

The learnability of uninterpretable features in adult L2 Greek: Developmental and L1 effects

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Περίληψη

*Διερευνήσαμε τον ρόλο των μη ερμηνεύσιμων χαρακτηριστικών (Chomsky 1995) στην κατάκτηση των ελληνικών ως Γ2. Τα δεδομένα προήλθαν από προφορικές δοκιμασίες που δόθηκαν σε 65 ενήλικες, κατηγοριοποιημένους σε τρεις ομάδες σύμφωνα με τη μητρική τους γλώσσα: αλβανικά, γεωργιανά ή αγγλικά. Οι συγκεκριμένες Γ1 διαφέρουν μεταξύ τους ως προς την ύπαρξη άρθρων και τη συμφωνία γραμματικού γένους, που αποτελούν τους στόχους της έρευνάς μας. Τα αποτελέσματα έδειξαν μεγαλύτερες δυσκολίες στο οριστικό παρά στο αόριστο άρθρο, δυσκολίες στη γραμματική συμφωνία γένους, επίδραση της Γ1 καθώς και του επιπέδου ελληνομάθειας. Τα ευρήματά μας φαίνεται ότι υποστηρίζουν την υπόθεση της ερμηνευσιμότητας των χαρακτηριστικών (πρβλ. *The Interpretability Hypothesis*, Tsimpli and Dimitrakopoulou 2007).*

Λέξεις - κλειδιά: ερμηνευσιμότητα χαρακτηριστικών, ενήλικες με την Ελληνική ως Γ2, άρθρα, συμφωνία γένους

1 Introduction: General background to the study

This study investigates articles and gender agreement between nouns and articles in Greek as a second language (L2) acquired at adulthood, within the Universal Grammar (UG) framework of the Minimalist Program (Chomsky 1995). In this framework lexical items in the language faculty bear abstract features, such as number, case, gender and animacy, among others. While some of these features have semantic content, and are thus interpretable at the Logical Form (LF), other features lack semantic import and only serve grammatical operations. The latter are termed uninterpretable features and constitute the focus of this study. For example, the feature number is interpretable on nouns, bearing the semantic information ‘more than one’, but uninterpretable on determiners and adjectives, as in the latter case it carries no semantic content and only serves the syntactic operation of Agreement.

Research in adult second language acquisition (L2A) has extensively focused on a) what can maximally be acquired and b) the causes of divergence in end-state L2 grammars. Here we test the *Interpretability Hypothesis* (Tsimpli and Dimitrakopoulou 2007, Tsimpli and Mastropavlou 2008) (hereafter IH) according to which post childhood L2 learners have access to the principles and operations of UG as well as to LF-interpretable features, yet have difficulty in accessing LF-uninterpretable features not instantiated in their L1, since these features are subject to maturational constraints.

Other hypotheses within the UG framework, however, suggest that adult learners have full access to interpretable and uninterpretable features and that morphological syntactic features can be fully acquired, given input adequacy (Lardiere 1998, Prévost and White 2000, Robertson 2000, Slabakova 2013).

Greek articles and DP gender agreement provide a good testing ground for the IH, as we show in the next sections. In the rest of the paper, Section 2 describes the Greek

article system, Section 3 overviews previous research on L2 Greek articles and DP gender agreement, and Section 4 outlines our research questions and predictions. In Section 5 we report our results and in section 6 we attempt to interpret them as well as discuss their theoretical implications and offer suggestions for future research.

2 Greek articles and DP agreement

Greek has an indefinite and a definite article, both inflecting for gender and case; the definite article inflects for number too. This is shown in Tables 1 and 2.

