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L3 Acquisition of Pronominal Possessors and Gender Agreement

Abstract

The main goal of this paper is to contribute to the understanding of the acquisition of singular pronominal possessors (his/her) and gender agreement in third language (L3) English by first language (L1) Hungarian and second language (L2) Romanian learners and the extent to which animacy, task type and proficiency might affect it. The experiment is based on previous research by Imaz Agirre and García Mayo (2018), a comprehensive study on the acquisition of gender agreement and pronominal possessors in third language acquisition. This paper presents new findings by virtue of examining the third language acquisition of some agreement properties in the context of a novel combination of languages (L1: Hungarian, L2: Romanian, L3: English).

Keywords: third language acquisition, pronominal possessors, gender agreement, animacy, task-type effect, proficiency effect

1 Introduction

As argued in the literature, acquisition of gender agreement patterns has been shown to pose a challenge for language learners, especially bilingual speakers (see, for example Montrul & Potowski 2007; Tsimpli 2014). Research has consistently shown (Bruhn de Garavito & White 2002; Franceschina 2005; Montrul et al. 2008; Alarcón 2011; Grüter et al. 2012, Hur et al. 2020) that bilingual speakers exhibit a wide range of levels in production and comprehension tasks that measure gender agreement, also featured in recent research. Previous studies related to gender agreement in Romance languages (White et al. 2004; Lynch & Polinsky 2018; Rothman et al. 2018) have concentrated mostly on gender agreement within the nominal domain, especially on the agreement between articles, nouns, and/or adjectives or on the agreement between gendered pronominal forms with their antecedents (Martínez-Gibson 2011; Polinsky 2008). Only a few studies focused on bilingual speakers whose first language has gendered pronouns in the third-person and lacks grammatical gender within the determiner phrase (DP), and they also spoke a language that displays grammatical gender and gender in the third-person pronouns. The present paper examines three languages, from which Hungarian lacks grammatical gender, Romanian has gender within the DP, and English has gendered third-person pronouns.

The structure of the paper is as follows: Section 2 provides a description of the linguistic background with respect to the gender system, and possessive structures in Romanian, Hun-

garian and English. Then, in Section 3 I discuss previous research on the acquisition of pronominal possessors and gender agreement. Section 4 describes the present study, including the research questions, participants and methodology used. Section 5 discusses the results and Section 6 concludes.

2 Linguistic background

In this section I present the linguistic background with respect to the gender system and possessive structures in Romanian, Hungarian, and English, and it also prepares the presentation of the present study and its findings. Table 1 at the end of the section summarises the differences and similarities in the three languages in terms of possessiveness and grammatical gender coding. The present study is focused mainly on the linguistic phenomenon of gender agreement in pronominal possessors.

Romanian. As Tomescu (2017) argues, in Romanian nominally there is a three-gender system (masculine, feminine, neuter). Similar to other Indo-European languages, in Romanian there are possessive pronouns/adjectives that agree with the head noun in the case of first and second person as in example (1a,b), and genitive-marked pronominal forms for the third person as in (2a,b).

With regard to encoding possession and gender agreement in Romanian, the literature distinguishes several types of pronominal possessors of which, for the relevance of the present study, I discuss two:

i) Possessive adjectives that agree with the head noun in the case of first and second person singular and plural as in examples (1a) and (1b).

(1) a. *fata mea / ta / noastră / voastră*
 girl.F.DEF my.F.SG / your.F.SG. / our.F.PL / your.F.PL
 ‘my girl’ / ‘your girl’ / ‘our girl’ / ‘your girl’

b. *frații mei / tăi / noștri / voștri*
 brothers.M.DEF my.M.PL / your.M.SG / our.F.PL / your.M.PL
 ‘my brothers’ / ‘your brothers’ / ‘our brothers’ / ‘your brothers’¹

(Dobrovie-Sorin & Giurgea 2013: 347, (111a) and (111b))

According to the explanations of Dobrovie-Sorin (2011), the examples above show that for the first person singular i.e. *fata mea*, as in (1a) - we can isolate the constant elements *m-* for the first person (except for the nominative *eu*) and *t-* for the second person singular i.e. *fata ta* (1a.). The stems of agreeing possessors are obtained by adding a vowel to this consonantal element (*-e-* for the first person i.e. *mea*, and *-ă/a* for the second person i.e. *ta* (1a)).

¹ Dobrovie-Sorin & Giurgea 2013: 347, (111a) and (111b)

ii) Genitive-marked forms of the personal pronoun for the third person, that agree with the possessor. Third-person possessors are marked with genitive case.

- (2) a. fata lui / ei / lor
 girl.F.DEF he.GEN / she.GEN / they.GEN
 ‘his girl’ / ‘her girl’ / ‘their girl’

(Dobrovie-Sorin & Giurgea 2013: 347, (112a))

- b. fratele lui / ei / lor
 brother.M.DEF he.GEN / she.GEN / they.GEN
 ‘his brother’ / ‘her brother’ / ‘their brother’

In the examples above, third-person pronouns are made up of a common invariable root, which takes different forms, and an inflectional morpheme. In (2a) and (2b) irrespective of the gender of the head noun the root for the masculine pronoun is *-l* from the personal pronoun *el* (*he*), and for the feminine is *-e* from the feminine personal pronoun *ea* (*she*). For the plural Romanian uses *lor* (*their*) for both feminine and masculine. The letter *-i* is not written in these forms in Romanian. Inflectional morphemes express gender and number through different forms of this root. Regarding agreement, in Romanian there are two types of gender agreement:

i) Agreement with the head noun in case of possessive adjectives as in examples (1a) and (1b), and the reflexive root *s-* as in examples (3a) and (3b) below:

- (3) a. fata sa
 girl.F.DEF his/her.F.3SG
 ‘his girl/her girl’

(Dobrovie-Sorin & Giurgea 2013: 347, (113a))

- b. fratele său
 brother.M.DEF his/her.M.3SG
 ‘his/her brother’

As the literature indicates (Dobrovie-Sorin & Giurgea 2013), there were reflexives in the old texts which lost their reflexive meaning, and they developed a number restriction later, as they were being used for singular referents only. The forms *său/sa/săi/sale* (*his/her*) as they appear in (3a) and (3b), are often restricted to writing.

ii) Agreement with the possessor: genitive-marked forms, as shown in examples (2a) and (2b).

We can see that agreement does not compete with case marking: the possessive suffix is analysed as a particular realisation of the genitive case, and it co-occurs with agreement features. We can therefore conclude that agreeing possessive pronouns are doubly ‘marked’, once by the case realised inside the possessive stem and once by agreement with the ‘possessee’ (Dobrovie-Sorin, 2011). The agreement of genitive-marked forms, as in (2a): *fata lui* (*his girl*), *fata ei* (*her girl*) are featured in the present study.

Hungarian. Hungarian, along with other Uralic languages like Lappish, Altaic, Estonian, and Turkish, lacks the grammatical gender that all other Indo-European languages in their

particular geographic environments possessed (Vasvári 2011: 15–16). Two types of possessive structures are discussed below:

i) “The dative-marked possessor either occupies the initial position in the extended projection of the possessed noun (4a), or it is external to it, sitting among the complements of the matrix verb, on a par with the projection of the possessed noun (4b).” (É. Kiss 2002: 157).

