The acquisition of null operator structures by Greek learners of English

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Abstract
This paper reports on the results of an experimental study into the acquisition of null operator structures in Greek L1/English L2. The study tested the acceptability of object gaps and (ungrammatical) pronouns A' bound by a null operator in the complement clause of easy-to-please and degree phrases as well as in infinitival relatives. The results show optionality even at advanced stages in the acceptability of ungrammatical and grammatical sentences. This apparent optionality is argued to stem from the difference between the native and the target language in the specification of uninterpretable features, which are least accessible to resetting and condition interlanguage grammars.

Keywords: animacy, opacity, features, interpretability, resumptive pronouns

1. Introduction
The issue of L2 accessibility to Universal Grammar and to the feature specification of functional categories of a target language has been the focus of numerous studies in generative SLA research. On the assumption that L2 grammars are indeed ‘natural’ grammars, constrained by the principles of UG which interact with the linguistic data, the question remains as to the state of developing grammars and in particular the properties of L2 grammars underlying learner performance.

Various theories in the framework of the Minimalist Programme have been put forward to explain the failure of even advanced adult learners of a second language to acquire certain properties of the target language and the apparent
optionality in their grammars. Among these, the Missing Surface Inflection Hypothesis, put forward by Lardiere (1998) and Prévost & White (2000) attributes L2 divergence from the target forms to the dissociation between surface morphology and abstract feature specification. More specifically, non-native-like performance is accounted for by the difficulty in retrieving specific morphological forms, which might be due to processing constraints or communicative pressure but not to the knowledge of abstract categories. However, although this theory accounts for persistent difficulties of learners in acquiring the correct morphological forms, it fails to provide a principled account for the systematic patterns emerging in L2 grammars. On the other hand, the Failed Feature Hypothesis, developed by Hawkins and Chan (1997) predicts permanent fossilisation due to the inaccessibility of the functional lexicon (that is, the collection of feature settings responsible for syntactic computations). In the same light, Tsimpli and Roussou (1991), and Tsimpli (2003) argue for the impossibility of parameter resetting. Furthermore, Tsimpli (ibid.) provides a principled explanation for cases of apparent optionality as well as those in which non-native performance appears to be native-like. Based on the divide of functional features between +/-strong but also between +/-LF interpretable, she predicts that interpretable features (for example the wh- feature) are accessible to the learner, while the value of uninterpretable features (e.g. agreement on the inflectional heads T and v) is not. Furthermore, she argues that the morphological forms of the target language are reanalysed by the L1 system available (that is, the non-parameterised operative principles of UG and the collection of interpretable and uninterpretable features specified for the L1 value) in such a way as to fit the L1 settings.

On the assumption that learnability problems in SLA arise when the native language and the target language differ in the feature specification of functional heads, even advanced learners are thus predicted to have difficulty in arriving at native-like specifications. The present study investigates properties of developing Greek/English L2 grammars with respect to the representation of formal features such as agreement in the verbal domain, as this is instantiated in the formation of A' chains in which non-finite forms are also involved. More specifically, it is claimed that learners resort to the use of the resumptive strategy in cases of null operator - gap chains, which is linked to (a) the syntactic properties of the lexical items involved in null operator structures, (b) the properties of finiteness, which is associated with the strength of subject agreement in the inflectional domain, and (c) the properties of pronouns in English and Greek.

The organisation of the rest of the paper is as follows. Section 2 discusses the
properties of null operator structures in English. Section 3 discusses finiteness and resumption in Greek, which are responsible for disallowing the construal of null operator - gap chains in the language. Section 4 presents results from an experimental study into the acquisition of null operator structures by two groups of Greek learners of English, while Section 5 provides an account of the state of L2 grammars with respect to the phenomena examined.

2. Null operator structures: English vs Greek

The term null operator structures (NOS) refers to structures resulting from the movement of a phonologically null operator (tough movement) from the object position of an embedded non-finite clause to its [Spec CP]. From there it is predicated on the matrix NP c-commanding the embedded clause. Examples of constructions in English involving null operator movement include easy-to-please adjectival phrases (tough predicates) and degree structures as well as infinitival relatives.