	Singular			Plural		
	Masculine	Feminine	Neuter	Masculine	Feminine	Neuter
Nominative	o	i	to	i	i	ta
Accusative	to(n)	ti(n)	to	tus	tis	ta
Genitive	tu	tis	tu	ton	ton	ton

Table 1 | Inflectional paradigm of the definite article

	Singular			Plural		
	Masculine	Feminine	Neuter	Masculine	Feminine	Neuter
Nominative	enas	mia	ena	-	-	-
Accusative	ena(n)	mia	ena	-	-	-
Genitive	enos	mias	enos	-	-	-

Table 2 | Inflectional paradigm of the indefinite article

Given that in Greek there is overt morphological agreement between all members of a Determiner Phrase (DP), both article types carry uninterpretable features such as case, gender and number. While the indefinite article always bears the interpretable feature [definiteness], as can the zero article \emptyset (1), the definite article (2) is a semantically null category, distinct from category (D)efiniteness with which it is co-indexed (Giusti 2002, Alexiadou et al. 2007).

(1) Χθες αγόρασα μια φούστα και \emptyset κάλτσες.
 yesterday bought.1sg a.fem.acc.sg skirt.fem.acc.sg and socks.fem.acc.pl
 ‘Yesterday I bought a skirt and socks.’

(2) Το λυπημένο κορίτσι χαμογέλασε.
 the.neu.nom.sg sad.neu.nom.sg girl.neu.nom.sg smiled.3sg
 ‘The sad girl smiled.’

3 Previous Research Testing the Interpretability Hypothesis with L2 Greek Articles and DP agreement

Most relevant research has shown that the L2A of the definite article poses more problems to learners compared to the indefinite article. In Tsimpli (2003) adult L1 Russian-Turkish [-articles] learners of Greek made more errors at the definite than at the indefinite article. Similar findings were confirmed by other studies that

demonstrated problems persisting through advanced stages of development (Mavridou 2012, Karpava 2015, among others) with only the indefinite article reaching native-like levels of attainment with increased proficiency (Mavridou 2012). The fact that general L2 proficiency cannot guarantee mastery of the definite article was further confirmed by Astara (Αστάρια 2010) who found a positive association in the acquisition of the two articles between learners of a [-articles] L1 and feature interpretability.

Tsimpli and Mastropavlou (2008) found a child/adult asymmetry in L2A of the definite article. While at lower proficiency levels both groups did better at the indefinite article than at the definite one, when proficiency increased, the children improved on both articles. On the contrary, the adults' problem with the definite article persisted. Child and adult L2A of the Greek definite article were also contrastively investigated by Chondrogianni (2008) with L1 Turkish data. Her results showed that children were faster learners, yet, adults ultimately reached the same degree of DP production.

Dimitrakopoulou et al. (2004) found that definite article omission lowered by half as exposure increased from 3 to 12 years in L1 Slavic adults. Also, the participants' age of first exposure was found to be a factor significantly affecting results (cf. Karpava 2015). However, Agathopoulou et al. (2012) observed a reversed pattern of accuracy with their adult learners faring better at the definite article and performing as high as 90%. Such results point towards the possibility of learnability problems with interpretable features as well. Yet, the fact that Slavic group [-articles] was less accurate than the English and the Romance groups at the definite article seems to support the IH.

Research also points to that gender agreement is difficult to acquire even at very advanced stages of adult L2 development. Studies examining adult oral data show that problems with gender agreement occur at intermediate stages (Dimitrakopoulou et al. 2006, Agathopoulou et al. 2008, Αμπάτη 2009) and persist into even higher attainment levels (Dimitrakopoulou et al. 2006, Τσιμπλή 2003, Tsimpli et al. 2007). And while with L2 child acquirers it is possible to attribute morphophonological variability to patterns of development (Chondrogianni 2008, Κόντα 2013), for adult learners, even in presumably end-state grammars, it becomes crucially relevant to investigate what can be maximally acquired. Dimitrakopoulou et al. (2004) tested adult L1 Russian and Serbo-Croatian learners of L2 Greek and found very few agreement errors in the DP. Yet, all participants' L1s grammaticalise gender and agreement, so there was no contrast of performance with learners whose L1 lacks grammatical gender, which is what our study sets to do.