- (4) a. Jánosnak a könyve
 John.DAT the book.POSS
 ‘John’s book’
- b. Jánosnak ellopták a könyvét.
 John.DAT stole they the book.POSS.ACC
 ‘John’s book was stolen.’

(É. Kiss 2002: 157, (12a) and (12b))

Example (4a) shows how the dative-marked possessor takes the initial position and the form is that the personal name is followed by the suffix *-nak* (or *-nek*) depending on the vowels in the name and also followed by a definite article *a*, and then the possessed noun. As for example (4b), the personal name preserves its initial position, however the dative-marked possessor is external and sits among the complements of the matrix verb. The possessed noun is followed by *-t*.

ii) The caseless possessor (*ő*) – is always positioned after the article of the possession (*a/az*), as example (5a) shows (É. Kiss 2002: 158).

- (5) a. az ő könyve
 the he/she book.POSS
 ‘his/her book’
- b. (a) János könyve
 (the) John book.POSS
 ‘(the) John’s book’

(É. Kiss 2002: 158, (14b) and (14c))

Example (5a) shows that when the caseless possessor is expressed by a personal pronoun, the definite article must always be present. Example (5b) uses a personal name to represent the caseless possessor; the definite article is optional in this instance. The dative-marked and caseless possessors agree with the possessee in number and person, without expressing grammatical gender.

In the present study the attention of the reader is directed to the caseless possessor *ő* (*his/her*) in Hungarian, as this type of possessive structure is examined, along with parallel structures in the learners’ L2 Romanian and L3 English. The examples below show that in Hungarian the caseless possessor *ő* (*his/her*) is optional (6b) and it can be recovered from the possessive suffix of the possessee (*-e*).

- (6) a. az ő könyve
 the he/she book.POSS
 ‘his/her book’
 b. a könyve
 the book.POSS
 ‘his/her’ book’

Also, notice that unlike Romanian and English, the Hungarian third person singular personal pronoun *ő* does not show grammatical gender, hence there is no gender agreement in Hungarian.

English. Since there are no syntactic constraints that directly relate to gender differences, gender in English is only of a semantic nature. The masculine and feminine third person singular possessive determiners in English match the possessor’s natural gender (as presented by Imaz Agirre & Garcia Mayo 2018:207), showed in the examples below:

- (7) a. He’s talking to **his** mother.
 b. She’s talking to **her** mother.

(Imaz Agirre & Garcia Mayo 2018: 207–208)

The pronominal possessors (his/her) in the aforementioned cases correspond with the possessors’ natural gender (*he* - masculine; *she* - feminine).

As presented by Imaz Agirre & Garcia Mayo (2018: 207), the possession relationship in English may be expressed in the following three ways:

i) Prenominal genitive DPs represented by the genitive ‘s as in (8):

- (8) John’s house

ii) Postnominal preposition-noun phrase:

- (9) the house of John

iii) Except for third person singular possessives that exhibit gender variations for masculine, feminine, and neuter (*his*, *her*, *its*), possessive pronouns do not reflect overt morphological agreement. These pronouns agree in gender with the possessor. Examples (10a,b) illustrate the agreement of third person singular pronominal possessors.

- (10) a. He is playing with his brother.
 b. She is playing with her brother.

(Imaz Agirre & Garcia Mayo 2018: 208, (6a) and (6b))

In the examples above the pronominal possessors *his/her* agree with the subject of the sentence in gender, expressed by personal pronouns *he/she*, with the reading that the possessor refers to the subject of the sentence. However, the possessor can also refer to someone else, outside the sentence. The examples also show that English establishes number, person, and gender agreement between the possessive pronoun and the possessor. The main focus of the present study is possessive pronouns *his/her*, which establish gender agreement with the possessor in the sentence.

The following table is a summary of the relevant similarities and differences discussed earlier in this paper, regarding possessive structure and gender agreement in the three languages involved in the present study.

	Romanian	Hungarian	English
Gender system	– masculine, feminine and neuter	– lacks grammatical gender	– semantic in nature – the SG possessive determiner agrees with the natural gender of the possessor
Possessive structure	Genitive-marked forms of the personal pronoun in 3SG cartea lui / ei book.F.DEF.SG his / her ‘his / her book’	Caseless possessor represented by the 3SG personal pronoun az ő könyve the he/she book.POSS ‘his/her book’	Possessive pronouns his / her book
Agreement	– genitive-marked forms show gender agreement with the possessor i.e. (2a) and (2b)	– there is no gender agreement	– gender agreement with the possessor in 3SG i.e. (10a) and (10b)

Table 1. Gender system, possessive structure and gender agreement in Romanian, Hungarian, and English

Table 1 above shows that the gender systems of the three languages are different: Romanian has a nominal three-gender system, Hungarian lacks grammatical gender and in English gender is semantic in nature and the possessive determiner has agreeing forms (*his/her/its*) with the natural gender of the possessor. The possessive structures are represented differently, too. In Romanian there are genitive-marked forms of the personal pronoun in the third person singular (*lui/ei*), in Hungarian there is a caseless possessor, which can often be omitted, represented by a third person singular personal pronoun (*ő*), and in English there are possessive forms of personal pronouns (*his/her*). Regarding agreement, in Romanian genitive-marked forms show gender agreement with the possessor, in Hungarian there is no gender agreement and in English, similarly to Romanian, there is gender agreement with the possessor in third person singular.

3 Previous research on the acquisition of pronominal possessors and gender agreement

Learners of English as a second or third language often make gender agreement errors, as researchers like Antón-Méndez (2010); Pozzan & Antón-Méndez (2017) have pointed out. The following example displays a typical agreement error.

(11) *The **mother** is telling a story to **his** son.

Example (11), adapted from Imaz Agirre & Garcia Mayo (2018), is ungrammatical if the possessive pronoun *his* is meant to refer to the *mother*, being the subject of the sentence. When

learners construct such ungrammatical sentences, they establish gender agreement between the possessive pronoun and the possessee.

In another example given by Imaz Agirre and García Mayo (2013) in their exploratory study done with Spanish bilinguals, L3 English learners showed gender agreement problems as in example (12).

(12) *She is brushing **his** teeth.

Example (12) above is ungrammatical if the possessive adjective refers to the feminine subject. Furthermore, Tomescu (2017) argues that Hungarian-Romanian bilinguals show a delayed acquisition of the gender feature due to the fact that Hungarian is a genderless language. The first research question (detailed in Section 4) of the present study deals with a similar problem. In what follows, I discuss the reasons for dealing with animacy, task type, and proficiency in the present study.

Animacy. In the literature, there is no consensus regarding the effect of animacy. Previous studies with L2 English (Antón-Méndez 2010) and with L2 Spanish (Sagarra & Herschensohn 2011) showed that learners had more gender agreement errors with animate possesseees in the DP. Other studies showed more errors in the case of inanimate nouns (Alarcon 2010) because animate nouns displayed natural gender. Furthermore, neurocognitive findings showed that monolinguals were able to identify gender agreement errors in the case of animate (see, for example, Barber, Salillas & Carreiras 2004; Corral, Barber & Carreiras, 2008; Osterhaut, Bersick & McLaughlin 1997) and inanimate nouns, too (Barber et al. 2004). Other studies also showed that there was no difference between establishing agreement with animate or inanimate head nouns (Alarcon 2014; Anton-Mendez, Nicol & Garrett 2002; Barber et al. 2004; Corral et al. 2008). Cornips et al. (2006) argue that the gender of animate nouns poses little problem for bilinguals. One of the goals of the present study is to show whether animacy facilitates, inhibits, or has no effect on the acquisition of L3 English pronominal possessors by L1 Hungarian and L2 Romanian learners.