2.1 Tough Constructions (TCs)

The class of tough predicates includes adjectives such as easy, difficult, hard and impossible, which s-select a Proposition, syntactically realised by a CP/IP as in (1a) and (1b). They also give rise to tough movement constructions (1c), which involve the base-generation of a DP in the subject position of the matrix clause, and its co-indexation with the object gap position in the embedded CP complement through a null operator. Note that in structures such as (1d), in which there is no complement, the DP satisfies the internal theta-role of the adjective and, as Anderson (2001) observes, it has the semantic type of a Proposition as difficulty is evaluated with respect to the total of activities associated with the DP. In this respect, it differs from (1c), the only NO structure among the examples, in which difficulty is evaluated with respect to a specific activity.

(1a) It is difficult to translate Alice in Wonderland
(1b) Translating / To translate Alice in Wonderland is difficult
(1c) Alice in Wonderland is difficult to translate
(1d) Alice in Wonderland is difficult

So far it has been assumed that tough adjectives are one-place predicates (in that they assign one thematic role) and that the embedded CP is always a complement of the predicate. Therefore, the DP in NOS must be non-thematic. However, there is a lot of controversy on the status of the matrix DP. Arguments favouring a thematic status of the subject (Jones 1991, Darlymple and
Holloway King (2000) are based on the differences in interpretation between a NOS and its 'it' analogue and on the inability of the latter to have an expletive pronoun such as 'there' in subject position. However, a characteristic of a null operator structure is that its DP subject has a topic reading, which could result from the properties of the operator\textsuperscript{1} it is associated with. From this it follows that the subject cannot be realised by the expletive 'there' as the latter can never be a topic. Furthermore, the obligatory wide scope reading of the existential quantifier in (2a) in contrast to (2b) is to be expected if the matrix DP subject of a tough construction has a topic reading.

(2a) Something is easy to translate (= one specific thing) \textit{<wide scope reading>}
(2b) It is easy to translate something (=anything) \textit{<narrow scope reading>}

Hornstein (2001) has also argued that tough adjectives are one-place predicates. However, he claims that when the DP realises the theta role, the CP infinitive is an adjunct. A NOS results when the DP moves out of the adjunct being attracted by the theta features of the matrix adjective. However, although in Minimalism thematic features have an active part in the computation as they are attracted by a functional category or a DP (Roussou 2001), they do not themselves serve as probes for movement. Furthermore, an adjunct analysis of the embedded CP fails to account for the following facts: (a) the verb in the infinitival clause is obligatorily transitive, (b) the (implied or expressed) subject of the embedded verb has an 'experiencer' reading resulting from the predicate adjective c-commanding it.

Some information about the status of tough adjectives in earlier English is in place at this point. As reported by Anderson (2001), tough adjectives allowed the experiencer (of the 'ease' or 'difficulty') to appear in matrix subject position, which they controlled, as in (3). Furthermore, the embedded verb could be a passive infinitive as in (4), in which case the matrix subject attracted the object's theta features since the agent role was suppressed.

(3) The child\textsubscript{k} was easy [IP PRO\textsubscript{k} to understand the lesson]
(4) The woman\textsubscript{k} was hard [IP t\textsubscript{k} to be calmed down t\textsubscript{k}]

Both constructions were used until the nineteenth century but are disallowed in Modern English. As for the properties of the tough adjectives in these structures, we maintain that the adjective had the ability to assign two thema- 

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\textsuperscript{1} Null operators are individual operators, as argued by Tsimpili (1998), restricting the set of reference of the variable they introduce to one entity. The variable in this case is a null epithet (Lasnik and Stowell, 1991) with non-anaphoric, non-pronominal and non-variable properties, which render it a suitable candidate for co-indexation with a sentence antecedent.
tic roles and c-select for a DP and an IP complement. Hence, the ability of the matrix subject to control the IP subject.

2.2 Degree clauses

Another type of NOS involves infinitival complements of a degree phrase (headed by too or enough). In this case the subject of the adjective selected by the degree head is co-indexed with the object gap in the infinitival clause. It should be noted here that the semantic relation between the matrix predicate and the embedded clause is looser than the one in tough predicates since the matrix subject receives its theta role from the adjective itself. Furthermore, the degree adverb does not obligatorily select a NOS. As can be seen in examples (5a) to (5c), there is no restriction as to the category of the verb appearing in the embedded clause since intransitive and passive verbs are also allowed. In this case, the matrix subject has control over the embedded subject (PRO), while in the presence of an overt subject in an embedded transitive clause, such as in (5d), the object is optionally expressed.