Number agreement, on the other hand, has proved less challenging for L2 learners (Dimitrakopoulou et al. 2004, Tsimpli et al. 2007 for Greek), while case has been found entirely unproblematic (Tsimpli et al. 2007), as structural case is universally required.

All in all, research findings seem inconclusive regarding whether adult L2 learners from [-articles] L1s or L1s without gender agreement may fully acquire such uninterpretable features lacking from their L1. Hence, the present study aims to shed more light to the issue at hand.

4 Research questions and predictions

In light of previous research, our main research question was:

- Given massive exposure to an L2, can post-pubertal learners acquire LF-uninterpretable features (symbolized with *u* below) lacking from their L1?

If the IH holds, we would expect:

- (a) A definite/indefinite article and a [*ugender*], [*unumber*]/ [*ucase*] asymmetry in performance
- (b) An L1 effect favouring [+articles], [+*ugender*], [*unumber*]/ groups
- (c) A developmental effect for the definite (but not the indefinite) article, and for [*ugender*], [*unumber*] (but not for [*ucase*])

5 The present study

In this section, first we describe the participants, then our tasks and finally we present the results.

5.1 *The participants*

A total number of 65 L2 Greek participants were collected using the following pre-selection criteria as well as an oral test described in the next subsection:

- a. first exposure to the L2 after puberty
- b. naturalistic exposure
- c. LoR > 8 years for both the advanced and the intermediate

25 participants were L1 Albanian, 20 L1 English¹ and 20 L1 Georgian. We also included a group of 12 Greek NS controls matched for age and level of education with the L2 participants in the study. Thus, there were 77 participants in total. Most of the L2 participants had had only naturalistic exposure to Greek. Yet, there were few of them, mostly in the L1 English group, who had also received a little instruction during their residence in the country.

5.2 *Articles and DP agreement in the three L1s of the study*

Albanian has both definite and indefinite articles. The definite article inflects for gender, number and case. The indefinite article *një* is unmarked for gender. There is a tripartite gender distinction of nouns in Albanian, like in Greek. English has definite and indefinite articles, yet no DP agreement and nouns do not inflect for gender. Georgian lacks articles and grammatical gender. Examples (3a) - (3c) illustrate the definite and indefinite article of a masculine, a feminine and a neuter noun in Albanian respectively. In (4) there is an example of the English definite and indefinite articles. The Georgian noun may have a definite or an indefinite reading, depending on the rest of the context (5).

- (3) a. hotel / hoteli / hotel
hotel / hotel.def.mas.nom.sg / hotel. indef.mas.nom.sg
'hotel' / 'the hotel' / 'a hotel'

¹ The inclusion of the English group aimed at testing expletive vs. non-expletive uses of the definite article, present in Albanian, yet absent in English. However, this paper does not examine the latter dichotomy which is the subject of a much larger research project.

b. gjyshe / gjyshja / gjyshe
 grandmother / grandmother.def.fem.nom.sg / grandmother.indef.fem.nom.sg
 ‘grandmother’ / ‘the grandmother’ / ‘a grandmother’

c. të folur / të folurit / të folur
 voice / voice.def.neu.nom.sg / voice.indef.neu.nom.sg
 ‘voice’ / ‘the voice’ / ‘a voice’

(4) I bought a dress and a t-shirt the other day. The dress is for a formal occasion.

(5) c’igni
 book
 ‘a book’ / ‘the book’

Table 3 summarizes the main differences and similarities between Greek and the L2 participants’ L1s with respect to their article systems.

