profound theoretical knowledge</i> [which has intellectual and emotional depth]	Prepositional Phrase Object	TSU	which	right
		The most important aspect is, that <i>the knowledge</i> [which is obtained at university] is of a high importance for personal and social life	Subject	TSU Passive	which	center
		Theoretical knowledge is crucial and serves as a basis for <i>collecting experiences</i> [that prepare oneself for the real world]	Prepositional Phrase Object	TSU	that	right
17.F.23	3	The modern world establishes <i>a new range of wealth and plentifulness</i> [which provides a lot of distraction]	Direct Object	TSU	which	right
		you are distracted the whole time and you can see <i>all things</i> [that you desired to see]	Direct Object	DO	that	right
		You should always be yourself and follow <i>the path</i> [that's right for you]	Direct Object	ISU	that	right
	4	In <i>our society</i> , [controlled by the industry], rich and powerful people decide what to do	Prepositional Phrase Object	TSU Passive	Reduced (past participle)	center
		There are no longer bound to <i>the same rules</i> [all other people are]; they got more equal than others	Prepositional Phrase Object	OBL	zero	right
18.	1	We are generally predispositioned to mistrust <i>someone</i> [who purposefully harms or destroys]	Direct Object	TSU	who	right
	5	<i>Students</i> [that are striving to become teachers] are often met with a massive amount of	Subject	ISU	that	center

		pedagogical theories and methods				
19.M.23	3	It is <i>a dangerous and risky development</i> [that skips a lot of people, attitudes, feelings and emotions]	Predicate Nominal	TSU	that	right
		Especially by reading books for children one can flee into <i>a world</i> [that is dominated by joy, silence and plenty of fantasy]	Prepositional Phrase Object	TSU Passive	that	right
	5	On the other hand one might imagine <i>a young girl</i> , [who decides to become a primary school teacher]	Direct Object	TSU	who	right
		For doing this job you really need to have <i>many social abilities</i> [that definitely cannot be learned by theoretical studies]	Direct Object	TSU Passive	that	right
20.F.23	3	I believe that <i>the two aspects</i> [mention ed above] do not exclude each other	Subject	TSU Passive	Reduced (past participle)	center
		If people had not dreamt of innovations and imagined new ways, for example of communication, <i>the results</i> [we are familiar with in our modern society] would not exist	Subject	OBL	zero	center
		People do not research and invest in <i>a field</i> [for which they do not have a passion and pursue a goal]	Prepositional Phrase Object	OBL	which	right
		<i>Only those</i> [who believe in the power of the human] will actually change the world and make it a better place to life in	Subject	TSU	who	center
	5	Many industrial workers complain with justification about <i>engineers</i> [who have just received their degrees]	Prepositional Phrase Object	TSU	who	right

		It reflects the viewpoint of many people [who worked since they left school at the age of 16]	Prepositional Phrase Object	ISU	who	right
		There are two other points [that I want to mention besides this rather pessimistic position]	Predicative Complement in Existential Clause	DO	that	right
		Many universities advertise the growing numbers of practically oriented courses of study [which indicate obligatory internships, study trips or empirical research projects]	Direct Object	TSU	which	right
		It is the theoretical background [that determines your decisions on research methods, data and the way of proceeding]	Predicate Nominal	TSU	that	right
		I strongly believe that people [who are at an academic career] need theoretical degrees	Subject	ISU	who	center
21.F.24	3	Technology is also getting more complex, especially for older people [who cannot keep up with the pace of the faster changing world]	Prepositional Phrase Object	ISU	who	right
		It is not the material things [people are dreaming of, rather the emotional experiences] as these are much harder to achieve	Predicate Nominal	OBL	zero	right
	5	A lesson plan includes learning objectives and differentiated learning outcomes , [which have to be met by the pupils at the end of the lesson]	Direct Object	TSU Passive	which	right
22.F.24	3	_____				
	5	Students do not have the experience like others [who are	Prepositional Phrase Object	ISU	who	right

		already working for a few years in the job]				
		The students go to university and learn <i>the theoretical things</i> [that are necessary for their job]	Direct Object	ISU	that	right
23.M.24	1	The students of the university are considered as <i>adults</i> [who are going to live in the society]	Prepositional Phrase Object	ISU	who	right
		What the students can get from the university is <i>knowledge in different fields</i> [which can be applied to their future career]	Predicate Nominal	TSU Passive	which	right
		It is <i>the essential thing</i> [which universities provide]	Predicate Nominal	DO	which	right
	3	Science, as known as knowledge based on <i>facts</i> [that are provable], is originally derived from dreaming and imagination	Prepositional Phrase Object	ISU	that	center
		These sentences should be, of course, based on <i>facts</i> [which we have already known]	Prepositional Phrase Object	DO	which	right
		Dreaming and imagination act as <i>a stimulator</i> [which drives and enables human to create a lot of useful things in life]	Prepositional Phrase Object	TSU	which	right
		We just should not let all the knowledge [which we have been collecting] stop us from dreaming	Direct Object	DO	which	center
24.F.23	3	The world now knows that it is possible to create <i>cloned embryonic stem cells</i> [that are genetically identical to the person] from whom they are derived	Direct Object	ISU	that	right
		The world now knows that it is possible to create cloned embryonic stem cells that are	Prepositional Phrase Object	OBL	whom	right

	genetically identical to <i>the person</i> [from whom they are derived]				
	One could not imagine that cloning is possible or that there will be <i>a Google Glass</i> [which you can wear like a portable computer in front of your eyes]	Predicative Complement in Existential Clause	DO	which	right
5	Unfortunately that doesn't leave enough room for <i>valuable practical experience</i> [that prepares students for life outside of university lecture halls]	Prepositional Phrase Object	TSU	that	right
	The Master degree of Applied linguistics at the University of Siegen involves <i>an internship</i> [which does not have to extend the length of 6 weeks] and counts only 8 credit points of the total amount of credits	Direct Object	TSU	which	right
	Theoretical knowledge is of vital importance for a successful academic future, but without <i>the practical application</i> , [that should come along simultaneously], students need more time and effort to familiarize themselves with employment structures and daily tasks	Prepositional Phrase Object	ISU	that	center
	It is not only <i>the academic certificate</i> [that matters in the end]	Predicate Nominal	ISU	that	right

Table D3. Sentences containing RCs extracted from the Kurdish Sorani corpus

Student ID	Topic No.	Sentences Extracted from the Essays	NPmat Role	NPreI Role	Relative pronoun	Center/ Right embedded
1.M.23	1	To fully understand the nature of crime, first we must define crime and study <i>the laws</i> [existing in legal system of each country].	Direct Object	ISU	Reduced (present participle)	right
		It is believed that there is a part in the brain [that is the source of evil in human nature].	Predicative Complement in Existential Clause	ISU	that	right
		In rehabilitation, lawbreakers receive proper help and psychological therapies according to <i>the type of crime</i> [they have committed]	Prepositional Phrase Object	DO	zero	right
	6	Air pollution is known to <i>anyone</i> [who lives in big cities].	Prepositional Phrase Object	ISU	who	right
		To avoid air pollution, anyone can play a small role and reduce <i>the amount of dioxide carbon</i> [that is the main pollutant in the air].	Direct Object	ISU	that	right
2.M.28	1	<i>Most of the wise governors</i> [whose countries are at the high level of development] don't agree with sending lawbreakers to prisons.	Subject	GEN	whose	center
		They state that <i>most of the criminals</i> [who had the experience of being in prison] will repeat the crime in a bigger size and turn back to the jail.	Subject	TSU	who	center
		Studies have revealed that <i>about half of the people</i> [who have lived in prisons] have sort of a mental disorder!	Subject	ISU	who	center
	2	It obviously means that you determine your income by <i>the amount of work</i> [that you have done].	Prepositional Phrase Object	DO	that	right

		There are <i>some special managerial posts</i> [that people would like to have].	Predicative Complement in Existential Clause	DO	that	right
		For example, poor people with low income and bad economic condition, or <i>people</i> [who are unable to work due to their disabilities].	Subject	ISU	who	right
3.F.28	5	<i>Many young people</i> [who have great dreams and want to follow their wishes] go to universities and learn more.	Subject	TSU	who	right
	6	Without doubt, pollution is <i>one of the most important problems</i> [which everyone can simply notice].	Predicate Nominal	DO	which	right
		Noise pollution is <i>a disturbing type of pollution</i> [which can mentally threaten people].	Predicate Nominal	TSU	which	right
4.F.26	1	They believe that sending delinquents to prison is not useful at all <i>and bigger problems</i> [that are irreparable] might arise.	Subject	ISU	that	center
		After prisoners are sprung from the prison, they cannot live like <i>a citizen</i> [who has never been in prison and they feel very bad].	Prepositional Phrase Object	ISU	who	right
	4	Even though the author has written the story about <i>some animals</i> [living in a farm], the story is a symbol of humans' soaring ambition and ignoring morality.	Prepositional Phrase Object	ISU	Reduced (present participle)	right
5.M.27	1	<i>Most of the wrongdoers</i> [who are in a prison] come into contact with other rebels in prison.	Subject	ISU	who	center
		When someone commits a crime, he is usually arrested and kept in poor-conditioned prisons with	Prepositional Phrase Object	TSU	who	right