(5a) John is too tired to walk
(5b) John is too short to be asked to join the basketball team
(5c) The tea is too hot to drink
(5d) The tea is too hot for us to drink eu / it

2.3 Infinitival relatives

In infinitival relatives, which are licenced by verbs of the ‘want’ type (want, need, look for), the matrix object is co-indexed with the object gap in the infinitival clause.

(6) I am looking for an aspirin \([CP \ OP_k [IP \ PRO \ to \ give_{t_k} \ to \ John]]\)

This construction differs, however, from the other NOS discussed as to the status of the null operator. More specifically, whereas in infinitival relatives the null operator heads a [+WH] chain and is associated with a true variable, the null operator in tough constructions introduces a variable that refers to a singleton set.

3. Tough constructions in Modern Greek

3.1 Finiteness and resumption in M.G.

Modern Greek is characterised by the absence of infinitival forms, so clauses corresponding to the English infinitive are always in the Subjunctive Mood. The
latter is morphologically realised through the particle ‘na’, which appears as the head of a Mood Phrase, higher than T, as argued by Philippaki-Warburton (1992), and Roussou (2001), among others. Furthermore, the verb in the Subjunctive Mood is always marked for subject agreement, while clitics appear preverbally. This is indication that even in the Subjunctive the verb rises as high as the Tense Phrase, which has the following feature specification when selected by the subjunctive Mood:

- Interpretable tense feature – [-realis] (due to T’s selection by the Subjunctive Mood).
- EPP – [-strong] (no specifier to host a subject DP is available, as proposed by Alexiadou and Anagnostopoulou 1998).
- Uninterpretable Subject Agreement feature – [+strong] (valued by the verbal inflection).

With regard to the feature [+finite], we propose, following Rizzi (1997), that it resides in the lower C and is correlated with Mood in Greek. In contrast, finiteness in English is correlated with T, as this is the highest projection of the inflectional domain in the language. As for the status of the affix on the Greek verb, it not only encodes the verb’s thematic/aspectual properties but it is also the phonological manifestation of the uninterpretable phi-features of T. As such, it can function resumptively when the subject is also present in the clause. Similarly, object clitics are the phonological reflex of uninterpretable phi-features on light v of the verbal domain. As such, they can appear in clitic-doubling constructions, topic structures or be A’-bound by an operator such as in embedded wH-interrogatives.

(7a) To diavasa to vivlio
   It-read-1st SNG the book
   ‘I read the book’

(7b) Tin tainia, tin idame exthes
   The film ACC her-saw1st PL yesterday
   ‘The movie, we saw (it) yesterday’

(7c) Pjon ipes oti ton apezalan exthes?
   Who3 did you say that him3-expelled- 3rd PL yesterday
   ‘Who did you say they expelled yesterday?’

The ability of the clitic pronouns to be locally bound stems from the deficient structure of clitic pronouns. According to Cardinali and Starke (1994),

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2 Tsimpli (2001:219) defines resumptive elements as ‘the phonological manifestation N formal, nominal features on non-nominal X^0 max’.
clitic pronouns differ from strong pronouns (such as English) in the sense that they are X\(^0\) elements lacking the functional projection responsible for a referential index and the nominal phi features. As such they need to appear on a functional head associated with phi-features to satisfy recoverability. Hence, their resumptive use since in such cases they are not visible at LF (Tsimpli 2003). On the other hand, English pronouns\(^3\) are XPs which are merged in a theta position (with the exception of 'it', which can be used expletively). Furthermore, English pronouns are specified for the semantic feature of \([+\text{animacy}]\) and are thus LF-interpretable.

## 3.2 NO constructions in MG

In the absence of infinitives, MG resorts to the use of the subjunctive for the structures that correspond to the English null operator constructions discussed in Section 2. Moreover, clitics are obligatory in subjunctive clauses selected by adjectives of the 'easy' type or ones modified by a degree adverb. Otherwise, the verb needs to have passive morphology.