L1		Greek	Albanian	English	Georgian
Articles		+	+	+	–
Morphologically marked agreement features	[ugender]	+	+	–	–
	[unumber]	+	+	–	–
	Det-Noun	+	+	–	–

Table 3 | Cross-linguistic comparison of variables

5.3 The proficiency measure

In order to exclude the possibility of a literacy effect, the participants’ L2 Greek proficiency was measured orally through individual interviews on topics of general interest. Speech samples were evaluated by the researcher and a fellow colleague in their capacity as experienced L2 oral examiners. The assessment was carried out according to 4 categories of band descriptors adapted from both CEFR and IELTS oral placement test. Every participant had a band score ranging from 0 to 9 assigned to them for each category of descriptor, whereby 0 corresponded to no communication possible and 9 to full proficiency. That made four scores per participant in total. Those four scores were added and their sum total was divided by four, i.e. the number of descriptor categories. This quotient constituted the global score for every participant. Global scores 4 - 6 were listed as intermediate level, 7 - 9 formed the advanced level groups, and 6.5 were altogether excluded from either to make group difference sharper. The four descriptor categories were: a. fluency and coherence, b. lexical resource, c. grammatical range and accuracy, and d. pronunciation. Table 4 presents the 7 groups’ profiles concerning their proficiency, age when tested, age of onset (AoO) and LoR.

L1/ Proficiency group	N	Proficiency	Age at test	AoO	LoR
Albanian ADV	13	7.69 (SD: .78)	45.00 (SD: 8.13)	23.38 (SD: 5.81)	21.62 (SD:4.93)
		Range: 7 - 9	Range: 29 - 46	Range: 17 - 38	Range: 9 - 27
Albanian INT	12	5.13 (SD: .71)	44.17 (SD: 7.32)	25.75 (SD: 5.94)	18.42 (SD: 5.88)
		Range: 4 - 6	Range: 32 - 57	Range: 18 - 36	Range: 10 - 26
English ADV	10	7.60 (SD: .66)	48.20 (SD: 7.58)	23.50 (SD: 4.50)	24.70 (SD: 8.08)
		Range: 7 - 9	Range: 30 - 60	Range: 18 - 32	Range: 9 - 35
English INT	10	5.50 (SD: .79)	47.44 (SD: 10.96)	28.11 (SD: 4.70)	19.33 (SD: 9.82)
		Range: 4 - 6	Range: 32 - 68	Range: 21 - 33	Range: 8 - 42
Georgian ADV	10	7.65 (SD: .85)	42.10 (SD: 8.17)	22.30 (SD: 5.91)	19.80 (SD: 4.52)
		Range: 7 - 9	Range: 30 - 59	Range: 18 - 37	Range: 12 - 22
Georgian INT	10	5.44 (SD: .53)	48.33 (SD: 8.92)	28.78 (SD: 6.44)	19.56 (SD: 5.39)
		Range: 4.5 - 6	Range: 33 - 57	Range: 21 - 40	Range: 12 - 26
Greek NS	12	-	43.58 (SD: 10.79)	-	-
		-	Range: 20 - 59	-	-

Table 4 | The participants' means of proficiency, age at the time of test, AoO and LoR (SDs in parentheses)

5.4 The tasks

We elicited oral production data from three tasks: a natural semi-structured conversation about topics of general interest, a story-telling task (STT) and a task of giving instructions (GIT) on how to prepare a sandwich. In the STT the participants saw three sets of pictures illustrating three different stories to describe and narrate. The pictures from every story set had been cut and were presented to participants one at a time. In the IGT the participants had 9 flashcards depicting ingredients and were asked to describe the process of making a sandwich.

All tasks aimed at testing the use of articles and DP agreement between the determiner and the noun.² Outputs were recorded, orthographically transcribed and analysed. Errors in DP contexts were classified as determiner omissions or substitutions, and incorrect gender, number or case agreement. Example (6a) shows correct suppliance of the definite determiner in an obligatory context (OC) while (6b) shows an instance of an omission error for the same OC. Similarly, examples (7a) and (7b) show correct suppliance of the indefinite article and an error of substitution with the definite one respectively. Examples (8) through (10) illustrate correct and incorrect instances of gender, number and case agreement in definite determiners.