		<i>other wrongdoers</i> [who have done another misdeed].				
		Then, prisons will be changed to <i>special places</i> [that are for rehabilitation].	Prepositional Phrase Object	ISU	that	right
	2	Simply put, the income should be determined by <i>the amount of work and the quality of work</i> [that one does].	Prepositional Phrase Object	DO	that	right
		There are also <i>some people</i> [who are unable to work due to their disabilities] and therefore they live in a nonstandard condition of living.	Predicative Complement in Existential Clause	ISU	who	right
6.F.22	1	Prison is <i>a place</i> [that humans have made it] because he knew about his own evil nature.	Predicate Nominal	DO	that	right
		Unfortunately this system is only limited to a few countries and many countries still have <i>the traditional system of prison</i> [which are not useless].	Direct Object	ISU	which	right
	6	<i>Everywhere</i> [that we take a look at it] draws the attention of the viewer and prove that we are surrounded by unique things.	Subject	DO	that	center
		Although one of the reasons of pollution and the polluted world is natural and is out of our control, vast amount of pollution is by <i>humans</i> [who are always making water, air, and soil polluted].	Prepositional Phrase Object	TSU	who	right
7.F.25	5	Now, even in developing countries <i>the number of people</i> [who want to go to universities and get university degrees] is increasing.	Subject	TSU	who	center
		<i>These courses</i> [that are not practical] do not to prepare students for the future careers.	Subject	ISU	that	center

	6	There are <i>many factories</i> [that produce chemical waste and cause air pollution].	Predicative Complement in Existential Clause	TSU	that	right
		Water pollution is made by <i>factories</i> [that send their chemical waste into rivers and streams].	Prepositional Phrase Object	TSU	that	right
8.M.34	3	There are <i>many things</i> [that do not exist] and if some people create them they help the world in a great way.	Predicative Complement in Existential Clause	ISU	that	right
		Secondly, there are <i>variety of viruses</i> [that are very common nowadays] and kill loads of people every day.	Predicative Complement in Existential Clause	ISU	that	right
		While the contagious dangerous diseases in the past have been eradicated, there are <i>a lot of new types of fatal diseases</i> [that should come under the control].	Predicative Complement in Existential Clause	ISU	that	right
	5	Many students at university only memorize <i>some basic theories</i> [that are in their books] and they do not learn any practical skill.	Direct Object	ISU	that	right
9.M.23	2	However, there are some suppressive rules especially in religious societies in spite of <i>many attempts</i> [that men and women make].	Prepositional Phrase Object	DO	that	right
		<i>The second attitude</i> [that is crucial] is having peace of mind.	Subject	ISU	that	center
		When <i>women</i> [whose right is respected] are sure of having the same conditions as men, they never think of a violence or any evil deed.	Subject	GEN	whose	center
	5	As a result, they think that <i>the university degrees</i> [that are mostly based on theoretical science] have less value.	Subject	ISU	that	center

		For example, the world without theory is like a driver [who knows how to drive], but does not have any knowledge about the driving rules.	Prepositional Phrase Object	TSU	who	right
		For instance, engineering as a science [that is the combination of mathematics, physics, and chemistry] is mostly practical.	Subject	ISU	that	center
10.F.23	5	Therefore when you are graduated as an engineer, after 4 years of studying at a university, you will probably not find any job [relevant to your studies].	Direct Object	ISU	zero	right
	6	Sound pollution is another type of pollution [that annoys people in a terrible way].	Predicate Nominal	TSU	that	right
11.F.26	1	It is the basic right for anyone to live in a safe society and it is the primary need of any secure society to have residents [who are nice and noble].	Direct Object	ISU	who	right
	3	In comparison, nowadays people are busy with virtual world, high-tech products, and so many services [that has made life more comfortable], but people are less happy than past.	Prepositional Phrase Object	TSU	that	right
12.F.22	3	Science has assisted us to invent countless inventions [that have improved the quality of our lives in different ways].	Direct Object	TSU	that	right
	6	So, air and water is polluted and the waste on the earth produces different poisonous gases [that people breathe them].	Direct Object	DO	that	right
		The gases mix with the air and then people [who are living near the factories] breathe them and get sick.	Subject	ISU	who	center

13.F.26	5	Thus, <i>all of the students</i> [who finish their theoretical studies] could be prepared for the real world.	Subject	TSU	who	center
	6	Therefore, reconsidering <i>the rules</i> [that prevent industries from pouring the toxics into the air and water] is highly demanding.	Direct Object	TSU	that	center
14.F.26	3	Now we are living in a scientific, industrialized and prosperous era, but we should not forget <i>our offspring</i> [who will certainly need more comfortable life in the future].	Direct Object	TSU	who	right
	6	We carry out <i>many functions</i> [which are harmful for the environment].	Direct Object	ISU	which	right
15.F.24	5	But I think it is not true to say that <i>any person</i> [who goes to university] will have a successful life.	Subject	ISU	who	center
	6	_____				
16.F.28	3	All the success is the result of dreams of <i>creative people</i> [who were willing to help others].	Prepositional Phrase Object	ISU	who	right
	5	That is shameful but there are <i>some universities</i> [that do not have laboratories for scientific majors] and students cannot do the experiments.	Predicative Complement in Existential Clause	TSU	that	right
17.F.33	3	There are <i>some people</i> [who prefer to have a simple life rather than a busy one].	Predicative Complement in Existential Clause	TSU	who	right
	6	Pollution is produced mostly by <i>cars and machines</i> [that use fossil fuels].	Prepositional Phrase Object	TSU	that	right
18.F.24	1	I agree with reducing the amount and the intensity of punishment because there are <i>many other</i>	Predicative Complement in Existential Clause	TSU	that	right

		<i>effective ways</i> [that could bring better results].				
	2	No one wants to neglect the differences or expect a woman to do <i>the same piece of work</i> [that a man does].	Direct Object	DO	that	right
19.M.24	5	There are <i>so many other university graduates</i> [who have the same problem].	Predicative Complement in Existential Clause	TSU	who	right
	6	Point source pollution refers to <i>all identifiable pollutants</i> [which are discharged to the environment].	Prepositional Phrase Object	TSU Passive	which	right
20.F.29	4	They have their own rules, their own friends, their own style of life, and therefore they ignore <i>other people</i> [who are different from them].	Direct Object	ISU	who	right
	6	We should think about <i>the ways</i> [that can save the environment].	Prepositional Phrase Object	TSU	that	right
21.F.24	1	Generally they are guided and punished based on <i>the type of the problem</i> [that they have made for the society].	Prepositional Phrase Object	DO	that	right
	6	Environmental pollution is <i>one of the most serious problems</i> [that we are facing].	Predicate Nominal	DO	that	right
		Rivers, lakes, and seas are full of <i>plastic</i> [that humans usually drop in to the water].	Prepositional Phrase Object	DO	that	right
22.M.24	2	I believe that the financial rewards of men and women should be proportionate with <i>their amount of activities</i> [that they do in the society].	Prepositional Phrase Object	DO	that	right
	3	But, if you take a closer look, you see there are <i>so many things</i> [that are necessary to have].	Predicative Complement in Existential Clause	ISU	that	right
23.F.26	3	We may have more advancement in our lives because of <i>the super</i>	Prepositional Phrase Object	TSU	that	right

		<i>computers</i> [that run huge projects]				
	4	I believe that the world is an exact copy of the story of animal farms because of <i>all the pigs</i> [who are governing the world].	Prepositional Phrase Object	TSU	who	right
24.F.24	3	The power of imagination and fantasizing has mostly assisted <i>people</i> [who want to have a healthier and more successful life].	Direct Object	TSU	who	right
	6	Therefore, many anti-pollution efforts should be made to fight against <i>pollution</i> [that endangers life].	Prepositional Phrase Object	TSU	that	right

Table D4. Sentences containing RCs extracted from the Persian corpus

Student ID	Topic No.	Sentences Extracted from the Essays	NPmat Role	NPrel Role	Relative pronoun	Center/ Right embedded
1.F.22	3	They might have dreamed about <i>the apparatuses</i> [that they wished to have but did not have at that time].	Prepositional Phrase Object	DO	that	right
		In <i>such a world</i> [which allows information to transfer more quickly], people have to be more aware of the new ideas, hypotheses, and explorations.	Prepositional Phrase Object	TSU	which	center
		The comfort of life is due to <i>the imagination</i> [that is hidden behind the new technology].	Prepositional Phrase Object	TSU Passive	that	right
	6	Pollution is a stern <i>environmental problem</i> [that affects dry and wet lands throughout the world].	Predicate Nominal	TSU	that	right
		When <i>the air</i> [we inhale] is full of CO ₂ , we are in danger of malignance.	Subject	DO	zero	center
		On the one hand technology and machines make life easier, on the other hand they are the major reason for <i>pollution</i> [that is getting out of human's control].	Prepositional Phrase Object	ISU	that	right
		They want to recognize the planet's environmental problems and come up with solutions to save <i>the Earth</i> [that is the home for all of us].	Direct Object	ISU	that	right
2.M.24	1	Needless to say, <i>a number of people</i> [who are in prisons] have big financial problems.	Subject	ISU	who	center