(8) Ο μουσακάς είναι δισκολός να τον μαγειρεψει / na mageireftei

The mousaka\(_{\text{MASC}}\) is hard\(_{\text{MASC}}\) na\(_{\text{SUB}}\) him-cook\(_{2\text{nd}}\) SNG / na\(_{\text{SUB}}\) be cooked\(_{3\text{rd}}\) SNG

(9) Αφτά τα κουτία είναι πολι να βαριά ( gia) na ta kouvaliso / (gia) na kouvalithoun

These the boxes\(_{\text{NEU}}\) are too heavy\(_{\text{NEU}}\) na them-carry\(_{1\text{st}}\) SNG / na\(_{\text{SUB}}\) be carried\(_{3\text{rd}}\) PL

In both (8) and (9) the agreement between the adjective and the matrix DP is a reflex of theta feature attraction. The CP clause, on the other hand, seems to function adverbially, namely as a circumstantial adverb introducing the activity with respect to which difficulty is evaluated. Based on this interpretation and the fact that in both examples the CP can be replaced by a prepositional phrase equivalent in function to the English 'as for XP', we propose that in these examples the CP is an adjunct modifying the predicate clause. However, structures in which the DP and the adjective do not agree are also available. In this case, the subject DP is merged in the spec of a Topic position in C and can appear in either Nominative or Accusative Case. In all these structures we assume that a null operator is not needed to co-index the matrix

\(^3\) Note that pronouns can be used resumptively in English as a way to overcome island violations.

(i) I am looking for those documents which I can never remember where I put them.
DP and the clitic in the embedded clause because of the pronominal properties of the latter.⁴

On the other hand, MG has null quantificational operators, which license gaps as is the case of relative subjunctives in (10).

(10) Xreiázomai kati na pio
    need₁ˢᵗₐ₈ₙ something naₘₐ₈ₙ drink₁ˢᵗₐ₈ₙ
    ‘I need something to drink’

It should be noted here that the absence of the clitic in sentences with an existential quantifier is due to the unavailability of indefinite clitic pronouns. However, a clitic can optionally appear in cases of morphologically more complex quantifiers, such as in (11).

(11) Psalno kapoion na ton proslavo
    I am looking for someone naₘₐ₈ₙ him hire₁ˢᵗₐ₈ₙ
    ‘I am looking for someone to hire’

To summarise so far, the differences between English and MG with respect to (a) the feature specification of the Finiteness head in the C domain, (b) the nature of agreement associated with T and v, and (c) the properties of the pronominal systems in the languages result in the availability of null operator-gap dependencies in more structures in English than in Greek.

4. The study

4.1 Research questions

Based on the differences discussed in the previous sections and on the assumption that (a) the L₁ settings of uninterpretable features crucially affect the representations of the L₂ grammar, and (b) LF interpretable features can be acquired, the study formed the background for the discussion of the following research questions:

(i) Can structures involving anaphoric null-operators be acquired by Greek learners of English?

(ii) If non-target performance is attested in all or some of these structures, could it be attributed to (a) a non-target representation of infinitival clauses in L₂ English, and / or (b) a non-target representation of En-

⁴ Rizzi (1997) claims that in Romance topic-comment structures the clitic pronoun connects the topicalised DP with the open position inside the clause, performing the function of the null operator in English. We assume this to be the case in Greek in structures which involve co-indexation between a DP and an open position inside a clause.
English pronouns? Both possibilities stem from the influence of the native language which lacks infinitives and has a richer pronominal paradigm (strong pronouns as well as clitics).

4.2 The test

Two groups of learners were included in the study together with a control group of native speakers of English (n=28). The learners were assigned to two levels of proficiency according to their performance in the Oxford Placement Test (Allan, 1992): the Intermediate group (n=35) and the Advanced group (n=39). The English learners were recruited from English language institutes and from Aristotle University, they had all started learning the language at about 9 years old and were between 15 and 21 years of age.