(6) a. Τώρα η μητέρα έχει δουλειά.
now the.fem.nom.sg mother.fem.nom.sg has work
‘Now the mother is working.’

b. * Τώρα μητέρα έχει δουλειά.
now mother.fem.nom.sg has work

(7) a. Μια γυναίκα πήγε σε ένα μαγαζί.
a woman went to a.neu.acc.sg shop.neu.acc.sg
‘A woman went to a shop.’

² The tasks, particularly the IGT, also aimed at retrieving pronominal clitics. The latter structure, however, falls outside the scope of the current study and shall not be dealt with here.

- b. * Μια γυναίκα πήγε στο μαγαζί.
a woman went to-the.neu.acc.sg shop.neu.acc.sg
- (8) a. Τρόμαξε η γυναίκα και ο σκύλος.
was-scared.3sg the woman and the.mas.nom.sg dog. mas.nom.sg
'The woman and the dog were scared.'
- b. * Τρόμαξε η γυναίκα και το σκύλος.
was-scared.3sg the woman and the.neu.nom.sg dog. mas.nom.sg
- (9) a. Δώρο για τα γενέθλιά σου.
present for the.neu.acc.pl birthday your
'Present for your birthday.'
- b. * Δώρο για το γενέθλιά σου.
present for the.neu.acc.sg birthday your
- (10) a. Η γραβάτα είναι πολύ επίσημη.
the.fem.nom.sg tie. fem.nom.sg is very formal. fem.nom.sg
'The tie is very formal.'
- b. * Τη γραβάτα είναι πολύ επίσημο.
the.fem.acc.sg tie. fem.nom.sg is very formal. neu.nom.sg

5.4 Results on articles

The results for the definite and the indefinite article are presented in Table 5. As demonstrated, only the Georgian intermediate group omitted more definite than indefinite articles.

L1/Proficiency	Definite		Indefinite	
	CORRECT	OMITTED	CORRECT	OMITTED
Albanian ADV	1174	9	134	0
	99.2%	0.8%	100%	0%
Albanian INT	655	17	98	2
	97.5%	2.5%	98%	2%
English ADV	744	10	113	1
	98.7%	1.3%	99.1%	0.9%
English INT	629	35	121	0
	94.7%	5.3%	100%	0%
Georgian ADV	644	93	50	2
	87.4%	12.6%	96.2%	3.8%
Georgian INT	370	109	44	13
	77.2%	22.8%	77.2%	22.8%
Greek NS	593	0	102	0
	100%	0%	100%	0%

Table 5 | Definite and indefinite determiners across L1/proficiency subgroups

The data were analysed by means of chi-square tests of independence. It was revealed that the participants omitted indefinite articles significantly less than definite articles ($\chi^2(1, N = 5169) = 13.111, p < .001, \eta^2 = .050$) and that the L1 English intermediate group fared significantly better at the indefinite than the definite article ($\chi^2(1, N = 785) = 6.676, p = .010, \eta^2 = .092$). In this respect the English advanced behaved like the Albanian groups and the group of the Greek NS. A marginal significance of association was found in the case of the Georgian advanced group, who performed better at the indefinite than the definite article ($\chi^2(1, N = 789) = 3.530, p = .060, \eta^2 = .067$). All other groups performed at ceiling at both determiners.