Task type. Regarding the effect of task type, there are again conflicting results in the literature. The Representational Deficit Hypothesis (RDH) by Hawkins & Liszka (2003) suggests that no task effect occurs in the case of L2 learners as they encounter an uninterpretable feature existing in their L1. Contrarily, researchers, such as McCarthy (2008) and White et al. (2004) from computational approaches suggest that learners will have problems in oral production due to communicational pressure. RDH and computational hypotheses claim that task type (comprehension and production) should not affect learners' performance, whereas the Feature Reassembly Hypothesis (FRH) claims that production is more demanding due to feature reassembly reasons. Research has consistently shown (as in Bruhn de Garavito & White 2002; Franceschina 2005; Montrul et al. 2008; Alarcón 2011; Grüter et al. 2012; Hur et al. 2020) that bilingual speakers show various production and comprehension results when gender agreement is tested. In the present study, I used a comprehension (grammaticality judgement) and a production (fill-in-the-gap) task in order to trace the existence of task type effects in the acquisition of L3 English pronominal possessors.

Proficiency. As for the role of proficiency level in the L2 acquisition of *his/her*, different results are available in previous literature. On the one hand, Muñoz (1994) demonstrated that bilingual Catalan/Spanish speakers made more gender agreement errors as their proficiency increased. On the other hand, higher proficiency L1 French learners made fewer errors in L2

English, according to White and Ranta (2002). Imaz Agirre and Garca Mayo (2018) examined the impact of proficiency and transfer on L2 and L3 English learners' gender agreement in a Spanish-Basque environment. Their analysis of the three proficiency levels (elementary, intermediate, and advanced) found that the learning of gender agreement in third person singular possessive adjectives was significantly influenced by proficiency level in their L3. Their findings were consistent with earlier research on L2 Romance language learners (White et al. 2004), Catalan/Spanish bilinguals (Muñoz 1991, 1994), and L1 French learners (White & Ranta 2002; White et al. 2007), which found that in minimum input situations, competence and proficiency significantly influenced the acquisition of morphosyntactic structures, and error rates were reduced as their proficiency increased.

The present study is based on the research of Imaz Agirre and García Mayo (2015, 2018), whose goal was to assess the role of animacy, task type, transfer and proficiency in the acquisition of third person singular possessives by L2 and L3 English learners. The participants were three proficiency groups of Spanish speakers ($n = 70$), three proficiency groups of Basque/Spanish speakers ($n = 117$), and a control group of English native speakers ($n = 24$). When determining possession and gender agreement, the three languages used in this study differ significantly. Concerning animacy, they found that learners performed better in inanimate conditions than in animate conditions. In all groups, the comprehension task results proved to be better than the production task results. In terms of the effect of proficiency, the number of errors decreased in both groups as proficiency increased, but in the case of L3 students, the development of language skills appeared to happen at a slower pace.

4 The present study

Section 4 presents in separate subsections the research questions and hypotheses, methodology, participants, procedure, test instruments and the description of the two tasks involved: comprehension – grammaticality judgement task (GJT) and production – fill-in-the-gap task (FIG). The research questions and hypotheses are adapted from Imaz Agirre and García Mayo (2018).

4.1 Research questions and hypotheses

R1 Does the DP's internal structure make a difference in establishing correct gender agreement? Does the acquisition of gender agreement in L3 English depend on the grammatical gender and animacy of the equivalent noun in Romanian?

R2 Does the type of task (production vs. comprehension) affect how well participants perform? Do the results of the comprehension and production tasks differ significantly?

R3 Is there a connection between proficiency level and error rates? Do error rates decrease with the advance of the proficiency level?

The following hypotheses are considered in light of L2 and L3 acquisition study findings:
Hypothesis 1 is based on previous research of Antón-Méndez (2010); Sagarra & Herschensohn (2011); Imaz Agirre & Garca Mayo (2013); Santesteban et al. (2010). It is expected that learners will make more errors in determining gender agreement in DPs having an animate possessee than an inanimate one.

Hypothesis 2 assumes that more errors will be found in the production task, in support of Feature Reassembly Hypothesis (Lardiere 1998, 2000, 2009), which asserts that feature reassembly will make production more difficult.

Hypothesis 3 anticipates that intermediate learners will outperform elementary learners in terms of proficiency impacts. It is expected that participants will adapt to the developmental pattern for acquiring third person singular possessive adjectives as described in an earlier study (White & Ranta 2002; White et al. 2007).

4.2 Methodology

This section includes information about the participants, procedure, and test instruments used for the experiment.

4.2.1 Participants

A total of 132 participants took part in the experiment. There were 112 learners selected from 7 classes. Inclusion criteria were that all learners had B2 Romanian and A2 or B2 English proficiency level, learning Romanian as a second language (L2) and English as a third language (L3). Learners were given a biographical questionnaire (see Appendix 1) and placement tests in Romanian and English (described in Section 4.2.2). After evaluating the questionnaire responses and placement test results, two groups were formed: an Elementary group (B2 Romanian and A2 English proficiency levels) and an Intermediate group (B2 Romanian and B2 English proficiency levels). As 62 learners did not meet the study requirements, 50 learners formed two experimental groups (25 learners in the Elementary and 25 learners in the Intermediate group). Elementary learners were 13–14 years old, whereas Intermediate learners were 16–18 years old. 20 native English speakers (adults aged 21 to 65 from the UK) also participated in the study to form a control group. 7 native speakers who indicated they did not understand one of the tasks were eliminated. Finally, the English experimental tests were completed by 50 L1 Hungarian and L2 Romanian learners (being the two experimental groups) and 13 native English speakers (as the control group).

4.2.2 Procedure

All learner participants were recruited from a school in Crasna town, Romania. The learners' parents gave their written consent for their children's participation prior to the testing. All participants completed the biographical questionnaire in their L1 (Hungarian or English) anonymously. To gather sufficient information about the individuals' language backgrounds, the biographical questionnaire included questions like i.e. how long have they studied English and Romanian, at what age and where did they start studying them and how did they feel about their proficiency levels (see Appendix 1).

The learners took online English and Romanian placement tests. An online placement test was used for Romanian (<https://sec.ro/hu/placement-test/list/5/roman-nyelvu-szintfelmeroteszt>) and only students with B2 Romanian proficiency level for both the elementary and intermediate groups were accepted to take the English placement test. The Romanian placement test had 40 questions and the learners had to choose from 4 possible answers. After completing the

test, they received an email stating their language level expressed according to the Common European Framework of Reference for Languages (CEFR).

All qualifying participants took an online English placement test (<https://learnenglish.britishcouncil.org/english-levels/online-english-level-test>). The test had 30 multiple-choice questions and each question had two parts: A: level check question, and B: where the learners had to tell how sure they were about their answer (certain, fairly sure, not sure). When they finished, they were given their proficiency level (according to CEFR) and were recommended courses based on their scores. After processing the results, two groups were formed: Elementary (B2 Romanian – A2 English) and Intermediate (B2 Romanian – B2 English).