The study tested the tendency for the resumptive and gapping strategy in null operator chains. For the elicitation of the data a paced grammaticality judgement task consisting of 100 sentences involving various operator chains was used. Of these, 29 items were distractors, while 42 sentences (20 ungrammatical and 22 grammatical) included null operator constructions with tough adjectives, such as 'easy', 'difficult', 'hard' and 'impossible', degree clauses and infinitival relatives. The remaining 29 items involved other A' structures, which are not discussed in the present paper. The subjects were asked to indicate their judgement according to a five-point scale ranging from -2 (certainly ungrammatical) to +2 (certainly grammatical), while 0 encoded the 'not sure' response (White et al, 1998). Performance was measured on the basis of all the choices made on each side of the scale while 0 responses were excluded from the statistical analysis.

The test included 17 items which contained null operator chains with a gap while another 17 contained a resumptive pronoun in the place of the object gap. To test the conditions that could affect the acceptability of pronouns in the tough and degree constructions, C opacity (i.e. lexicalisation of C through the complementiser for licensing a DP in T) and animacy were used as variables. More specifically, test items included infinitives with (+ for XP) and without an overt subject (-forXP), as the ones in (12)-(13). Furthermore, the matrix DPs involved both animate and inanimate entities (examples (14)-(15)).

(12) His latest book is hard to read without the help of a dictionary
(13) Ballads have always been easy for me to play on the guitar

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5 Effect of C opacity on Greek and Spanish learners’ acceptability of resumptive pronouns in English NOS was reported in a study by Parodi and Tsimpi (to appear). Another study by Tsimpi (2003) into subject/object extraction showed strong effects of animacy on the acceptability rate of [-animate] resumptive pronouns.
(14) *People say this politician is hard for me to find him at home
(15) *Your last name is difficult to spell it without effort

Another 12 sentences were included, which contained a tough adjective or degree adverb and an infinitival complement. The subject of the embedded infinitive, which was either a transitive verb with a DP object or a passive verb, was c-commanded by the subject of the matrix predicate. In sentences such as (16) the matrix subject has an experiencer reading while in (17) the subject is thematically linked to the internal theta role of the embedded passive infinitive. Recall that although such structures are disallowed in Modern English, they were licit in previous centuries. On the other hand, degree clauses with a passive infinitive such as the sentence in (18) are grammatical in Modern English.

(16) *Her children were hard to accept the fact that she was getting a divorce
(17) *The dress you want is easy to be made within a few days
(18) Do you think that these trousers are too tight to be worn?

Such sentences were included in the study in order to check whether subjects who disallowed a pronoun in a NOS would also reject an (ungrammatical) derivation without a null operator.

4.3 Results

The results presented in Tables 1-3 include the acceptability rate of resumptive pronouns and the rejection rate of gaps in tough constructions (TC), degree clauses (DC) and infinitival relatives (IR). Recall that the percentages were calculated from the total of +2/+1 and -2/-1 responses while the 0 responses were excluded. Table 1 shows the acceptability of resumptive pronouns across sentence types.

<table>
<thead>
<tr>
<th>INTERMEDIATE</th>
<th>ADVANCED</th>
<th>NATIVE SPEAKERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>+anim</td>
<td>-anim</td>
<td>Total</td>
</tr>
<tr>
<td>TC-for</td>
<td>39.3*</td>
<td>51.7*</td>
</tr>
<tr>
<td>TC+for</td>
<td>30.8**</td>
<td>71.9*</td>
</tr>
<tr>
<td>DC-for</td>
<td>54.8**</td>
<td>74.2**</td>
</tr>
<tr>
<td>DC+for</td>
<td>52.9</td>
<td>81.8</td>
</tr>
<tr>
<td>IR</td>
<td>67.7*</td>
<td>37.5</td>
</tr>
</tbody>
</table>

* significant difference between the Intermediate and the Advanced groups
** significant difference between the Advanced group and the Native Speakers
A One-Way Analysis of Variance (ANOVA) performed on the data revealed significant differences between groups in all the sentence items involving resumptive pronouns apart from the degree clauses with an overt C complementiser. In the specific structure the acceptability rate of the resumptive pronouns was similar in both groups while almost half of the native speakers also judged these test items as correct. This could be due to the nature of the relation between the embedded clause and the matrix DP, since the latter appears in the matrix clause independently of the null operator construction, giving rise to a semantically bi-clausal predicate.