Regarding the definite article, there was a significant developmental effect for all study groups with the advanced participants scoring higher than their corresponding intermediates (Albanians ($\chi^2(1, N = 1855) = 9.704, p = .002, \eta^2 = .072$), English ($\chi^2(1, N = 1418) = 17.881, p < .001, \eta^2 = .112$) and Georgians ($\chi^2(1, N = 1216) = 21.536, p < .001, \eta^2 = .133$)). Also all groups differed significantly from the Greek NS controls in the suppliance of the definite determiner (Albanian advanced ($\chi^2(1, N = 1776) = 4.534, p = .033, \eta^2 = .051$), English advanced ($\chi^2(1, N = 1347) = 7.924, p = .005, \eta^2 = .077$) and intermediate ($\chi^2(1, N = 1257) = 32.153, p < .001, \eta^2 = .160$) and Georgian advanced ($\chi^2(1, N = 1330) = 80.455, p < .001, \eta^2 = .246$) and intermediate ($\chi^2(1, N = 1072) = 150.215, p < .001, \eta^2 = .374$). There were also L1 effects with the Albanians scoring higher than all other L2 groups, and the Georgians receiving the lowest scores. The Albanians performed significantly better than the English only at the intermediate level ($\chi^2(1, N = 1336) = 6.710, p = .010, \eta^2 = .071$), and significantly better than both Georgian groups, the advanced ($\chi^2(1, N = 1920) = 126.934, p < .001, \eta^2 = .257$) and the intermediate ($\chi^2(1, N = 1151) = 117.356, p < .001, \eta^2 = .319$). The English performed significantly better than the Georgians at both the advanced ($\chi^2(1, N = 1491) = 73.904, p < .001, \eta^2 = .223$) and the intermediate level ($\chi^2(1, N = 1143) = 77.257, p < .001, \eta^2 = .260$).

In the indefinite article, there was a significant developmental effect only within the L1 Georgian participants, with the advanced scoring higher than the intermediates ($\chi^2(1, N = 109) = 8.238, p = .004, \eta^2 = .275$). Also, both of the L1 Albanian groups scored significantly lower than the NS (advanced ($\chi^2(1, N = 154) = 3.975, p = .046, \eta^2 = .161$), intermediate ($\chi^2(1, N = 159) = 25.335, p < .001, \eta^2 = .399$)). Considering L1 effects, there were no significant differences between the Albanians and the English at any proficiency level, whereas the Albanians outperformed the Georgians at both levels (advanced ($\chi^2(1, N = 187) = 7.709, p = .005, \eta^2 = .203$), intermediate ($\chi^2(1, N = 157) = 18.189, p < .001, \eta^2 = .340$)). Furthermore, only the intermediate Georgians omitted the indefinite determiner in obligatory contexts significantly more than the English ($\chi^2(1, N = 178) = 29.771, p < .001, \eta^2 = .409$).

5.4 Results on DP agreement

Table 6 presents obligatory contexts (OC), correct suppliance of agreement as well as agreement errors between the noun and the article in definite DPs for each group while Table 7 details agreement errors in case, gender and number. As evident, all groups make very few agreement errors (0.3 – 7.9%) and of these errors most (87%) concern gender agreement, followed by number agreement errors. All groups make more gender agreement errors than number and case agreement errors as shown in Figure 1.

L1/Proficiency	Agreement			
	OC	Correct	Errors	Errors %
Albanian ADV	1141	1137	4	0.3%
Albanian INT	673	662	12	1.8%
English ADV	759	748	12	1.6%
English INT	633	597	40	6.3%
Georgian ADV	632	618	15	2.4%
Georgian INT	368	339	29	7.9%
Greek NS	586	586	0	0%

Table 6 | Agreement in definite DPs across L1/proficiency subgroups

L1/Proficiency	Categories of agreement errors			
	Case	Gender	Number	Total
Albanian ADV	0	4	0	4
	0%	100%	40%	
Albanian INT	1	9	2	12
	8.3%	75%	16.7%	
English ADV	0	11	1	12
	0%	91.7%	8.3%	
English INT	1	35	4	40
	2.5%	87.5%	10%	
Georgian ADV	0	14	1	15
	0%	93.3%	6.7%	
Georgian INT	0	26	3	29
	0%	89.7%	10.3%	
Greek NS	0	0	0	0
	0%	0%	0%	