Both learner and control participants were sent the link to the GJT and FIG experimental tests via google-form. The instructions were given in the participants' L1. The two groups of learners were gathered separately on different occasions in the school's computer laboratory and completed both experimental tasks (GJT and FIG) during one of their English classes. The control participants completed the tasks at home. Each learner participant (the eliminated learners too) received a gift card (worth €2) that they could use at the coffee shop next to the school. Book vouchers (worth €12 each) were also given to three lucky participants. The testing took place in two subsequent weeks in October, 2022. The two placement tests took 30 minutes each and the English experimental tests took less than 30 minutes to complete.

4.2.3 Test instruments

The genders of the possessor and possessee were taken into consideration when designing the experimental items. These items were dispersed according to mismatch and animacy conditions in each task. Items in the first category were separated into animate and inanimate conditions. To account for all logical possibilities involving noun animacy and gender attraction effects, the latter had gender-matched and gender-mismatched conditions. In total there were 8 experimental conditions, as table 2 shows:

Condition	Possessor	Possessee	Example
Gender-matched animate	Masculine	Masculine	<i>Ethan takes his son to school every morning.</i>
Gender-matched inanimate	Masculine	Masculine	<i>Henry is decorating his pine tree for Christmas.</i>
Gender-matched animate	Feminine	Feminine	<i>Elisabeth asks her aunt for some money for buying sweets.</i>
Gender-matched inanimate	Feminine	Feminine	<i>Samantha is wearing her scarf.</i>
Gender-mismatched animate	Masculine	Feminine	<i>James is writing a letter to his mother.</i>
Gender-mismatched inanimate	Masculine	Feminine	<i>Daniel could finally solve his problem.</i>
Gender-mismatched animate	Feminine	Masculine	<i>Julia leaves her son with the baby sitter during the day.</i>
Gender-mismatched inanimate	Feminine	Masculine	<i>Judy painted her wall yellow.</i>

Table 2. Distribution of experimental conditions

When dealing with animate possessors, the natural gender of the noun was taken into account, however, when dealing with inanimate nouns, the grammatical gender of the same noun in Romanian was taken into consideration, because there is no grammatical gender in Hungarian or English. I assumed that the learners' L2 Romanian, and especially the grammatical gender of the nouns in it, would play a role when they completed the English experimental tasks. Following Imaz Agirre and García Mayo (2018), I used both comprehension (GJT) and production tasks (FIG). In the GJT participants rated the sentences on a scale of 1 to 6, where 1 was totally unacceptable, and 6 totally acceptable in English, whereas in the FIG task, they wrote one word for each gap in the sentences.

The English control group validated the (un)grammaticality of the test items, prior to the testing. Nouns signifying familial ties were used in animate settings. In order to prevent issues with lexical items, well-known nouns were incorporated into the design of inanimate nouns. I only selected equivalents of inanimate nouns with masculine and feminine grammatical gender in Romanian, avoiding neuter nouns this time for simplicity.

4.3.1 Comprehension Task - Grammaticality Judgement Task

To determine if L3 English learners were attentive to gender agreement violations, an online grammaticality judgement task was designed. Learners' performance on grammatical and ungrammatical items may demonstrate their ability to distinguish between conditions that are acceptable and those that are unacceptable (White 2003a). The researcher would also be able to look into the interplay of the L1 or L2 in the underlying grammar of gender agreement in English by completing this task (Loewen 2005).

Participants were asked to rate the sentences on a scale of 1 to 6, where 1 was totally unacceptable, 6 was totally acceptable in English. There were 16 target items total throughout the test, 2 for each experimental condition. In the case of the target items, one item was grammatically correct and the other was not. Following the principles of psycholinguistic research (Mackey & Gass 2012), in the case of the fillers, a third of the items were ungrammatical; specifically, out of 32 filler phrases, 10 were ungrammatical and 22 were grammatical. The test consisted of 48 sentences in total. The sentences used in this test ranged in length from 9 to 14 words and shared a common syntactic structure. Some of the sentences were adapted from Imaz Agirre and Garcia Mayo (2018). For the full list of the GJT sentences see Appendix 2.

4.3.2 Production task - Fill-in-the-gap task

The purpose of the fill-in-the-gap task was to draw on the learners' explicit understanding of written production (Ellis 2005). The accuracy of the participants' written gender agreement would be evaluated by this task. The fill-in-the-gap exercise was designed to highlight learners' written performance and contrast it with the comprehension data. This task consisted of 48 items, 16 of them were target grammatical items and 32 were fillers. Every participant was given a link to a google-form that required them to fill in each gap with one word. To ensure that the participants had no trouble comprehending the activity, instructions were provided in their L1. Learners were not given any time limits, but they managed to finish both tasks within 30 minutes. For the full list of the FIG sentences see Appendix 3.

5 Results

The statistical analysis data from each task were submitted to several types of tests: chi-square test, ANOVA test with Bonferroni corrections, and pairwise T-test. The results from the comprehension and production tasks are discussed with regard to animacy, task type, and proficiency effects, presented in separate subsections below.

5.1 Animacy effects

In order to answer the first research question (R1) of the present study, repeated below, this subsection presents the data gathered from the elementary and intermediate learners (with L1 Hungarian, L2 Romanian and L3 English) and from the native English speakers:

R1: Does the determiner phrase's (DP) internal structure make a difference in establishing correct gender agreement? Does the acquisition of gender agreement in L3 English depend on the grammatical gender and animacy of the equivalent noun in Romanian?

In what follows the effects of animacy are discussed in the comprehension (grammaticality judgement) and production (fill-in-the-gap) tasks.

5.1.1 Animacy effects in the grammaticality judgement task

In order to make the comparison of grammatical and ungrammatical sentences possible, for the grammatical sentences I took the absolute distance of each rating from the top value of the scale (from 6). For the ungrammatical sentences, I took the absolute distance of each evaluation from the lowest value of the scale (from 1), so I took the absolute value of the difference between 1 and the participant's rating. Figure 1 displays the average distance data of the learners' evaluations.

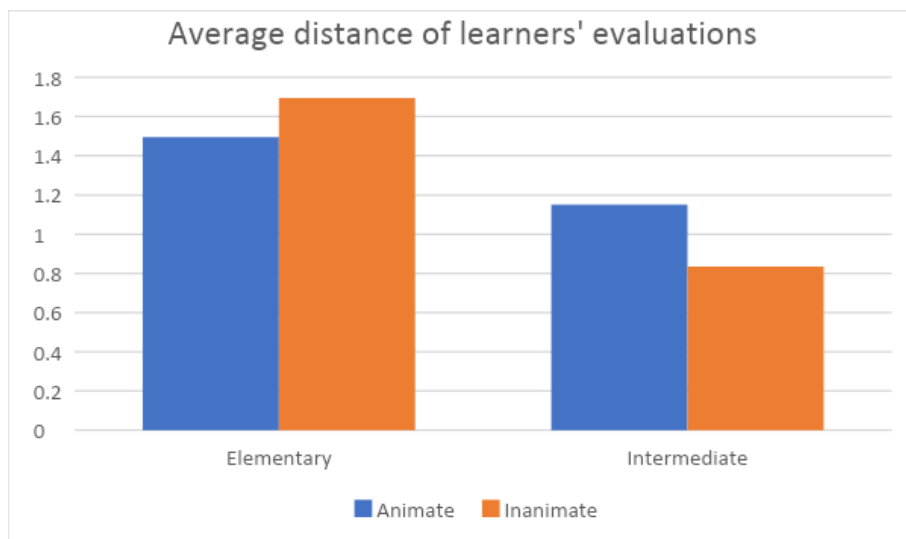


Figure 1. The average distance of the evaluations from the corresponding endpoints of the scale between elementary and intermediate learners

Figure 1 above shows that in the elementary group, the participants made fewer errors in the case of the animate head noun, so there was a smaller average distance from the corresponding endpoint of the scale. In the intermediate group, this was just the opposite, in the case of the inanimate head noun, the average distance from the corresponding endpoint of the scale was smaller.