		They should be punished in prisons depending on the crime [that they committed], but they all ought to be kept in clean rooms in prisons.	Prepositional Phrase Object	DO	that	right
	3	Our happiness is nothing but a breeze [which touches our faces without leaving any trace].	Predicate Nominal	TSU	which	right
		A huge part of happiness in life happen in our communication with people [who are important for us].	Prepositional Phrase Object	ISU	who	right
		The modern life [which is an outcome of science and technology] has ruined a large part of mankind's soul.	Subject	ISU	which	center
		They lose their childhood by sitting in their rooms all the time and feeling departed with the new technological toys [that their parents have bought for them].	Prepositional Phrase Object	DO	that	right
3.F.30	3	Nowadays we live in the modern world [dominated by science, technology and industrialization].	Prepositional Phrase Object	TSU Passive	Reduced (past participle)	right
	6	Many people suffer from diseases [caused by air pollution].	Prepositional Phrase Object	TSU Passive	Reduced (past participle)	right
4.F.29	1	The Penalty of Imprisonment is for those [who act against law].	Prepositional Phrase Object	TSU	who	right
		Prisoners have the tendency to change to worse people [that nobody can imagine].	Prepositional Phrase Object	DO	that	right
		By learning something different, they can experience a better feeling and look forward to a lifespan [which is pleasant for them].	Prepositional Phrase Object	ISU	which	right

	3	Nevertheless, they cause <i>several disadvantages</i> [that are disruptive too].	Direct Object	ISU	that	right
		Many of us neglect that <i>all the sophisticated equipment</i> [that we use today] were in someone's minds once.	Subject	DO	that	center
		Keep this in mind that <i>all products</i> [that exist now] were someday someone's dream.	Subject	ISU	that	center
5.F.30	5	We cannot ignore the fundamental feature of books as they are attempting to explain <i>various aspects of life</i> [that are hard to experience].	Direct Object	ISU	that	right
		When a person is not able to trial everything on his own, books can be referred as <i>a reliable resources</i> [that provides him/her with plenty of solid information].	Prepositional Phrase Object	TSU	that	right
		It can be concluded that regardless of <i>the information</i> [existing in books] both theoretical knowledge and experience are important.	Prepositional Phrase Object	ISU	Reduced (present participle)	center
	6	The desperate part is that <i>some types of pollutants</i> [that are serious threats to people's health] spread very fast and cause bad direct or side effects.	Subject	ISU	that	center
		This does not happen unless people with governments understand the point of saving <i>the world</i> [that is in a big danger].	Direct Object	ISU	that	right
6.F.29	1	It is an undeniable fact that in each society there are <i>some people</i> [who violate rules and laws].	Predicative Complement in Existential Clause	TSU	who	right

		Now, it is believed that the only way to change a wrongdoer's sprit is being in <i>a particular place</i> [that is controlled by expertise and psychologists].	Prepositional Phrase Object	TSU Passive	that	right
		<i>Most of the people</i> [who go to prison once] will be brought in front of the court again because of committing another crime.	Subject	ISU	who	center
	2	For example, <i>nurses</i> [who used to receive a meager amount of money in spite of their diligent and difficult work] were not motivated to work well.	Subject	TSU	who	right
		All in all, <i>the efforts</i> [that one puts in his work] should be considered as an important criteria.	Subject	DO	that	center
7.M.29	3	At first, <i>our ancestors</i> [who were uncivilized] did not know anything about space traveling and other modern technologies.	Subject	ISU	who	center
		It was <i>their power of imagination</i> [that directed them to invent new inventions for us].	Predicate Nominal	TSU	that	right
	6	Second, as many conducted studies indicate, water resources near the factories and industrial areas are not healthy because of <i>chemical wastes and other contaminants</i> [that are released into the water].	Prepositional Phrase Object	TSU Passive	that	right
8.M.30	1	At the first thought, <i>the criminals</i> [who are dangerous to be in the society] should not live freely.	Subject	ISU	who	center

		Someone [who is a trusty person] deserves to be admired.	Subject	ISU	who	center
		In contrast, people [who commit crime] must be penalized.	Subject	TSU	who	center
		They must be penalized for every single fault [they have done].	Prepositional Phrase Object	DO	zero	right
	3	Everything [that we have now] came to one's mind some time ago.	Subject	DO	that	center
		Eventually, thanks to human's dreaming man manufactured gigantic planes [which are able to carry hundreds of people and loads of cargo quickly].	Direct Object	ISU	which	right
		This invention [which is the result of man's desire to communicate without limitation] has paved the way.	Subject	ISU	which	right
9.F.30	3	Our minds always come up with new ideas and try to put them into action to invent novel things [that we have never had].	Direct Object	DO	that	right
		Without thinking beforehand it is less likely to invent things [that are specific and new].	Direct Object	ISU	that	right
	6	A large amount of pollutants are produced by us and then we call for help to save the world [that we have polluted with our wrong actions].	Direct Object	DO	that	right
		In sum, every year human produces huge quantities of hazardous waste [that cause pollution].	Direct Object	TSU	that	right

10.F.22	5	However, most of the universities cannot prepare students for the real world because they just offer theoretical courses [that are not enough for training a student].	Direct Object	ISU	that	right
	6	We should learn to ride bicycles more, use public transportation more, recycle glass, plastic, and paper, and use the products [which are environment friendly].	Direct Object	ISU	which	right
11.F.21	3	_____				
	6	If you are exposed to very high levels of air pollutants, you may experience irritation of the eyes, nose and throat, coughing and breathing problems and have a greater risk of heart attacks [that can cause death].	Prepositional Phrase Object	TSU	that	right
12.F.21	5	In my opinion, it depends on the major [that they choose to study at the university].	Prepositional Phrase Object	DO	that	right
		Students [who finish their studies in such majors] are expected to work in theoretical fields.	Subject	TSU	who	center
		In my opinion, to get prepared for doing your job efficiently, you first need the theories [that one can learn as the basics] and then you can put the theories into practice.	Direct Object	DO	that	right
	6	When we hear the word pollution, air pollution is usually the first thing [which comes to our minds].	Predicate Nominal	ISU	which	right
		There are several sources [that cause water pollution] such as factories waste,	Predicative Complement	TSU	that	right

		radioactive waste, oil pollution, sewage and wastewater.	in Existential Clause			
		People [living in suburbs] may use rivers' water for their daily uses and harmful materials from factories' wastes cause them to get bad diseases like asbestosis and even cancer!	Subject	ISU	Reduced (present participle)	center
13.M.26	3	_____				
	6	1.8 billion People in the world live in regions [that do not have access to drinkable water].	Prepositional Phrase Object	TSU	that	right
14.F.23	1	No one wants to employ one [who has spent some years in prison].	Direct Object	TSU	who	right
		The world needs a new system [that can redirect the criminals to the right way].	Direct Object	TSU	that	right
	6	Environmental pollution [that is the result of man's activities] is the main reason of the changes in the environment.	Subject	ISU	that	center
15.F.21	3	However, our era [that is full of new appliances] motivates more creativity.	Subject	ISU	that	center
		One [whose mind is active to ponder about new thoughts] can make life easier for himself and the other people throughout the world.	Subject	GEN	whose	center
	5	Anyone [who studies at university] expects to find a relevant job in the future and make success out of it.	Subject	TSU	who	center
		There are some institutions [that help the trainees to gain	Predicative Complement	TSU	that	right

		experience and learn practically].	in Existential Clause			
16.F.30	5	It would be devastating for them to find out that they have not got the required practical prerequisites and have just learned <i>the theories</i> [that are not sufficient].	Direct Object	ISU	that	right
	6	<i>All the creatures</i> [who live on the earth] die soon if polluting the earth continues with the same pace.	Subject	ISU	who	center
17.F.21	3	_____				
	4	It means that there are <i>some people</i> [who support dividing the society into different social classes and do not accept equality].	Predicative Complement in Existential Clause	TSU	who	right
18.F.24	3	People use their brains to create <i>modern technological devices</i> [which are essential for the world].	Direct Object	ISU	which	right
		Therefore, I do strongly believe that our modern world with all the up-to-date technologies still needs the imagination of <i>young people</i> [who have the capability of making new creations].	Prepositional Phrase Object	TSU	who	right
	5	In comparison, <i>practical methods</i> [that are ignored by the universities] can have important effects on students' lives.	Subject	TSU Passive	that	center
19.F.29	1	_____				
	6	<i>Several activities</i> [that are the causes for pollution] have been identified.	Subject	ISU	that	center

		That is a shame that <i>the activities</i> [that we daily do them] make the world dirty.	Subject	DO	that	center
20.M.20	4	There are many people especially <i>the governors</i> [who are in favor of superiority].	Predicative Complement in Existential Clause	ISU	who	right
		In <i>the world</i> [that is based on the capitalism] people whose financial conditions is better have more power.	Prepositional Phrase Object	ISU	that	center
		In the world that is based on the capitalism <i>people</i> [whose financial conditions is better] have more power.	Subject	GEN	whose	center
	6	<i>Pollutants</i> [that are dangerous chemicals] are spread in to the environment.	Subject	ISU	that	center
		Air pollution is a significant risk factor for <i>a number of pollution-related diseases</i> [that can cause fatality].	Prepositional Phrase Object	TSU	that	right
21.M.28	1	Based on the universal human rights, all people have right to live a free life in <i>the way</i> [that they like].	Prepositional Phrase Object	DO	that	right
	5	For example, physics illustrates <i>the gravity laws</i> [that Isaac Newton found them] in a span of time].	Direct Object	DO	that	right
22.M.26	3	_____				
	6	Air pollution is <i>another concern</i> [that causes many health problems].	Predicate Nominal	TSU	that	right
23.F.25	5	In our country during past ten years there has been an increase in <i>the number of students</i> [who finish their studies without good knowledge].	Prepositional Phrase Object	TSU	who	right