Overall, a developmental pattern seems to emerge with respect to the rest of the structures as a much lower percentage of advanced learners accepted the pronoun in NOS. Post hoc tests comparing the two groups of learners indicated that the acceptability of the pronoun was significantly lower among the Advanced group in the tough constructions of both types. More specifically, there was significant statistical difference in both the sentences in which the subject of the infinitive was not expressed (p<.01) and in those with an overt subject (p<.01). Furthermore, the two groups of learners differed significantly in the infinitival relatives (p<.01). On the other hand, the Advanced group differed significantly from the native speakers only in the tough construction with an overt complementiser (p<.009).

However, the subjects' responses did not seem to follow a uniform pattern when the animacy factor was considered. As can be seen in Table 1, in both the tough and degree structures a higher percentage of inanimate pronouns were accepted by both groups of learners. Even more, the effect of animacy was strengthened by the opacity of C, that is, when C was lexicalised, which meant that there was more phonological material between the head and the foot of the dependency. To further investigate the effect and interaction of the factors of animacy and C opacity on learners' judgements, a Repeated Measures ANOVA (GLM) was carried out. In the tough constructions the Intermediate group showed significant effects of animacy ($F_{(1,67)} = 16.477$ p<.01) and a significant interaction between animacy and C opacity ($F_{(1,67)} = 4.902$ p<.03) while no significant effects of the two factors were shown for judgements on degree clauses. As for the Advanced group, there was a significant interaction between animacy and C opacity ($F_{(1,73)} = 4.815$ p<.031) in tough constructions, while in degree clauses there was a significant effect of animacy ($F_{(1,76)} = 35.252$ p<.000) and a significant interaction between animacy and C opacity ($F_{(1,76)} = 9.149$ p<.003).

Surprisingly, animacy also seemed to affect the acceptability of pronouns by the native speakers. Thus, while the animate pronouns in the tough constru-
ctions were rejected, the inanimate pronoun ‘it’ was accepted by a small number of the control group, which increased dramatically in the degree clauses. Being the only underspecified pronoun in the English pronominal system, ‘it’ can be used expletively, in which case it is only PF visible. On the basis of this, it could be hypothesised that the native speakers were treating it as a PF element in the test items, hence its higher acceptability rate.

With respect to responses in infinitival relatives, the judgements of both groups of learners as well as the native speakers reveal a preference for the animate pronoun. A paired t-test performed on responses to infinitival relatives with animate and inanimate pronouns revealed a significant difference in the Intermediate group (t = -2.541 p < .018). This higher acceptability of the animate pronouns might be due to their semantic import, which possibly forces a purposive reading of the embedded clause.6

The high acceptability rate of the grammatical NOS, as summarised in Table 2, shows that learners also allow for an object gap in the structures as both groups fare quite well in sentences involving null operator-gap dependencies.

Table 2. Acceptability rate (in %) of object pronouns in NOS

<table>
<thead>
<tr>
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<th>INTERMEDIATE</th>
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<th>NATIVE SPEAKERS</th>
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<tbody>
<tr>
<td></td>
<td>+anim</td>
<td>-anim</td>
<td>Total</td>
</tr>
<tr>
<td>TC-for</td>
<td>60.9**</td>
<td>61.9*</td>
<td>61.4**</td>
</tr>
<tr>
<td>TC+for</td>
<td>72.7</td>
<td>63.5**</td>
<td>65.9*</td>
</tr>
<tr>
<td>DC-for</td>
<td>68.7</td>
<td>44.1</td>
<td>51.4</td>
</tr>
<tr>
<td>DC+for</td>
<td>60.0</td>
<td>79.4*</td>
<td>73.1</td>
</tr>
<tr>
<td>IR</td>
<td>72.4</td>
<td>80.6</td>
<td>78.1</td>
</tr>
</tbody>
</table>

Significant differences between groups were found in the tough constructions with an overt subject. Specifically, a One-Way ANOVA revealed differences between the Intermediate and the Advanced learners (p < .000) as well as between the Advanced and the native speakers (p < .018). Furthermore, the Intermediate also differ significantly from the native speakers in the tough construction without an overt subject. The degree clause in (19) was not accepted by the majority of the Advanced learners. The fact that it was also

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6 Purposive clauses such as the ones introduced by ‘in order to’ are adjoined to the VP (Tsimpli 1999) and, therefore, do not involve a predication relation with a DP.
rejected by 28% of the native speakers suggests that the choice of the lexical items in it might have caused problems. More specifically, the matrix DP could have been taken to have subject control inside the embedded clause, due to the fact that the embedded clause in DCs may involve either a null operator or a control derivation as in (20a) and (20b) respectively. The control reading of the clause would necessitate the presence of an object pronoun.