The same data was submitted to pairwise T-tests. In the case of the elementary and intermediate groups, the difference did not prove to be statistically significant (elementary: $t(398)=1.085$, $p>0.05$, intermediate: $t(398)=1.9113$, $p=0.06$). According to all data collected it can be stated that the animacy or inanimacy of the head noun did not influence the results either in the elementary, or the intermediate group. There were differences in the evaluation between the grammatical and ungrammatical sentences, too, therefore it is important to look at the average rating given to these.

Table 3 displays the averages of grammatical (GRAM) and ungrammatical (UNGRAM) sentences.

		Animate	Inanimate
Elementary	GRAM	5.11	4.5
	UNGRAM	3.1	2.89
Intermediate	GRAM	5.18	5.45
	UNGRAM	2.48	2.12

Table 3. Averages for GRAM and UNGRAM sentences in different groups for different head nouns

The data in Table 3 above show that the elementary group performed better on GRAM sentences in animate conditions, while in the case of the UNGRAM sentences they made fewer errors in the inanimate condition. However, the difference is not significant. In both GRAM and UNGRAM test sentences, the intermediate group performed better on inanimate conditions.

In the case of the elementary group, the total average of sentences with animate head nouns was 4.1, while in the case of the inanimate head nouns, it was 3.7. For some reason, learners gave generally better ratings for sentences with animate noun heads in the elementary group. It is possible that regardless of the (un)grammaticality of the sentences, learners preferred animate head nouns. In the intermediate group, the overall average of the sentences was almost the same regardless of the type of the head noun, animate or inanimate.

5.1.2 Animacy effects in the fill-in-the-gap task

Figure 2 displays the proportion of correct and incorrect answers in the FIG task.

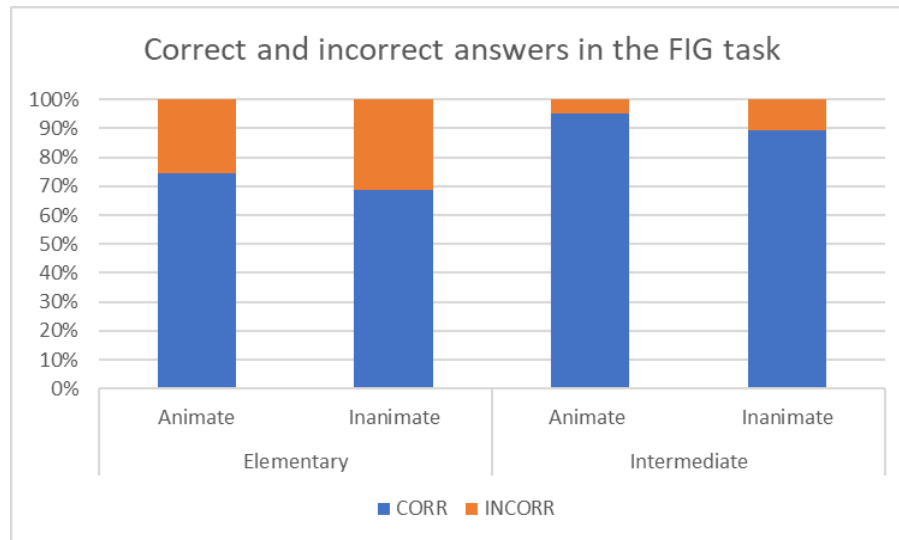


Figure 2. Proportion of correct and incorrect answers for animate and inanimate heads in both groups in the FIG task

Figure 2 above shows that in both groups, the proportion of incorrect answers was higher for inanimate noun heads. The proportion of incorrect answers varied much more in the intermediate group than in the elementary group.

A chi-square statistic was conducted with the results of the FIG task. In the elementary group, there was no statistically significant difference between the distribution of correct and incorrect answers for animate and inanimate head nouns ($\chi^2(1, N=200)=1.77, p>0.05$). In the intermediate group, the rate of incorrect answers was statistically significantly lower when the noun head was animate, so they performed better when the head noun was animate ($\chi^2(1, N=200)=4.23, p<0.05$). The difference is significant, however, animacy did not have an effect on the results in this case, either. This may indicate that the natural gender of the head noun (possessor) helped learners establish correct gender agreement with the possessee.

The results of the current study appear to be consistent with previous research that found no significant differences between the processing of gender agreement with animate and inanimate head nouns (see i.e. Alarcon 2014; Anton-Mendez, Nicol & Garrett 2002; Barber et al. 2004; Corral et al. 2008).

5.2 Task effect

In this subsection, differences between tasks are presented in order to answer the second research question (R2):

R2: Does the type of task (production vs. comprehension) affect how well participants perform? Do the results of the comprehension and production tasks differ significantly?

In order to be able to compare the results of the two tasks, I converted the ratings of the grammaticality judgement task so as to make them comparable to the results of the fill-in-the-

gap task. The method of conversion was the following: in order to make the grammatical and ungrammatical test sentences comparable and to ensure the reliability of the results, the participants' evaluations were converted so that correct ratings for the grammatical test sentences were 4/5/6 and for the ungrammatical sentences 1/2/3, whereas incorrect ratings for the grammatical test sentences were 1/2/3, and for the ungrammatical sentences 4/5/6.

A comparison of grammatical (GRAM) and ungrammatical (UNGRAM) sentences was made for the grammaticality judgement task and the results were as follows:

i) Elementary GRAM or UNGRAM: chi-squared (1, N=400)=24.73, $p < 0.00001$ GRAM > UNGRAM

ii) Intermediate GRAM or UNGRAM: chi-squared (1, N=400)=13, $p < 0.05$ GRAM > UNGRAM

There was a significant difference between the judgements of the grammatical and the ungrammatical sentences in each group. Ungrammatical sentences proved to be more difficult to rate for both the elementary and intermediate groups.

Since I noticed that the grammatical sentences performed significantly better with the participants than the ungrammatical sentences in the grammaticality judgement task, as also discussed by several authors in the literature (White 2003a; Loewen 2005; Hopp 2007; Keating 2009), I only compared the ratings given for the grammatical sentences with the results of the fill-in-the-gap task. A further reason for this was that the sentences of the fill-in-the-gap task were all grammatical and this method of comparison proved to be more reliable.

In order to see whether the difference between the judgements of the grammatical and ungrammatical sentences was significant in the GJT, I submitted the data to chi-square statistics. A chi-square test was performed in order to see whether the grammatical and ungrammatical features of the sentences had an effect on the proportion of responses. In terms of consistency, the chi-square is more reliable, even though some loss of data is possible.