	6	The number of <i>people</i> [whose health is affected by this problem] is really high.	Prepositional Phrase Object	GEN	whose	center
		Industrial countries need extra efforts to decrease <i>greenhouse gases</i> [which aggravate the pollution].	Direct Object	TSU	which	right
24.F.26	3	They are satisfied with <i>the condition of life</i> [that they have now].	Prepositional Phrase Object	DO	that	right
	4	The demand for the powerful hands to get the control of the situation in each system caused <i>the invention of the rules</i> [that can bring the equality for all people].	Prepositional Phrase Object	TSU	that	right
		For instance, <i>the person</i> [who is the manager of a company] wants to have higher salary and needs a rule to do so.	Subject	ISU	who	center
		For example, <i>a rich person</i> [importing a vital commodity to a country] wants to be exempted from paying taxes.	Subject	TSU	Reduced (present participle)	center
		In conclusion, I think there are always <i>some people</i> [who are more equal than others].	Predicative Complement in Existential Clause	ISU	who	right

Table D5. Sentences containing RCs extracted from the native English corpus

Student ID	Topic No.	Sentences Extracted from the essays	NPmat Role	NPreI Role	Relative pronoun	Center/ right embedded
1.0001.1	1	The money [involved in such a corporation] is mind boggling	Subject	TSU Passive	Reduced (past participle)	center
		The grounding of the Exxon Valdez was a catastrophe beyond belief, not only for the wildlife [which calls the sound its home], but for the native people of Alaska as well	Prepositional Phrase Object	TSU	which	right
		It is common practice now to double hull oil tankers [that travel the oceans and seas of the world]	Direct Object	ISU	that	right
		We must push to make large corporations, such as Exxon [accountable for their effects on the environment]	Prepositional Phrase Object	ISU	zero	right
2.0002.1	2	Most of the people [that turn to crime] are either fed up with societies rules for becoming rich and famous	Subject	ISU	that	center
		I know several people [who fit in this category of not being] will to go about obtaining money the legal way	Direct Object	ISU	who	right
		Just as the person knows, [who I was referring to above]	Prepositional Phrase Object	DO	who	right
		All the things [they did not have enough money to buy before], they could have now	Direct Object	DO	zero	center
		Right after, they received a call [that informed them] that their father had been arrested and he was in jail	Direct Object	TSU	that	right

		The news told a story of <i>a greedy business man</i> [who took money from elderly couples], who thought they were investing in a good real-estate project	Prepositional Phrase Object	TSU	who	right
		The news told a story of a greedy business man who took money from elderly couples , [who thought they were investing in a good real-estate project]	Prepositional Phrase Object	ISU	who	right
		This was a very harsh picture of <i>the man</i> [that had supported them and taken care of them for a long time]	Prepositional Phrase Object	TSU	that	right
		The government took control of all the families money, including <i>the house</i> [in which they lived]	Prepositional Phrase Object	OBL	which	right
		He was making good money and his family had <i>all the things</i> [that they needed]	Direct Object	DO	that	right
3.0003.1	3	If we recognize that <i>a work force</i> [filled with such diversity of workers] will inevitably include women - of all ages-	Subject	TSU Passive	Reduced (past participle)	center
		The issue will be difficult to resolve without involving employers or the government in <i>the child care industry</i> [which may not be the ideal solution]	Prepositional Phrase Object	ISU	which	right
		we, as a society, consciously work to raise <i>the status of workers</i> [who care for children]	Direct Object	ISU	who	right
4.0004.1	3	The value of a human being has become equated with <i>the dollars</i> [he or she generates in the marketplace]	Prepositional Phrase Object	DO	zero	right
		<i>Most of the traditional household roles</i> [formerly performed ed by women exclusively (but now handled by	Subject	TSU Passive	Reduced (past participle)	center

	people of both sexes)) have never been compensated by the dollar				
	Some sort of compensation should be made for "home-making service" as well as for <i>he or she</i> [who works outside the home]	Prepositional Phrase Object	ISU	who	right
	Teachers, engineers, artists, politicians and <i>all those</i> [who enrich our lives and our cultures], and on whom we depend, are indispensable to society	Subject	TSU	who	center
	Teachers, engineers, artists, politicians and <i>all those</i> who enrich our lives and our cultures, and [on whom we depend], are indispensable to society	Subject	OBL	whom	center
	I know of <i>no culture on this globe</i> [that pays a woman (or a man, for that matter) a yearly salary of \$50,000 for nurturing and educating children from the cradle to near-dependence]	Prepositional Phrase Object	TSU	that	right
	The bulk of that familial guidance service was provided by <i>the at-home female</i> [who did not demand financial compensation]	Prepositional Phrase Object	TSU	who	right
	It remains an unpaid job today, whether it's <i>Mom or Dad</i> [who stays at home]	Predicate Nominal	ISU	who	right
	<i>A person</i> [who chooses the tough "homemaker" position] is made to feel a bit ashamed	Subject	TSU	who	center
	Maybe it's simply due to the fact that the crucial task of raising children has <i>no dollar value</i> [attached to it]	Direct Object	TSU Passive	Reduced (past participle)	right

5.0005.1	1	It would seem to follow that if indeed money inspired and cultivated evil there would be a negative correlation between money [earned] and virtue obtained	Prepositional Phrase Object	TSU Passive	Reduced (past participle)	right	
		It would seem to follow that if indeed money inspired and cultivated evil there would be a negative correlation between money earned and virtue [obtained]	Prepositional Phrase Object	TSU Passive	Reduced (past participle)	right	
		One might say, that the "desire" for money could be gauged in comparison to evil acts [committed]	Prepositional Phrase Object	TSU Passive	Reduced (past participle)	right	
		The wealthy in fact could be more gluttonous than the poor [who would seem to have a greater desire for financial gain]	Prepositional Phrase (complement of than)	ISU	who	right	
			Those [who fit the term] are financially stable	Subject	TSU	who	center
			The desire for money would-must- coincide and flourish with a desire for virtue if virtue , [here defined as the counterpart of "happiness"], is to thrive	Subject	TSU Passive	Reduced (past participle)	center
			Only the serendipitously rich, the heirs of fortunes, could be the do-gooders of a world [in which money was the root of all evil]	Prepositional Phrase Object	OBL	which	right
			Those with power, those with wealth, those [who could be our saints] are just as often the oppressors as saviors	Subject	ISU	who	center
			It is not subtle argument, but the unfolding of history [that makes desire such an elusive]	Predicate Nominal	TSU	that	right

6.0006.1	3	Society also has <i>social institutions & practices in order</i> [which preserve the egalitarian concept]	Direct Object	TSU	which	right	
		Even <i>those</i> [who are not Christian] but who live in western society will most likely have inculcated that value on a personal level	Subject	ISU	who	center	
		Even <i>those</i> who are not Christian but [who live in western society] will most likely have inculcated that value on a personal level	Subject	ISU	who	center	
			<i>The concept of giving back to society</i> [which can be given] is thought of primarily in monetary terms	Subject	TSU Passive	which	center
			This seems highly contradictory to <i>the forces</i> [that bind us]	Prepositional Phrase Object	TSU	that	right
			The final problem [which arises] is the modern tendency of moral relativism	Subject	ISU	which	center
			<i>The values</i> [developed] are learned primarily from the family, religion, or an immediate micro community	Subject	TSU Passive	Reduced (past participle)	center
			<i>The concept</i> [provided] is an admirable goal	Subject	TSU Passive	Reduced (past participle)	center
			The concept provided is an admirable goal but <i>one</i> [whose ends will unlikely be achieved in any western culture].	Predicate Nominal	GEN	whose	right
7.0007.1	2	In terms of criminal work, pay must be weighed as <i>gains</i> [made from crime] versus all manners of loss that occur as a result	Prepositional Phrase Object	TSU Passive	Reduced (past participle)	right	
		In terms of criminal work, pay must be weighed as gains made from crime versus <i>all manners of loss</i> [that occur as a result]	Prepositional Phrase Object	ISU	that	right	

		One issue to consider as a loss is <i>the type of capital loss</i> [illustrated above]	Predicate Nominal	TSU Passive	Reduced (past participle)	right
		If <i>the time</i> [involved in the planning and enacting of a crime] does not pay off	Subject	TSU Passive	Reduced (past participle)	center
		If the time involved in the planning and enacting of a crime does not pay off in <i>a gain</i> [that can justify that time expenditure], then the crime has not paid	Prepositional Phrase Object	TSU	that	right
		Dealing in stolen property or other contraband could require splitting <i>monies</i> [earned with other involved parties]	Direct Object	TSU Passive	Reduced (past participle)	right
		It could be <i>an injury</i> [that keeps someone from ever working again]	Predicate Nominal	TSU	that	right
		<i>The stress</i> [that comes about from constant risk of injury and incarceration] is a cost in itself	Subject	ISU	that	center
8.0008.1	1	The desire for what we may not have can at times cause people to conduct themselves in <i>a way</i> [that they might not otherwise do]	Prepositional Phrase Object	DO	that	right
		Although there is a healthy desire to meet <i>the needs</i> [that we have]	Direct Object	DO	that	right
		There was a desperate desire, on the part of one or many, for <i>something</i> [that exceeds what was actually needed or required]	Prepositional Phrase Object	ISU	that	right
		Even <i>individuals</i> can be destroyed [who are in constant search of what evades them]	Subject	ISU	who	right
		This love of money urges them on, causes them to neglect their families and at times to commit	Direct Object	OBL	which	right