(19) Don’t you think that Joan is too clever to deceive so easily?
(20a) Don’t you think that Joan\textsubscript{\text{CP}} is \textsubscript{\text{IP}}\textsubscript{\text{PRO}} to deceive \textsubscript{\text{CC}} \text{so easily}?]
(20b) Don’t you think that Joan\textsubscript{\text{CP}} is \textsubscript{\text{IP}}\textsubscript{\text{PRO}}\textsubscript{\text{K}} to deceive (somebody) so easily?]

Animacy does not seem to play a role in the judgements on sentences involving an object gap. However, in the tough constructions with an overt subject there is a slight decrease in the acceptability of object gaps co-indexed with an inanimate DP when C is lexicalised.

To summarise so far, the responses of the two groups of learners reveal a developmental pattern. However, optionality is attested even at the advanced level as pronouns are accepted in certain sentence types.

The judgements on sentences involving different types of infinitives in the complement clause of tough adjectives are quite revealing as to the status of NOS in L2 grammars. Table 3 includes the results from test items involving tough predicates with (ungrammatical) matrix subject control over the subject of the (transitive or passive) infinitive and degree adjectives selecting a passive infinitive (grammatical).

<table>
<thead>
<tr>
<th></th>
<th>INTERMEDIATE</th>
<th>ADVANCED</th>
<th>NS</th>
</tr>
</thead>
<tbody>
<tr>
<td>*TC + transitive</td>
<td>59.7*</td>
<td>44.4**</td>
<td>4.5</td>
</tr>
<tr>
<td>*TC + passive</td>
<td>72*4</td>
<td>76.0**</td>
<td>38.0</td>
</tr>
<tr>
<td>DC + passive</td>
<td>79.5</td>
<td>84.6</td>
<td>81.7</td>
</tr>
</tbody>
</table>

As Table 3 shows, both groups of learners fared badly in the constructions involving tough predicates. More specifically, the majority of the Intermediate learners accepted sentences in which the object of the infinitive did not co-refer with the matrix subject. Moreover, although the Advanced group differed from them significantly (p<.008), the percentage of learners of this level not recognising the impossibility of this structure was high and significantly different
from the controls (p<.000). Furthermore, significant differences were revealed between the Intermediate and the Advanced group (p<.001) and between the Advanced learners and the native speakers (p<.000) in the sentences involving a tough predicate and a passive infinitive. It should be noted here that the percentage of native speakers who accepted these (ungrammatical) test items was higher than expected. This could be due to the fact that (a) this subject control structure was licit in the language and was used until the 19th century, as has already been said, and (b) the sentences, although syntactically impossible, are semantically transparent. On the other hand, the fact that only a negligible 4.5% accepted the structure with an experiencer reading of the matrix subject provides indisputable evidence about the present properties of the adjectives of this type, namely that they have lost their ability to assign two internal theta roles. As for the (grammatical) degree clauses with passive infinitives, they were accepted by a great number of learners from both groups.

5. Conclusions

In the light of the research questions presented in Section 4, the results can be summarised as follows:

(a) There is a developmental pattern in the rejection of resumptive pronouns and the acceptability of object gaps.
(b) Intermediate learners are sensitive to animacy across sentence types.
(c) opacity strengthens the effects of animacy in both groups.
(d) Lastly, non-target performance is dramatically high in (ungrammatical) sentences in which the matrix subject controls the infinitival subject.

Before proceeding with the discussion, let us summarise the judgements of the native speakers on the sentences involving pronouns. There was a comparatively high tolerance of inanimate pronouns in degree clauses, especially when the infinitival subject was overtly realised. This could be accounted for by the nature of the degree phrase which forms a bi-clausal predicate. In this, the matrix subject is theta-marked directly by the adjective in the matrix clause and thus does not depend on the embedded clause for its interpretation. A pronoun, especially one such as 'it', which is semantically light does not hinder the processing of the sentence.7 Furthermore, the fact that the degree adverb does not impose selectional restrictions on the embedded infinitive (i.e. it does not necessi-

7 According to standard grammar books, an expressed subject in the infinitival clause allows the expression of the object pronoun (Quirk and Greenbaum 1998: 334).
tate a null operator) might be a further reason why pronouns were accepted by the native speakers.