In order to determine whether the type of the task affects the proportion of the correct and incorrect answers, chi-square tests were conducted. Comprehension was significantly better than production in the elementary group when considering grammatical sentences only ($X^2(1, N=600) = 5.69, p < 0.05$). The reason for this may be that for elementary learners it is easier to rate a sentence as correct or incorrect in a GJT task than to produce some language in a FIG task. In the intermediate group, there was no significant difference between comprehension and production ($X^2(1, N=600) = 2.29, p > 0.05$). This was not surprising due to learners' increased proficiency levels.

Figure 3 displays the proportion of correct and incorrect answers for both task types.

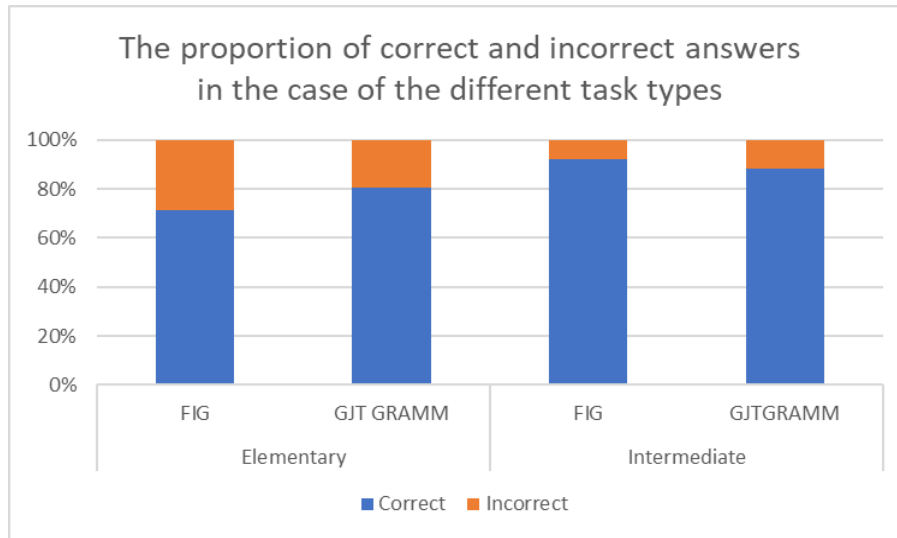


Figure 3. The proportion of correct and incorrect answers in the case of the different task types and within the two groups.

Figure 3 above shows that the number of FIG task errors was significantly higher with the elementary group whilst the intermediate group made fewer errors in the FIG task. In the GJT the intermediate group made more errors, however, this was not statistically significant. Comparing the results of the two tests, the difference between the errors was 4% for the intermediate group, and 9% for the elementary group.

In conclusion, there was a significant difference between the judgments of the grammatical and the ungrammatical sentences in each group. Ungrammatical sentences proved to be more difficult to rate for both the elementary and intermediate groups. Comprehension was significantly better than production in the elementary group when considering grammatical sentences only. There was no significant difference between comprehension and production in the intermediate group.

5.3 Proficiency effect

In this part, the effects of proficiency are analysed to address the third research question (R3):

R3: Is there a connection between proficiency level and error rates? Do error rates decrease with the advance of the proficiency level?

In the following subsections, the data on proficiency effects are discussed in the GJT and FIG tasks.

5.3.1 Proficiency Effect in the Grammaticality Judgement Task

There is a statistically significant difference between the groups for both grammatical (GRAM) and ungrammatical (UNGRAM) sentences (ANOVA: UNGRAM ($F=16.32$, $p<0.05$), GRAM ($F=11.57$, $p<0.05$)). Pairwise t-tests were performed to determine which groups had a statistically significant difference and to eliminate type 1 errors. The results of this are as follows:

i) In the case of UNGRAM sentences, a statistically significant difference was found between both the elementary and intermediate ($t(398)=3.6$, $p<0.05$) and intermediate and native ($t(302)=2.78$, $p<0.05$) groups.

ii) In the case of GRAM sentences a statistically significant difference was found between the elementary and intermediate ($t(398)=3.46$, $p<0.05$) groups, while the p-value between the intermediate and native language groups was on the border of statistical significance ($t(302)=2$, $p = 0.05$).

Figure 4 displays the groups' averages for the grammatical and ungrammatical sentences.

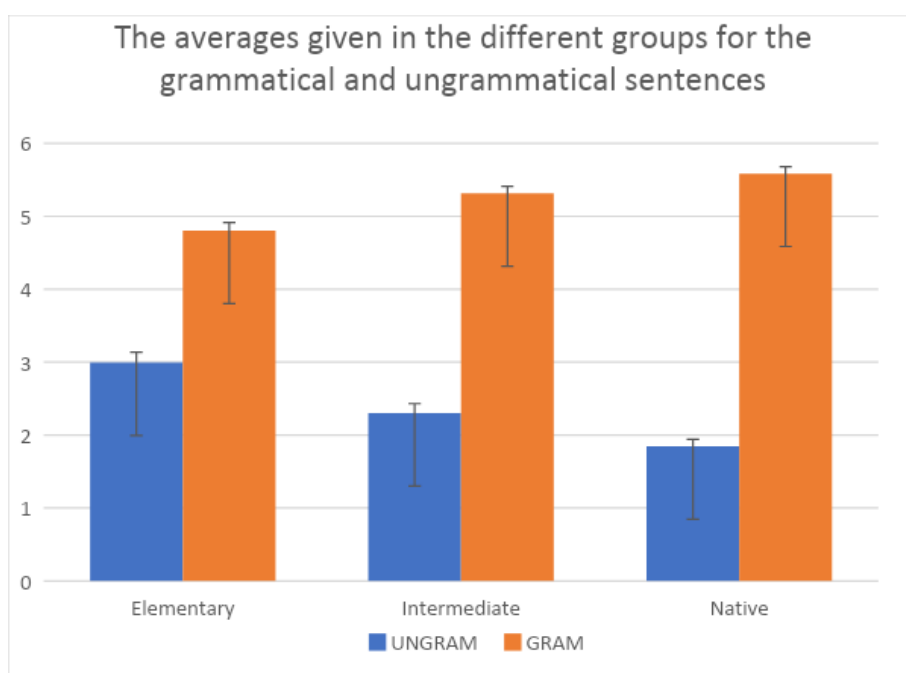


Figure 4. The average of the GJT in the different groups for the GRAM and UNGRAM sentences in the grammaticality judgement test (the error bar shows the standard error)

Figure 4 above shows that the difference between the evaluations given to incorrect and correct sentences was the smallest in the elementary group. The judgement given by the intermediate group in the case of GRAM sentences was very close to the evaluation of the native language group (difference of 0.265), while in the case of UNGRAM sentences, this difference was relatively larger (difference of 0.456).

5.3.2 Proficiency Effect in the Fill-in-the-Gap Task

A chi-square test was performed to determine whether the learners' language level has an effect on the proportion of correct and incorrect answers. There is a statistically significant difference between the two groups, the percentage of incorrect answers is significantly lower among intermediate students ($\chi^2(1, N=800)=58.03$, $p<0.00001$). This was in line with the results of the grammaticality judgement task. Figure 4 displays the data of comprehension and production task errors.