		<i>crimes</i> [for which they are imprisoned]				
		It produces selfishness in even the smallest child. It's not long before a 4-5 year-old realizes <i>the power</i> [that money brings]	Direct Object	DO	that	right
		It can bring relief to those in need and even extra joy into <i>a life</i> [that already has it's needs met]	Prepositional Phrase Object	TSU	that	right
		However, the love it, <i>the overwhelming desire for it</i> [that causes people to overlook what is most important]	Subject	TSU	that	right
9.0009.1	2	<i>A former politician</i> [who scammed the public for millions in personal gain] is now incarcerated making license plates for a token wage	Subject	TSU	who	center
		The phrase plays an important role in reassuring <i>people</i> [who play by the rules or admonishing potential criminals]	Direct Object	ISU	who	right
		They reinforce this message with <i>restitution or punishment</i> [that outweighs whatever payoff may have been associated originally with the crime]	Prepositional Phrase Object	TSU	that	right
		<i>Behavior</i> [that is not reinforced in some way] will not persist	Subject	TSU Passive	that	center
		I recently read that <i>the average amount of time</i> [that a convicted murderer spends in prison] is 15 years	Subject	DO	that	right
		crime pays for <i>an industry</i> [that thrives on it]	Prepositional Phrase Object	ISU	that	right
		Some of them go on to argue for <i>a local detention center</i> , [which, after, not only saves money on placement], but also generates	Prepositional Phrase Object	TSU	which	right

		local jobs and stimulates the economy				
10.0010.1	3	There are <i>many standards</i> [by which success and hard work have been measured]	Predicative Complement in Existential Clause	OBL	which	right
		They were not afforded <i>the many luxuries</i> [that have become commonplace in our present society]	Direct Object	ISU	that	right
11.0011.1	3	<i>The question of compensation for services</i> [rendered] is never so simple	Subject	TSU Passive	Reduced (past participle)	center
		It became very popular to disdain <i>people</i> [who did not actually work for a living]	Direct Object	ISU	who	right
		<i>People</i> [who inherit money or live off the interest of investors] often seem to spend their time in search of a new thrill	Subject	TSU	who	center
		<i>Some sort of excitement</i> [that money cannot buy]	Subject	DO	that	right
		Having almost unlimited wealth changes people, <i>both those</i> [who are born into wealth] and those who earn their own money early on	Direct Object	TSU Passive	who	right
		Having almost unlimited wealth changes people, both those who are born into wealth and <i>those</i> [who earn their own money early on]	Direct Object	TSU	who	right
		What about <i>people</i> [who work very hard]	Prepositional Phrase Object	ISU	who	right
		A rather hard view would be that if <i>someone</i> [who works on a menial or physically taxing job] does not make a fair or moderate salary then it is his or her own fault	Subject	ISU	who	center

		Unless we wish to impose on the personal lives of wealthy people by making them work harder, or give <i>people</i> [who are not wealthy] money that society does not believe they deserve, we cannot give pay equal to contribution to society	Indirect Object	ISU	who	right
		Unless we wish to impose on the personal lives of wealthy people by making them work harder, or give people who are not wealthy <i>money</i> [that society does not believe they deserve], we cannot give pay equal to contribution to society	Direct Object	DO	that	right
12. 0012.1	2	There are <i>many persons</i> [who engage in criminal activity to their advantage]	Predicative Complement in Existential Clause	TSU	who	right
		Throughout history <i>crime</i> is a recurrent theme, [often praised] as the years pass and events become more distant	Subject	TSU Passive	Reduced (past participle)	right
		Consider <i>the events</i> [shaping America's early history]: the people involved in the Boston Tea Party were certainly breaking the law	Direct Object	TSU	Reduced (present participle)	right
		Even Benedict Arnold's actions were considered criminal only because of <i>the date</i> [on which they occurred]	Prepositional Phrase Object	OBL	which	right
		<i>Events</i> [which reside in the darker portions of this country's history] have often brought profit to those committing illegal activities	Subject	ISU	which	center
		Events which reside in the darker portions of this country's history have often brought profit to <i>those</i> [committing illegal activities]	Prepositional Phrase Object	TSU	Reduced (present participle)	right

		Prohibition provided income to thousands of people [who broke the law daily] while running speak-eases or transporting liquor across the border	Prepositional Phrase Object	TSU	who	right
		It seems that those [who say] that crime does not pay have not read their history books recently	Subject	TSU	who	center
		Yet in America we see those [who are found guilty of crimes profiting from them]	Direct Object	TSU Passive	who	right
		In America we have perfected a judicial system [which can produce more prosperous criminals]	Direct Object	TSU	which	right
13.0013.1	4	Women have been looked down on if they try to get ahead and pay has differed with the same job for a man verses a woman [doing the same job]	Prepositional Phrase Object	TSU	Reduced (present participle)	right
		Now a lot of women work and the ones [that want to stay home] do it because they want to	Subject	TSU	that	center
		These are groups of people [that have defended women over the years]	Predicate Nominal	TSU	that	right
		An example is military women [wanting to serve in combat positions when at war]	Predicate Nominal	TSU	Reduced (present participle)	right
		There are some things [that women can do better than men] and there are some things that men can do better than women	Predicative Complement in Existential Clause	DO	that	right
		There are some things that women can do better than men and there are some things [that men can do better than women]	Predicative Complement in Existential Clause	DO	that	right
14.0014.1	4	A person [that commits a crime] will probably reap the benefits of whatever it is that they have done	Subject	TSU	that	center

		It's like when you are <i>a small child</i> [try ing to see just how much your parents will let you get away with before they discipline you]	Predicate Nominal	TSU	Reduced (present participle)	right
		For <i>an individual</i> [that starts out doing small crimes]	Prepositional Phrase Object	TSU	that	center
		or <i>less serious crimes</i> [that do not harm]	Prepositional Phrase Object	TSU	that	right
		to try just <i>one more thing</i> [that they feel that they may just slide with, and the cycle goes on and on].	Direct Object	OBL	that	right
		you can consider yourself <i>a habitual offender or someone</i> [that needs some kind of jail sentence]	Subject	TSU	that	right
		your punishment varies according to <i>the type of crime or crimes</i> [that the individual has committed]	Prepositional Phrase Object	DO	that	right
		For <i>those of us</i> [who have consciences]	Prepositional Phrase Object	TSU	who	right
		would never ever dream of committing <i>crime</i> [that may endanger another individual's well-being].	Direct Object	TSU	that	right
		this is not a good place to start shooting with <i>all these people</i> [standing around]	Prepositional Phrase Object	ISU	Reduced (present participle)	right
		this crazy gunman accidentally shoots <i>one of the children</i> [coming out of a building]	Direct Object	ISU	Reduced (present participle)	right
		only seconds after the gunman has just run past <i>the door</i> [that he just exited]	Prepositional Phrase Object	DO	that	right
		<i>the robber</i> [that was told to "run like hell"] eventually got caught	Subject	TSU Passive	that	center

		to make contact with another individual [who just happen]	Prepositional Phrase Object	ISU	who	right
		to be an innocent child [that changes things]	Predicate Nominal	TSU	that	right
		Something [that was supposed to be so simple] ended up to be a big mess.	Subject	TSU Passive	that	center
15.0015.1		One's attitude about money is the deciding factor [that determines]	Predicate Nominal	TSU	that	right
		The list of addictions [people develop] are endless	Subject	DO	zero	center
		The need for social prestige and the privilege [that comes with it] can be a force	Subject	ISU	that	center
16.0016.1	4	I'm in favor of some of the causes [that women are promoting]	Prepositional Phrase Object	DO	that	right
		these men had parents with values [that taught their children the proper traditional techniques]	Direct Object	TSU	that	right
		some of the causes [that these feminist groups stand for] are noble	Subject	OBL	that	center
		My argument is not that all the ideals [that women have wanted to change from or advance to over the years] are bad	Subject	DO	that	center
		I'm not asking for the world from you men out there, just for some consideration towards traditional values [that were the norm] when I was first dating.	Prepositional Phrase Object	ISU	that	right
17.0017.1		It contains a common truth [that is too often overlooked]	Direct Object	ISU	that	right
		The individual [who commits a crime...]	Subject	TSU	who	Center

		On this basis alone they may be denied the opportunity for a job [they want]	Direct Object	DO	zero	right
		or the housing [they desire]	Direct Object	DO	zero	right
18.0018.1		I know this and the facts [that I may use]	Direct Object	DO	that	right
		because of the Organized Crime & American Politics class [that I am currently taking]	Prepositional Phrase Object	DO	that	right
		Organized crime involves two or more individuals [working together for the same cause]	Direct Object	ISU	Reduced (present participle)	right
		There is one thing [that makes this all possible]	Predicative Complement in Existential Clause	TSU	that	right
		the average amount of money [spent on illegal gambling alone] is \$30 per person	Subject	TSU Passive	Reduced (past participle)	center
		Multiply that by the number of citizens [living in this country]	Prepositional Phrase Object	ISU	Reduced (present participle)	right
		Billions of dollars a year are turned over to the people [who run these crime rings]	Prepositional Phrase Object	TSU	who	right
		there is money [flowing in] through the form of payoffs	Predicative Complement in Existential Clause	ISU	Reduced (present participle)	right
		a person can have anything [they want]	Direct Object	DO	zero	right
19.0019.1		my mother and father always taught me the stealing was wrong and anyone [caught stealing] would be punished	Subject	TSU Passive	Reduced (past participle)	center
		I walked in on a group of individuals [robbing my house]	Prepositional Phrase Object	TSU	Reduced (present participle)	right