Table 7 | Agreement errors in definite DPs across L1/proficiency subgroups

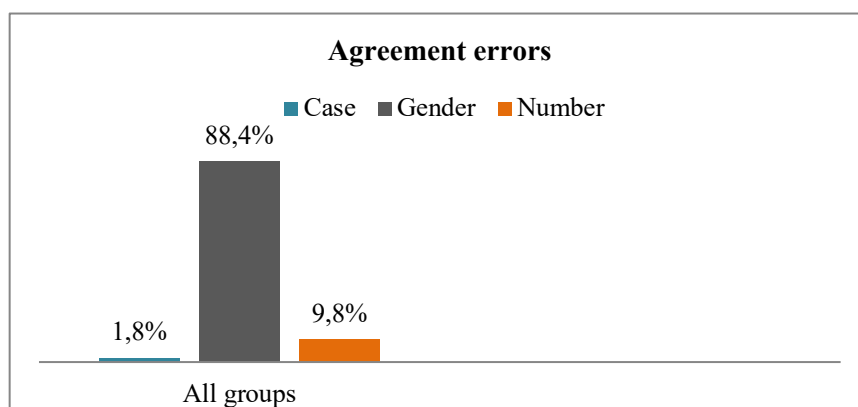


Figure 1 | Agreement in definite DPs

Table 8 and Figure 2 present successful performance in agreement per masculine, feminine and neuter in raw numbers and percentages turned into decimals respectively. As it is clear, groups were more accurate at the neuter gender. The performance of the

Georgian groups on the masculine gender is lower in relation to that of the other study groups.

L1/Proficiency	Masculine		Feminine		Neuter	
	Correct	Errors	Correct	Errors	Correct	Errors
Albanian ADV	214	2	375	2	548	0
Albanian INT	99	3	223	5	342	1
English ADV	97	5	246	3	406	2
English INT	94	14	207	13	297	8
Georgian ADV	106	3	212	9	300	2
Georgian INT	56	9	103	13	181	6
Greek NS	72	0	163	0	351	0

Table 8 | Gender agreement in definite DPs across L1/proficiency subgroups

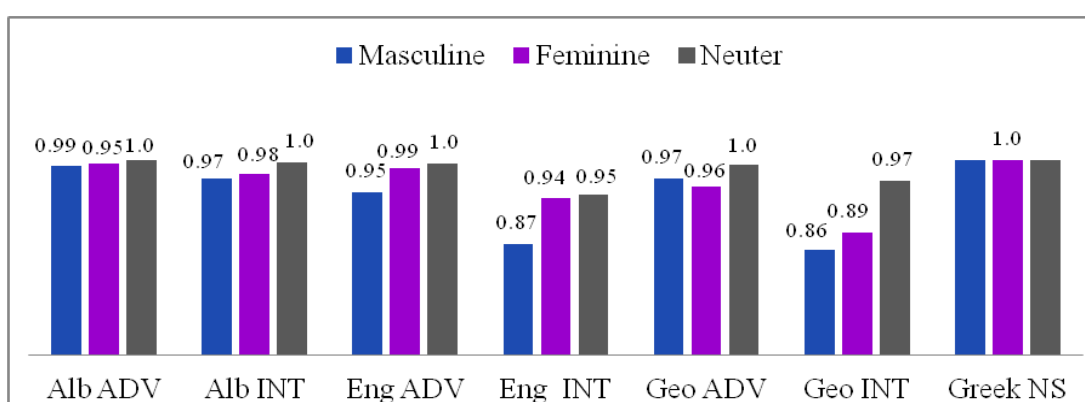


Figure 2 | Gender agreement in definite DPs across L1/proficiency subgroups

The statistical analysis of the data revealed significant developmental effects for all study groups, with the advanced being more accurate than the intermediates (Albanians ($\chi^2(1, N = 1815) = 9.914, p = .002, \eta^2 = .074$), English ($\chi^2(1, N = 1397) = 21.365, p < .001, \eta^2 = .124$) and Georgians ($\chi^2(1, N = 1001) = 16.817, p < .001, \eta^2 = .130$) respectively). All groups except the advanced Albanians differed significantly from the Greek NS controls regarding correct agreement in the definite determiner (intermediate Albanians ($\chi^2(1, N = 1260) = 10.534, p = .001, \eta^2 = .091$), English advanced ($\chi^2(1, N = 1346) = 9.336, p = .002, \eta^2 = .083$) and intermediate ($\chi^2(1, N = 1223) = 38.042, p < .001, \eta^2 = .176$), Georgian advanced ($\chi^2(1, N = 1219) = 14.059, p < .001, \eta^2 = .107$) and intermediate ($\chi^2(1, N = 954) = 47.627, p < .001, \eta^2 = .223$) respectively).