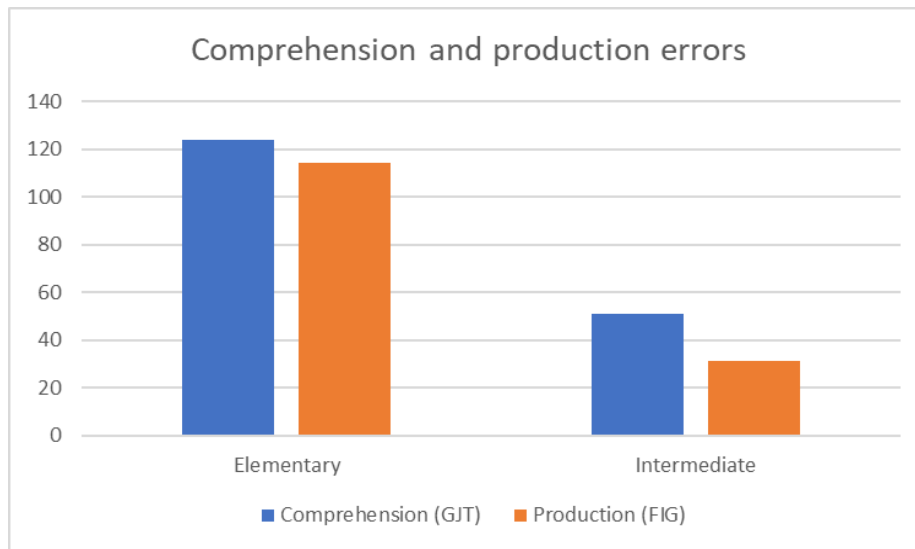


Figure 5. The number of errors in the comprehension and production tasks in the two groups

As seen in Figure 5 above, elementary learners made more incorrect gender agreement in both tasks than intermediate learners, in line with the hypothesis and previous research, showing that as proficiency increases the number of errors decreases.

The results of the present study suggest that animate and inanimate possessors/possesseees are more or less equally easy or difficult to comprehend or produce with regard to establishing correct gender agreement in possessive structures. It seems that the grammatical gender of the possessee in the learners' L2 Romanian did not have any effect and the natural gender of the possessor in the L3 English test sentences determined which pronominal possessor they considered as correct. Comprehension seemed easier than production for the elementary group. The reason for this seems to be that for the elementary group's level production is more challenging. For the intermediate group, there were no significant differences between the results of the comprehension and production tasks. Data show that proficiency highly affects the performance of the learners, and they establish fewer gender agreement errors at the intermediate level.

6 Conclusions and lines for further research

The findings showed that the first hypothesis, which anticipated that learners would err more in establishing gender agreement in DPs featuring an animate possessee than an inanimate one, was not confirmed. The present study shows that animacy has no effect in the acquisition of L3 English pronominal possessors by L1 Hungarian and L2 Romanian learners. Data from the comprehension task (GJT) has shown that the participants in the elementary group made fewer errors in the case of animate head nouns. In the intermediate group, learners made more errors in the case of inanimate head nouns. According to all data collected it can be stated that animacy of the head noun did not influence the results either in the elementary, or in the intermediate group. In the case of the production task (FIG), in the intermediate group, the rate of errors was statistically significantly lower when the noun head was animate, so they performed better when the head noun was animate. The difference is significant, however, animacy did not have an

effect on the results in this case, either. This may indicate that the natural gender of the head noun (possessor) helped learners establish correct gender agreement with the possessee. The results of the current study appear to be consistent with previous research that found no significant differences between the processing of gender agreement with animate and inanimate head nouns (see, for example, Alarcon 2014; Anton-Mendez, Nicol & Garrett, 2002; Barber et al. 2004; Corral et al. 2008).

The second hypothesis assumed that more errors would be found in the production task than in the comprehension task as the literature suggested that production would be more demanding. Data from the comprehension task (GJT) showed that there was a significant difference between the judgments of the grammatical and the ungrammatical sentences in each group. In the elementary group the results of the comprehension task were significantly better than the results of the production task when considering grammatical sentences only. Interestingly in the intermediate group, taking into consideration grammatical sentences only, there was no significant difference between the results of the comprehension task and the results of the production task. Thus, the second hypothesis was partly confirmed.

According to the third hypothesis it was expected that the intermediate learners would outperform the elementary learners and the number of errors would decrease as proficiency increased. Data from the comprehension task (GJT) showed that there is a statistically significant difference between the groups for both grammatical (GRAM) and ungrammatical (UNGRAM) sentences. The value produced by the intermediate group in the case of GRAM sentences was very close to the evaluation of the native language group, while in the case of UNGRAM sentences, this difference was relatively larger, however in line with the hypothesis. In the production task (FIG) there was a statistically significant difference between the two groups, the percentage of incorrect answers showed significantly lower errors among intermediate students, in line with the hypothesis. Overall, elementary students produced more instances of incorrect gender agreement than intermediate students in both tasks. The third hypothesis was confirmed, in line with previous research, showing that as proficiency increases the number of errors decreases.

These findings may have implications in both teaching and learning L2/L3 English. For L1 Hungarian learners the acquisition of English possessive pronominals showing gender agreement is problematic (as the error rates show), probably because their L1 lacks gender agreement features. Data show that animacy on the noun did not influence the learners, as they erred similarly in both animate and inanimate conditions. Further research may still focus on animacy effects in the case of L1 Hungarian-L2 English learners and compare the results to L1 Hungarian-L2 Romanian-L3 English learners.

Grammatical gender of the noun in the learners' L2 Romanian did not seem to matter. However, natural gender of the noun proved to be important and it strongly influenced the answers. Task types should be carefully selected/alternated, and adapted to the proficiency level of the learners. In the case of teaching gender agreement, the focus should be on the natural gender of the noun and providing the necessary context for the possessive structures to avoid misinterpretations. Learners who speak Romanian would understand better the various elements of gender agreement, compared to learners who only speak Hungarian, because Romanian has both natural and grammatical gender agreement (but more data are needed to attest this). Further research is planned involving Hungarian groups from Hungary, focusing on language transfer in the acquisition of pronominal possessors (his/her) and gender agreement in L3 English.

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Appendix 1.

Biographical Questionnaire in Hungarian

HÁTTÉRKÉRDŐÍV

A részvétel a kutatásban név nélkül történik. Megkérlek szépen, hogy a legjobb tudásod szerint töltsd ki ezt a kérdőívet.

Becenév: _____

Életkorod: _____

Iskolai végzettséged/Hányadik osztályos vagy: _____

Anyanyelv(ek): _____

A következő kérdések az angol nyelvtudásodra vonatkoznak

1. Mióta tanulsz angolul?

- 1–2 év
- 2–5 év
- 5–8 év
- 8–10 év
- több mint 10 éve

2. Hány éves korodban kezdtél angolt tanulni? _____

3. Hol kezdtél angolul tanulni?

- Iskolában _____ Máshol (pontosan hol?)