	some thieves were getting away with a crime [that they had no apparent reason to commit]	Prepositional Phrase Object	DO	that	right
	they did catch the people [who broke into my house that day]	Direct Object	ISU	who	right
	We would have to go to court and testify that it was our home [the stolen property came from]	Predicate Nominal	OBL	zero	right
	We kept going over things and had to try so hard to come up with a complete list of everything [that was taken from our house]	Prepositional Phrase Object	TSU Passive	that	right
	there would probably be a plea bargain for the people [that they caught]	Prepositional Phrase Object	DO	that	right
	I felt like they were getting away with a crime and that I was the one [that was being punished by being the victim]	Predicate Nominal	TSU Passive	that	right
	the two men and one woman [who invaded my life that cold January day in 1990], were going to go to jail	Subject	TSU	who	center
	and those awful people were sentenced for the crime [that they committed]	Prepositional Phrase Object	DO	that	right
	they received from our goods [that were not recovered]	Prepositional Phrase Object	TSU Passive	that	right
	I'm sure was not worth the time [they will spend in prison as habitual criminals]	Direct Object	DO	zero	right
20.0020.1	the reason [that women banded together was for recognition and equality]	Subject	DO	that	center
	the cause has been misused by people [who want women to be dominant rather than equal]	Prepositional Phrase Object	TSU	who	right

	therefore should be treated so in <i>the society</i> [in which they chose to live]	Prepositional Phrase Object	OBL	which	right
	Men had the exclusive rights to the vote, employment opportunities and <i>other societal features</i> [that empower a human being to be innately whole]	Direct Object	TSU	that	right
	the more <i>people</i> [that feel comfortable] they have a say in how their life turns out	Subject	ISU	that	right
	many people today have of a "feminist" is that of <i>a big chunky lesbian</i> [who hates all men]	Prepositional Phrase Object	TSU	who	right
	If women can shout at <i>the atrocities</i> [that have been thrown upon their gender and call it feminism] then they can get away with it	Prepositional Phrase Object	TSU Passive	that	center
	Outsiders now see the feminist movement as <i>a bunch of whining women</i> , [who don't want equality but want dominance]	Prepositional Phrase Object	TSU	who	right
	I would like women to be paid the same as <i>men</i> [who have the same skills in the same job level]	Prepositional Phrase Object	TSU	who	right
	many people see <i>the feminist movement</i> [mov ing in the wrong direction]	Direct Object	ISU	Reduced (present participle)	right
	keep in mind <i>the rudimentary beliefs</i> [that lay the foundation for the solidarity of women]	Direct Object	TSU	that	right
	<i>Many women</i> , including myself, [who consider themselves feminists] have separated themselves from modern day feminism	Subject	TSU	who	center

21.0021.1	the focus was on radicals like Stein, instead of <i>the housewife</i> [who returned to college]	Prepositional Phrase Object	ISU	who	right
	<i>Women</i> [supporting equal pay for women] and other "liberal" causes like affirmative action are only seen in the shadow of the bra-burning, anti-shaving leaders of the 1970s	Subject	TSU	Reduced (present participle)	center
	For so many years <i>the good</i> [that feminists have promote for women] has fallen by the wayside in lieu of other more interesting, i.e., radical ideas	Subject	DO	that	center
22.0023.1	This year our nation celebrates <i>the anniversary of the Women's Suffrage Movement</i> [which resulted in the women of America being recognized as full citizens]	Direct Object	ISU	which	right
	<i>those women</i> [who sought out their equality]	Subject	TSU	who	center
	<i>those women</i> who sought out their equality, [labored for years to gain access to the political system....]	Subject	ISU	Reduced (past participle)	center
	and <i>those women</i> [finally won the right only after the power structure of American politics heard their battle cries]	Subject	TSU	zero	center
	<i>Those women</i> [who believe in equal opportunity]	Subject	ISU	who	center
	there are still <i>those among us, both male and female</i> , [who resent women] who have spoken out	Predicative Complement in Existential Clause	TSU	who	right
	there are still those among us, both male and female, who resent <i>women</i> [who have spoken out]	Direct Object	ISU	who	right

		Names like Betty Friedan and Gloria Steinam, <i>women</i> [who made their mark as feminists of the '60s,] are greeted with cheers	Subject	TSU	who	center
		a generation of young women, daughters of those women of the '60s now find <i>doors of opportunity</i> open to them [which would have slammed in the faces of their mothers and grandmothers]	Direct Object	ISU	which	right
23.0024.1		there is <i>an endless list of things</i> [that can become the root of evil]	Predicative Complement in Existential Clause	ISU	that	right
		<i>groups and programs</i> [that we have in America and around the world] would not be able to function	Subject	DO	that	center
		to function without the donations of money from <i>those</i> [who are able to give]	Prepositional Phrase Object	ISU	who	right
		but I am sure that <i>most if not all funds</i> [donated] are used	Subject	TSU Passive	Reduced (past participle)	center
		... are used for <i>the purposes</i> [intended in those agencies]	Prepositional Phrase Object	TSU Passive	Reduced (past participle)	right
		are used for the purposes intended in those agencies and <i>programs</i> [which are reputable]	Prepositional Phrase Object	ISU	which	right
24.0025.1		the power can become intoxicating to the point of it being <i>the obsession</i> [that controls a person's life]	Predicate Nominal	TSU	that	right
		<i>Anything</i> [that comes easy] most probably won't be as appreciated	Subject	ISU	that	center
		valued as <i>something</i> [that comes with effort]	Prepositional Phrase Object	ISU	that	right
		<i>a dollar figure</i> [that they made last year]	Subject	DO	that	right

		<i>more substantive accomplishments</i> [that agree with their sense of values]	Subject	ISU	that	right
		<i>The people</i> [who rate their success by that dollar figure]	Subject	TSU	who	center
		<i>The person</i> [who rates success on substantive accomplishments] can stand alone	Subject	TSU	who	center
		Money is <i>something</i> [that our society has made indispensable]	Predicate Nominal	DO	that	right

Note: The first column on the left is the participant's ID column, in which the first number shows the ID number of the participant, the letters "F" or "M" specify the gender, and the number following the gender demonstrates the age of the participant. The second column shows the number of the topic essays on which the essay is written. The sentences containing RCs which are extracted from the essays appear in the third column. In each sentence presented in each table, the head noun is given in italics boldface, and the RC is given in brackets. The NPmat roles appear in the fourth column, and the NPrel Roles appear in the fifth column. The sixth column shows whether any relative marker has been used in the construction of the RC; and if so, what relative marker has been used. Finally, the last column shows whether the RC is located within the matrix clause (center-embedded) or is marginally adjoined to it (right-embedded).

Appendix E

English Unlimited Placement test

Written test

 A1 to C1

- Choose the best answer for each question.
- Stop when the questions become too difficult.
- Spend no more than 40 minutes on the test.

- 1 Where _____ from?
I'm from Russia.
A you are B you C are you
- 2 We have _____ house in Moscow.
A any B a C an
- 3 I have two _____, a boy and a girl.
A sons B daughters C children
- 4 I work in a _____. I'm a doctor.
A hospital B hotel C supermarket
- 5 This is my brother. _____ name's Paul.
A Her B His C He's
- 6 _____ five people in my family.
A They are B There is C There are
- 7 I get up _____ 7 o'clock in the morning.
A for B at C in
- 8 I like apples, but I _____ bananas.
A don't like B like C do like
- 9 Excuse me, _____ speak French?
A do you B you do C you
- 10 How much are _____ shoes?
A this B these C that

- 11 Where are my glasses?
They're _____ the table.
A at B on C in
- 12 My sister _____ tennis very well.
A plays B play C playing
- 13 I usually go to work _____ train.
A on B with C by
- 14 I don't see my parents very often _____ they live in South Africa.
A so B but C because
- 15 Rosie stayed _____ home yesterday afternoon.
A in B at C to
- 16 Last night I _____ to the cinema.
A went B did go C was
- 17 The _____ is quite expensive but the food there is excellent.
A film B restaurant C book
- 18 Do you want to listen to music or _____ TV?
A see B look C watch
- 19 _____ were you at the weekend?
I was in Scotland.
A When B Where C What
- 20 _____ you have a good time at the party?
Yes, it was fun.
A Did B Were C Had
- 21 Are you _____ English teacher?
A Maria B Marias' C Maria's
- 22 Bob will meet _____ at the airport.
A us B we C our
- 23 I'm going to a concert tonight. _____ you like to come?
A Do B Are C Would

- 24 _____ use your dictionary?
Sure. Here you are.
A Could I B Could you C Do I
- 25 I like this apartment but the _____ is too expensive for me.
A money B rent C cost
- 26 Excuse me, how do I _____ to the bus station?
A come B get C arrive
- 27 Do you sell stamps?
Yes, we do. How _____ do you want?
A any B many C much
- 28 Sorry I'm so late.
That's _____.
A OK B great C right
- 29 I'd like _____ milk in my coffee, please.
A some B any C a
- 30 _____ a bus stop near my flat.
A It's B Here's C There's
- 31 Is this a good time to talk?
Sorry, no. I _____ dinner.
A cook B am cooking C cooking
- 32 I think cycling is more dangerous _____ driving.
A as B like C than
- 33 We _____ going to the theatre next Saturday.
A will B do C are
- 34 _____ meet for coffee some time soon.
A Let's B Do you C Shall they
- 35 Kamal has got a holiday home near _____ sea.
A a B the C some