Finally, there were L1 effects, with the Albanian groups scoring significantly higher than the two other L1 groups at both developmental levels, intermediate and advanced. The advanced L1 Albanians made significantly fewer agreement errors in definite DPs than the advanced L1 English ($\chi^2(1, N = 1901) = 8.247, p = .004, \eta^2 = .066$) and the intermediate L1 Albanians made significantly fewer errors than the intermediate L1 English ($\chi^2(1, N = 1311) = 17.402, p < .001, \eta^2 = .115$). The Albanians' performance was significantly better than that of the two Georgian groups at both levels of development (the advanced ($\chi^2(1, N = 1774) = 15.665, p < .001, \eta^2 = .094$) and the intermediate ($\chi^2(1, N = 1042) = 23.433, p < .001, \eta^2 = .150$)). The performance of the English and the Georgians did not differ significantly with respect to agreement errors in definite DPs at either developmental stage.

The pattern is quite different when it comes to agreement accuracy in indefinite DPs; although there is a developmental effect for all L1 groups, only the intermediates perform distinguishably different from the NS and no L1 effect is attested.

Finally, the general pattern of agreement accuracy that emerges is the following: Participants are mostly accurate at supplying gender agreement in neuter definite DPs and then in feminine DPs, while masculine DPs trigger the most inaccuracies in gender agreement. Also, the neuter was preferably used as a default followed by the feminine, while the masculine was the least preferred option for default use.

6 Discussion and conclusion

In this section we revisit our research question and the relevant expectations (see Section 4).

We found that both the definite and the indefinite articles have been acquired to a great extent by all groups in the study. This is to be anticipated after their massive exposure to the L2. However, it seems that the Greek definite article poses a greater challenge: its L2A uniformly involves a developmental effect not attested in the case of the indefinite article. Also, in the definite article the learners' performance never reach that of the NS and the definite article triggers more L1 effects in favour of the learners whose L1s grammaticalise it. Hence, as regards articles, all of our expectations (a), (b), and (c) are confirmed. This asymmetrical pattern of acquisition may be accounted for by the uninterpretable feature make-up carried by the definite article. The Georgian group does no longer have access to those features beyond puberty, and for this reason they may not fully master the definite article even at the advanced stage of L2 development. On the other hand, the Georgians do not differ significantly from the English group at the same developmental stage with respect to the indefinite article. These findings are compatible with the predictions of the IH.

Considering results in agreement between nouns and articles in definite DPs, the feature of gender was proved the most problematic, followed by number, while case hardly caused any problems, confirming our expectation (a). All L1 groups became significantly more accurate at agreement in definite DPs with exposure, as per our expectation (c). The attested L1 effect in that only the performance of the advanced Albanian group reached native-like levels, whereas all other groups differed significantly from NS, complies with the IH and confirms our expectation (b). Overall, participants are more accurate at supplying gender agreement in neuter definite DPs, then in feminine DPs, while masculine DPs trigger the most inaccuracies in gender agreement. Similarly, the preferred default gender in definite DPs is the neuter followed by the feminine. This finding is consistent with previous research (Τσιμπλή 2003, Tsimpli et al. 2007, Unsworth et al. 2011, Kaltsa et al. 2017, among others).

The contribution of this study to relevant research is twofold. First, our proficiency test according to CEFR criteria and descriptors ensured a fine differentiation between L2 levels. Second, the three L1 groups of participants enabled a contrastive analysis in order to check for L1 effects. The findings and implications of the present study are left open for further research into the L2A of other structures, such as pronominal clitics, as well as through diverse task modality.

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