4. Hogyan értékeled az angol nyelvtudásodat? Kérjük, hogy tegyél egy X-et a megfelelő rubrikába.

	kezdő (A1-szint)	álkezdő (A2-szint)	alapfok (B1-szint)	középfok (B2-szint)	felsőfok (C1-szint)	mesterfok (C2-szint)
írás készség						
beszéd készség						
beszéd értés						
olvasás készség						

A következő kérdések a román nyelvtudásodra vonatkoznak.

5. Mióta tanulsz románul?

- 1–2 év
 2–5 év
 5–8 év
 8–10 év
 több mint 10 éve

6. Hány éves korodban kezdtél románt tanulni? _____

7. Hol kezdtél románul tanulni?

- Iskolában _____ Máshol (pontosan hol?) _____

8. Hogyan értékeled a román nyelvtudásodat? Kérjük, hogy tegyél egy X-et a megfelelő rubrikába.

	kezdő (A1-szint)	álkezdő (A2-szint)	alapfok (B1-szint)	középfok (B2-szint)	felsőfok (C1-szint)	mesterfok (C2-szint)
írás készség						
beszéd készség						
beszéd értés						
olvasás készség						

9. Az angolon és a románon kívül beszélsz egyéb idegen nyelveket? Ha igen, milyen nyelveket és milyen szinten? Kérjük, hogy húzd alá a megfelelő szintet.

Nyelv 1: _____

Szint: kezdő (A1-szint), álkezdő (A2-szint), alapfok (B1-szint), középfok (B2-szint), felsőfok (C1-szint), mesterfok (C2-szint)

Nyelv 2: _____

Szint: kezdő (A1-szint), álkezdő (A2-szint), alapfok (B1-szint), középfok (B2-szint), felsőfok (C1-szint), mesterfok (C2-szint)

Ez a kérdőív vége. Köszönöm szépen a válaszaidat!

Appendix 2.

Grammaticality Judgment Task (GJT)

Please rate the following sentences on a scale of 1 to 6, where 1 is totally unacceptable and 6 is totally acceptable in English. Please rely on your first impression about the sentence and interpret it as it is, without an additional context. Please put your rating number to the end of each sentence.

Kérlek, értékelj a következő mondatokat egy 1-től 6-ig terjedő skálán, ahol 1 teljesen elfogadhatatlan és 6 teljesen elfogadható az angolban. Kérlek, támaszkodj az első benyomásodra a mondatról önmagában, szövegkörnyezet nélkül.

1. Ethan takes his son to school every morning.
2. I am reading the newspaper at the moment.
3. The whale are escaped from the aquarium.
4. William is answering the question her father asks.
5. Allison does not wear sunglasses.
6. Anne is driving the airport.
7. Henry is decorating his pine tree for Christmas.
8. Did you see the film on TV last night?
9. Victoria was been walking by the beach.
10. Thomas lost her button.
11. The water is lovely and warm at the swimming pool.
12. It is Susan's mother's birthday and she is collecting flowers for his mother.
13. Elizabeth asks her aunt for some money for buying sweets.
14. There is no time to visit the museum.
15. Megan is broke the sandcastle with a finger.
16. Ella moved to another city and she misses his grandma
17. Mum and dad do not stay up late on weekdays.
18. James shared her orange with another child.
19. Samantha is wearing her scarf.
20. There are some offices on the fifth floor.
21. Carter is drink some water.
22. Hannah broke his vase when cleaning it.
23. We usually have dinner at 8.
24. Julia has done the shopping.
25. James is writing a letter to his mother.
26. Chloe has been looking for a job all the summer.
27. Michael was lying on her back on the hammock.
28. Ben is having a walk with her sister.
29. We wrote a test yesterday.
30. Jim was sitting at the table.
31. Daniel could finally solve his problem.
32. I didn't get it because it was too expensive.
33. April pick an apple for Josh.
34. David is cleaning her boat.
35. Susan's mother is working in an old office building.

36. We do not spend any time in the museum tomorrow morning.
37. Julia leaves her son with the babysitter during the day.
38. There is a lot of water on the carpet.
39. Max receiving the receipt by email.
40. Sophie visited his brother last week before the wedding.
41. Max doesn't play hockey.
42. Smog is a problem in big cities.
43. Judy painted her wall yellow.
44. My neighbor takes the bus every morning.
45. The stairs was slippery.
46. Barbara likes immersing his biscuit in cappuccino.
47. Amelia locked the door when she went to work.
48. Mike hasn't smoked for ages.

Appendix 3.

Fill-In-The-Gap Task (FIG)

Fill in the gap with an appropriate word, please. You have to use only ONE word for the blank space.

Kérlek, egészítsd ki a mondatot egy megfelelő szóval. Igyekezz mindenképpen csak EGY szót beírni az üresen hagyott helyre.

1. I don't know anywhere ____ the world as beautiful as here.
2. Children usually visit monkeys ____ the zoo.
3. David is talking to ____ son because they are preparing the company's annual meeting.
4. I am going to the cinema tonight. I already have ____ ticket.
5. I feel bad when people laugh ____ something I say.
6. Henry is searching the house for ____ rucksack.
7. I have to stop talking to you. I'm ____ bit short of time.
8. Sophia is writing a report ____ Disney World.
9. Madeline is wondering whether ____ mother would be at home.
10. We can all work much better when ____ room is clean and tidy.
11. Some teenagers say that karate makes them feel ____ confident.
12. Megan can't complete ____ task because she doesn't have the textbook.
13. Claire doesn't feel like working ____ the computer.
14. The party was so loud that she asked them to turn ____ music down.
15. As usual, Paul is going to visit ____ grandmother tomorrow afternoon.
16. Max agrees to go ____ a run with Susan.
17. There ____ too many questions to answer so I only did three.
18. Christian put ____ plate full of vegetables on the table.
19. You must not make noise during ____ lesson.
20. Amelia seldom goes to the computer lab ____ Tuesday afternoon.

21. Rosa gives ___ father a CD for his birthday.
22. Jim was drinking mineral water after ___ marathon.
23. Thomas thinks it ___ boring to learn grammar.
24. Judy lost ___ earring in the park yesterday but Sean found it this morning.
25. The pupils built a robot ___ cans.
26. Christian put ___ plate full of vegetables on the table.
27. James is worried about ___ grandson, it's almost midnight and he hasn't arrived home yet!
28. I ___ angry with him for telling lies about me.
29. There is a lot of noise coming ___ next door.
30. Rob has forgotten that ___ button was missing from his jacket.
31. There wasn't enough time ___ finish so I did not manage to finish my homework.
32. Peter thinks that English is more interesting ___ mathematics.
33. Anna received a postcard from ___ aunt.
34. Loch Ness is ___ most famous lake in Scotland.
35. It wasn't very polite of him ___ leave without saying thank you.
36. When Margaret moved to the city, she sold ___ farm to the bank.
37. Betty wants **to have** driving lessons. And then she is going ___ buy a car.
38. The northern border of ___ United States is Canada.
39. John's son is a very bad student but ___ daughter is brilliant.
40. Rugby is the ___ popular sport South Africa.
41. Brownies are the most popular cakes ___ America.
42. The king is wearing ___ crown for an official reception.
43. You can look up the word ___ a dictionary.
44. We go ___ ballet classes twice a week.
45. Sandra was worried, so she convinced ___ husband not to accept the job.
46. She is trying to jump ___ queue.
47. He never listens ___ classical music.
48. Samantha threw away ___ sausage because it tasted bad.