- 36 If you've got a headache, you _____ go home.
A should B did C had
- 37 _____ ever been to New York?
A Have you B Are you C Did you
- 38 I only get about five hours' sleep a night.
That's not _____ .
A enough B lot C too much
- 39 Did Amina finish the report?
No. She _____ it tomorrow.
A finishes B is going to finish C finished
- 40 Paula _____ loves working with children.
A very B really C much
- 41 Is Ottawa the capital of Canada?
I think _____ .
A is B yes C so D right
- 42 We never _____ a television when I was a child.
A have had B hadn't C had D didn't have
- 43 We paid the restaurant bill _____ credit card.
A to B with C on D by
- 44 The last time I _____ Joanna was in Paris.
A have seen B saw C see D was seeing
- 45 If you _____ money from a friend, you should always pay it back promptly.
A borrow B earn C spend D lend
- 46 Can I make myself a cup of coffee?
Of course. You _____ to ask.
A haven't B mustn't C needn't D don't have
- 47 I _____ a lot of sport in my free time.
A do B practise C make D exercise
- 48 _____ anywhere interesting recently?
A Do you go B Have you been C Are you going D Will you go


- 49 It's Walter's birthday on Friday. He _____ be 30, I think.
A should B can C will D shall
- 50 Learning the piano isn't as difficult _____ learning the violin.
A like B so C than D as
- 51 If the weather _____ bad tomorrow, we can go to a museum.
A will be B was C is D would be
- 52 About a billion cans of Coca-Cola _____ drunk around the world every day.
A is B are C was D were
- 53 My mum's not very well.
Oh, _____.
A it doesn't matter B I do apologise C sorry to hear that D not bad, thanks.
- 54 Hans isn't here. He _____ to see his grandmother. He'll be back tomorrow.
A has gone B had been C has been D had gone
- 55 Would you mind changing my appointment? _____ time on Friday is fine.
A Next B All the C Every D Any
- 56 When I was a child, I _____ climb the wall and jump into our neighbours' garden.
A would B did C have D used
- 57 Have you finished _____ the wall yet?
A paint B to paint C painting D painted
- 58 Can you help me? I've tried _____ hotel in the city and can't find a room.
A many B any C every D all
- 59 Lena used to find work boring _____ she became a nurse.
A unless B until C if D since
- 60 If I _____ closer to my office, I could walk to work.
A lived B would live C had lived D live
- 61 I _____ outside the cinema when suddenly a police car arrived.
A stood B was standing C have stood D am standing

- 62 Shall we go to *The Riceboat* for dinner?
It _____ be fully booked. They're sometimes busy on a Monday.
A will B may C can D must
- 63 We've _____ come back from a trip to India. It was amazing.
A already B yet C just D only
- 64 I've got to be at work in five minutes.
Don't worry, I _____ you a lift if you want.
A give B am giving C 'll give D 'm going to give
- 65 My doctor advised me _____ more exercise.
A take B taking C having taken D to take
- 66 I couldn't _____ up with the noise in the city, so we moved to the countryside.
A put B live C set D take
- 67 There's no name on this dictionary.
It _____ be mine then. Mine's got my name on the front.
A might not B mustn't C won't D can't
- 68 Julia _____ married since she was 20.
A is B was C has been D is being
- 69 Don't worry if I _____ late tonight. I'm going to the gym after work.
A am B will be C would be D was
- 70 I've got a terrible headache, and it won't go away.
Have you tried _____ some aspirin?
A to take B take C took D taking
- 71 Boxing is a sport _____ requires a lot of speed and fitness.
A it B that C what D where
- 72 Jon _____ working on this project for a couple of months so he hasn't made much progress yet.
A is only B has only been C was only D had only been
- 73 I was wondering _____ I could ask you some questions.
Sure, go ahead.
A what B if C that D how

- 74 What clothes should I pack for a trip to Boston?
Well, it depends _____ the time of year that you go.
A on B with C up D to
- 75 I've finished this salad and I'm still hungry. I _____ ordered something more filling.
A must have B would have C should have D may have
- 76 Do you ever ask your neighbours to do favours _____ you?
A for B to C with D about
- 77 Some married couples seem to get more _____ over time.
A alike B same C like D equal
- 78 I don't know how much this card costs. The price label's _____ off.
A gone B taken C done D come
- 79 Ben got the job because he _____ a very good impression at his interview.
A made B did C put D took
- 80 Salsa music always _____ me of my trip to Cuba.
A remembers B realises C recognises D reminds
- 81 I _____ to be picking Tom up at the station but I've lost my keys.
A am supposed B am requested C am intended D am obliged
- 82 How about going to *Colours* nightclub?
There's no _____ I'm going there. It's awful!
A hope B way C time D opportunity
- 83 By the age of 18, I _____ not to go to university.
A had decided B decided C have decided D was deciding
- 84 I'm afraid your car _____ repaired before next week.
A hasn't been B wasn't C wouldn't be D can't be
- 85 The amount of organically grown food on sale has _____ enormously in recent years.
A raised B lifted C increased D built
- 86 Can you believe it? A woman has been _____ for hacking into the computer of her online virtual husband.
A accused B suspended C arrested D suspected

- 87 You may borrow my laptop _____ you promise to look after it.
A unless B in case C as long as D although
- 88 It's a huge painting. It _____ taken ages to complete.
A must have B can't have C should have D won't have
- 89 Pierre tends to put _____ dealing with problems, rather than dealing with them immediately.
A down B off C over D away
- 90 If the taxi hadn't stopped for us, we _____ standing in the rain.
A were still B would still be C are still D will still be
- 91 My mother's Italian, so _____ the language has been quite easy for me.
A to learn B learn C having learned D learning
- 92 _____ I had the talent, I still wouldn't want to be a movie star.
A In case B Even if C Provided that D However much
- 93 The factory workers threatened _____ on strike if they didn't get a pay rise.
A going B to go C that they go D to have gone
- 94 I was about to go to sleep when it _____ to me where the missing keys might be.
A remembered B happened C appeared D occurred
- 95 There's going to be a new department at work. They've asked me to _____ it up.
A take B set C put D bring
- 96 If the film is a _____ success, the director will get most of the credit.
A big B high C large D good
- 97 By the end of today's seminar I will _____ to each of you individually.
A speak B have spoken C be speaking D have been speaking
- 98 This is a photo of my little sister _____ ice cream on the beach.
A eat B eating C was eating D having eaten
- 99 Our students take their responsibilities very _____.
A considerably B thoroughly C seriously D strongly
- 100 Pia was _____ delighted with the birthday present.
A very B completely C fairly D absolutely

- 101 People were amazed that the burglary took place in _____ daylight.
A wide B broad C large D open
- 102 She invested a lot of time _____ researching the most appropriate university course.
A to B for C with D in
- 103 The police claimed that they acted in self- _____ .
A interest B confidence C defence D discipline
- 104 I _____ remember putting my briefcase down on that shelf.
A deeply B entirely C clearly D strongly
- 105 He turned _____ to be considerably older than I had imagined.
A over B up C out D round
- 106 The windows in this house are in urgent _____ of replacement.
A need B help C want D demand
- 107 Speed cameras _____ shown to reduce accidents.
A have B were being C have been D are being
- 108 Life is a _____ deal easier for immigrants who can speak the local language.
A far B huge C big D great
- 109 The experiment _____ testing people's responses before and after drinking coffee.
A contained B incorporated C involved D consisted
- 110 We may be a bit late. We're _____ in a traffic jam.
A buried B stuck C blocked D surrounded
- 111 Having _____ his driving test several times, Paul finally passed at the fourth attempt.
A taken B made C had D attended
- 112 Gospel music has been a major influence _____ other musical styles, especially soul.
A with B to C about D on
- 113 Maintaining an accurate balance sheet is essential, _____ business you're in.
A however B wherever C whatever D whenever
- 114 It's _____ likely that this novel will win a literary prize.
A totally B deeply C strongly D highly

- 
- 115 It's no _____ for me to get Brad's phone number – I'll be seeing him tonight.
A point B wonder C secret D problem
- 116 I'd lived in Australia, so I was used to _____ on the left side of the road.
A driving B drive C having driven D drove
- 117 I don't think the colours in Julia's outfit _____ together.
A fit B suit C match D go
- 118 Very rarely _____ here in July.
A it rains B does it rain C is it raining D it is raining
- 119 I prefer to buy CDs _____ download music from my computer.
A in contrast to B as opposed to C rather than D in comparison to
- 120 The number of turtles on the island _____ by 70% over the last decade.
A has declined B has been declining C has been declined D is declining

Appendix F

Table F1. *Test sentences in translation test 1 employed in the pre-test*

Relative Clause Type	Number	Test Sentence
Subject	1	This is the man who knows Sara.
	2	This is the boy who met Sara yesterday.
	3	This is the cat that played in the park yesterday.
	4	This is the student who got a good mark.
	5	This is the woman who came to the library.
Direct Object	1	This is the man whom Sara knows well.
	2	This is the boy whom my sister met last week.
	3	This is the girl whom Tom loved so much.
	4	This is the book that I bought yesterday.
	5	This is the school subject which I liked a lot.
Indirect Object	1	This is the man to whom Sara gave a book.
	2	This is the girl to whom I gave my doll.
	3	This is the woman to whom Sara sent a letter.
	4	This is the library to which I gave the books.
	5	This is the person to whom I showed the house.
Object of Preposition	1	This is the place from which we bought the books.
	2	This is the man about whom you spoke last night.
	3	This is the table on which he put his bag yesterday.
	4	This is the teacher from whom we learned a lesson.
	5	This is the task on which the students worked.
Genitive	1	This is the boy whose sister was in our class.
	2	This is the singer whose song was the best.
	3	This is the man whose son had an accident.
	4	This is the girl whose mom came to our school.
	5	This is the dog whose picture was in the newspaper.
Object of Comparison	1	This is the girl who Mary is smarter than.
	2	This is the rival who I am better than.
	3	This is the flat which my house is smaller than.
	4	This is the student who Mary is more intelligent than.
	5	This is the boy who Perter is younger than.