With respect to the one of the main questions addressed in the test, namely whether the learners are able to form null operator-gap chains, the high percentages of correct performance in sentences involving an object gap seem to indicate that this might be the case. However, the dramatically high percentage of non-target responses in the ungrammatical sentences involving subject control (examples (17)-(18) above) shows that learners allow for derivations that do not involve a null operator, and are possibly conditioned by the L1 properties. More specifically, assuming that the adjectives are treated as one-place predicates assigning a theta role to the embedded infinitive, we could hypothesise the base-generation of the matrix subject in a topic position (something which is allowed in the learners’ L1 given that strong subject agreement is satisfied by verb movement to T and a subject position in T is not needed). From that position the DP surfacing as the subject would attract the theta feature associated with the agent of the embedded transitive infinitive (sentence (17)) or the patient of the passive infinitive (sentence (18)). Recall here that in passive verbs the agent theta role is not projected.

As to the properties of infinitives in the interlanguage grammars, the results show sensitivity to the lexicalised C. In particular, learners have a greater tendency to accept pronouns in the presence of an overt complementiser and a subject in the embedded infinitival clause in both the degree and the tough clauses. In this respect they differ from the native speakers, who are not affected by the presence of the complementiser 'for' in the tough structures. Resort to the resumptive strategy on the part of the learners can be accounted for by the opacity of the clause, which seems to hinder object control of a gap from the matrix DP. Opacity in this case is taken to be associated with a [+finite] environment, albeit without the temporal properties of a tensed clause. If, as has been argued, (the LF-uninterpretable) subject agreement feature is associated with finiteness in C in the participants’ L1, it is quite likely that the learners had analysed the lexicalised C as [+finite] similarly to the Greek subjunctive clauses.

Animacy (an LF-interpretable feature) was also a factor that conditioned responses in degree and tough constructions. Intermediate learners showed greater acceptance of inanimate pronouns across sentence types while, for the advanced learners, its effect was evident in the sentences with an overt C. These results indicate that learners acquire the status of the English pronominals since, even at the intermediate level, they are sensitive to the semantic specifi-
cation of animacy. However, they may still treat the inanimate pronoun as a weak pronoun, that is, as a marker of (the LF-uninterpretable) object agreement, and therefore accept it at a higher rate than the [+ animate] pronouns.\(^8\)

At this point some discussion is due as to the performance in infinitival relatives. The dramatically high acceptance of the animate pronouns by the Intermediate group is possibly due to the nature of the existential quantifier in the sentence items. In contrast to ‘something’, the quantifier ‘someone’ has a specificity feature, which can be resumed by a definite pronoun. Note that in Greek \textit{wh}- extraction contexts a clitic is allowed if the \textit{wh}- element is D-linked, i.e. if the variable it introduces belongs to a specific set, while resumption is disallowed for the underspecified ‘\textit{ti}’ (what). The specificity effect is also found in the responses of the other two groups. However, the great difference in percentages shows that the reasons underlying the acceptability of the pronouns were different in each group. Thus, while for Intermediate learners pronouns are PF reflexes of verbal agreement, it cannot be said that this is the case with the controls. As was mentioned in Section 4, for them and also for the Advanced learners, who patterned with the controls in this respect, the semantic import of the animate pronoun might have forced a purposive reading of the infinitival relative that allowed for its VP adjunction.

In sum, the results from the study show that learners restructure their grammars but that L1 values of non-interpretatable features condition developing grammars, as argued by Tsimpli (2003) and delay – if not inhibit – the attainment of target language representations.

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\(^8\) This analysis could be disputed on the grounds that the native speakers also show a tolerance for the inanimate pronoun, which cannot be accounted for by an object agreement analysis. However, the number of learners accepting ‘\textit{ti}’ differs significantly from the native speakers, something which calls for a different analysis of L2 pronouns.
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