Note: The test sentences were in Persian, and what is listed here is the English translation of the sentences.

Table F2. *Test sentences in translation test 2 employed in the post-test*

Relative clause type	Number	Test sentence
Subject	1	This is the cat that climbed the tree yesterday.
	2	This is the boy who played in the garden yesterday.
	3	This is the man who saw Peter in the park last week.
	4	This is the dog that slept under the tree yesterday.
	5	This is the person who called me last week.
Direct Object	1	This is the girl whom I saw at school this morning.
	2	This is the cat that Mary fed in the kitchen yesterday.
	3	This is the man whom Peter met in the street yesterday.
	4	This is the cat that the dog chased in the yard.
	5	This is the man whom I do not know well.
Indirect Object	1	This is the girl to whom Peter sent an email.
	2	This is the child to whom the little boy gave his toy.
	3	This is the boy to whom the woman sent a letter.
	4	This is the girl to whom Mary showed her bike.
	5	This is the man to whom Peter gave a book.
Object of Preposition	1	This is the person from whom the cat ran away yesterday.
	2	This is the place from which the little boy fell yesterday.
	3	This is the boy with whom Alex played in the garden.
	4	This is the man with whom Mary danced last night.
	5	This is the project on which Mary worked last year.
Genitive	1	This is the woman whose horse was running on the farm.
	2	This is the woman whose cat caught a mouse yesterday.
	3	This is the boy whose dog barked at the farmer yesterday.
	4	This is the man whose wife was in hospital last week.
	5	This is the man whose son sang in the park yesterday.
Object of Comparison	1	This is the man who Peter is taller than.
	2	This is the hotel which Hilton is better than.
	3	This is the bike which our new bike is cheaper than.
	4	This is the girl who Mary is more active than.
	5	This is the mouse which my dog is smaller than.

Note: The test sentences were in Persian, and what is listed here is the English translation of the sentences.

Appendix G

Table G1. *Number and percentage of errors at each test sentence of each RC type at the high proficiency level*

Number of test sentences	SU		DO		IO		OBL		GEN		OCOMP	
	No	%	No	%	No	%	No	%	No	%	No	%
1	1	50	1	7.7	5	17.24	4	19.05	3	11.54	9	21.95
2	0	-	2	15.39	6	20.69	3	14.29	6	23.07	7	17.07
3	1	50	4	30.77	7	24.14	6	28.58	6	23.07	7	17.07
4	0	-	5	38.46	5	17.24	3	14.29	8	30.77	10	24.40
5	0	-	1	7.7	6	20.69	5	23.80	3	11.54	8	19.51
Total number of errors	2		13		29		21		26		41	

NO: Number of errors at each test sentence of each particular RC type

Table G2. *Number and percentage of errors at each test sentence of each RC type at the intermediate proficiency level*

Number of test sentences	SU		DO		IO		OBL		GEN		OCOMP	
	No	%	No	%	No	%	No	%	No	%	No	%
1	19	26.76	31	28.45	34	26.99	14	16.67	10	18.87	16	23.89
2	17	23.94	25	22.94	28	22.22	21	25	10	18.87	12	17.91
3	11	15.50	22	20.18	28	22.22	17	20.24	12	22.64	13	19.40
4	10	14.08	17	15.60	14	11.11	18	21.43	8	15.09	14	20.90
5	14	19.72	14	12.85	22	17.47	14	16.67	13	24.53	12	17.91
Total number of errors	71		109		126		84		53		67	

Table G3. *Number and percentage of errors at each test sentence of each RC type at the low proficiency level*

Number of test sentences	SU		DO		IO		OBL		GEN		OCOMP	
	No	%	No	%	No	%	No	%	No	%	No	%
1	18	22.5	19	24.68	16	20.78	15	23.80	8	17.78	12	20.34
2	15	18.75	20	25.98	13	16.88	16	25.40	8	17.78	12	20.34
3	14	17.5	15	19.49	19	24.67	10	15.87	8	17.78	12	20.34
4	14	17.5	13	16.89	12	15.59	14	22.23	9	20	11	18.65
5	19	23.75	10	12.98	17	22.08	8	12.70	8	17.78	12	20.34
Total number of errors	80		77		77		63		41		59	

Appendix H

Table H1. *Frequency and percentage of the correctly formed, the erroneously formed, and the avoided subject relatives in the pre-test (N=128) and the treatment group in the post-test (N=52) at the three levels of proficiency*

Proficiency levels		Correct	Erroneous	Avoided
High	Pre-test (N=21)	103 (98.09%)	2 (1.90%)	0
	Post-test (N=10)	49 (98%)	1 (2%)	0
Intermediate	Pre-test (N=72)	258 (71.67%)	71 (19.72%)	31 (8.61%)
	Post-test (N=28)	109 (77.86%)	19 (13.58%)	12 (8.58%)
Low	Pre-test (N=35)	69 (39.43%)	80 (45.72%)	26 (14.86%)
	Post-test (N=14)	32 (45.71%)	28 (40%)	10 (14.29%)

N: Number of participants

Table H2. *Frequency and percentage distribution of the correctly formed, the erroneously formed, and the avoided direct object relatives in the pre-test (N=128) and the treatment group in the post-test (N=52) at the three levels of proficiency*

Proficiency levels		Correct	Erroneous	Avoided
High	Pre-test (N=21)	91 (86.67%)	13 (12.38%)	1 (0.95%)
	Post-test (N=10)	48 (96%)	2 (4%)	0
Intermediate	Pre-test (N=72)	191 (53.05%)	109 (30.28%)	60 (16.67%)
	Post-test (N=28)	91 (65%)	24 (17.14%)	25 (17.86%)
Low	Pre-test (N=35)	35 (20%)	77 (44%)	63 (36%)
	Post-test (N=14)	24 (34.28%)	30 (42.86%)	16 (22.86%)

Table H3. *Frequency and percentage of the correctly formed, the erroneously formed, and the avoided indirect object relatives in the pre-test (N=128) and the treatment group in the post-test (N=52) at the three levels of proficiency*

Proficiency levels		Correct	Erroneous	Avoided
High	Pre-test (N=21)	66 (62.86%)	29 (17.62%)	10 (9.53%)
	Post-test (N=10)	46 (92%)	4 (8%)	0
Intermediate	Pre-test (N=72)	105 (29.17%)	126 (35%)	129 (35.83%)
	Post-test (N=28)	82 (58.58%)	38 (27.14%)	20 (14.29%)
Low	Pre-test (N=35)	4 (2.28%)	77 (39.42%)	94 (53.72%)
	Post-test (N=14)	21 (30%)	25 (35.71%)	24 (34.29%)

Table H4. *Frequency and percentage distribution of the correctly formed, the erroneously formed, and the avoided oblique relatives in the pre-test (N=128) and the treatment group in the post-test (N=52) at the three levels of proficiency*

Proficiency levels		Correct	Erroneous	Avoided
High	Pre-test (N=21)	69 (65.71%)	21 (20%)	15 (14.28%)
	Post-test (N=10)	45 (90%)	5 (10%)	0
Intermediate	Pre-test (N=72)	75 (20.84%)	84 (23.34%)	201 (55.83%)
	Post-test (N=28)	74 (52.86%)	31 (22.14%)	35 (25%)
Low	Pre-test (N=35)	0	63 (36%)	112 (64%)
	Post-test (N=14)	17 (24.28%)	25 (35.71%)	28 (40%)

Table H5. *Frequency and percentage of the correctly formed, the erroneously formed, and the avoided genitive relatives in the pre-test (N=128) and the treatment group in the post-test (N=52) at the three levels of proficiency*

Proficiency levels		Correct	Erroneous	Avoided
High	Pre-test (N=21)	50 (11.88%)	26 (24.77%)	29 (27.62%)
	Post-test (N=10)	46 (92%)	4 (8%)	0
Intermediate	Pre-test (N=72)	41 (11.39%)	53 (14.73%)	266 (73.89%)
	Post-test (N=28)	81 (57.86%)	6 (4.28%)	53 (37.86%)
Low	Pre-test (N=35)	9 (5.14%)	41 (23.43%)	125 (71.43%)
	Post-test (N=14)	20 (28.57%)	6 (8.57%)	44 (62.86%)

Table H6. *Frequency and percentage of the correctly formed, the erroneously formed, and the avoided object of comparison relatives in the pre-test (N=128) and the treatment group in the post-test (N=52) at the three levels of proficiency*

Proficiency levels		Correct	Erroneous	Avoided
High	Pre-test (N=21)	42 (47.62%)	41 (39.04%)	22 (20.96%)
	Post-test (N=10)	38 (76%)	7 (14%)	5 (10%)
Intermediate	Pre-test (N=72)	14 (3.89%)	67 (18.62%)	279 (77.5%)
	Post-test (N=28)	50 (35.71%)	24 (17.14%)	66 (47.14%)
Low	Pre-test (N=35)	0	59 (33.71%)	116 (66.29%)
	Post-test (N=14)	17 (24.28%)	6 (8.57%)	47 (67.14%)

Note: To calculate the total number of test sentences for each RC type at each proficiency level, the number of the participants at each proficiency level was multiplied by five, the number of the test sentences for each RC type. Then, the occurrence number of the correctly formed/erroneously formed/avoided types was divided by the calculated total number of test sentences.