1. Introduction

This study aims to investigate Greek-English interlanguage compounds like *toys factory or *shoes exporters attested in observational data. Research indicates that, generally, non-head nouns (henceforth NHNs) in English compounds do not take the regular plural affix –s. Gordon (1985) elicited novel deverbal compounds from L1 English children and showed that although they produce irregular NHNs, they overwhelmingly reduce their regular counterparts. He suggested that this asymmetry can be accounted for by Kiparsky’s (1982) model of level ordering in lexical phonology according to which, irregular plurals are stored in the lexicon at level I, compound formation rules apply at level II, and regular plurals are formed by application of a rule at level III. Consequently it is assumed that irregular plurals can be inserted in compounds because the latter are formed at a next level, unlike regular plurals which cannot, because they are formed at a level following that of compounds. Clahsen et al. (1992) in a longitudinal study of L1 German impaired (dysphasic) and non-impaired children, show that regular German plural affixes are consistently omitted inside compounds and advocate a level-ordering principle for German, too, thus offering further support to Gordon’s claim. In addition, Clahsen (1995) discusses the acquisition of German plural suffixes by Portuguese, Spanish and Italian immigrants and concludes that those German plural suffixes perceived as regular (-s or -n, depending on the subjects’ L1) are left out in compounds.

However, Lardiere (1995a,b) argues that this principle lacks validity both on theoretical and empirical grounds. In what mainly interests us here, her Spanish-English interlanguage data are rife with regular plural NHNs and, unlike Clahsen’s study, hers involve only novel compounds. Furthermore in her study the native speakers generally do not produce irregular plural NHNs, and the learners do not seem to treat regular/irregular NHNs differently. She proposes that whenever such differential treatment occurs, it could be accounted for by Pinker and Prince’s (1988) dual mechanism model, according to which irregular plurals are stored in the lexicon as such, whereas regular plurals are the result of productive rule application. Another difference between the two studies is that Lardiere examines only deverbal compounds, which she analyses as lexical AGR phrases, thus suggesting that principles of syntax can apply in morphology. Combining suggestions by Anderson (1985) and Roeper (1988), she also claims that deverbal compounding is an incorporation process in which the incorporated noun loses its referential properties, hence the ban on plural NHNs. She therefore maintains that plural NHNs in the Spanish-English interlanguage indicates adjunction and that they are due to L1 influence of a surface form, because, in Spanish compounds, NHNs do not get incorporated and although they are non-referential, they are in the plural, as in, e.g. abrelatas (‘an open-3SG can-opener).

The two suggestions differ significantly in that level-ordering sees compounding as a result of lexical rules, whereas Lardiere’s account involves the operation of syntactic rules in the lexicon. More recently, Bongartz (2000, 2002) goes a step further, viewing compounds as completely syntactic objects: she analyzes them as determiner phrases (DPs) and suggests that ‘a complex DP’ like the toy factory and ‘a DP+DP paraphrase’ like the factory for toys have the same constituent order in deep
structure, as shown in (1a,b). Note that incorporation accounts generally involve deverbal, and not root compounds, as there are significant differences between the two categories; deverbal compounds have argument structure and a head-complement relation, unlike root compounds which do not involve theta-marking and have a modifier-head relation. Further evidence for this difference comes from L1 data: Lardiere (1995a) reports Clark et al.’s (1986) observation that children form root compounds much earlier than deverbal compounds and remarks that when they produce plural NHNs, these are only in root compounds. So she claims that unlike the former, which are incorporation structures, the latter reflect an adjunction process. Bongartz, on the other hand, while grouping them together, makes a distinction within the category of root compounds between ‘noun compounds’ and ‘prenominal modifiers’; applying syntactic criteria, she shows that the former are incorporation structures but that the latter derive from adjunction (2002, p.29) and claims that this analysis can account for some cases of regular plurals NHNs as in, e.g. *rocks research,*1 as well as non-compound-like stress patterns, e.g. *rice puddi*ng, which are cases of prenominal modification.

Thus, in a unified analysis of root and deverbal compounds, she proposes that the different surface order of nouns in complex DPs and in DP+DP paraphrases is due to the different featural properties of the determiner heading the NHN in the two structures. As illustrated below, in (1a) the D₂ null determiner ∅ has a set value for [-specific] which can be checked in situ by the N₂ (toys), but in (2b) the D₂ null determiner lacks a value for specificity (notated as [µ specific]). On this account, Bongartz supports that the compound is formed because in languages with weak determiner features, like German and English, the NHN moves from its initial position, to the left of the head noun in order to take a value for specificity from D₁ through feature attraction. If determiner features are strong, they can percolate to the non-head; hence there is no need for noun incorporation, as is the case with Romance compounds where the order of the head and the non-head noun is the same as in sentential structure.

Thus *toys factory* is ungrammatical because the N₂ toys cannot check its set value for specificity in the DP₂, and so the derivation crashes. The noun in the DP₂ can be plural only in phrasal combinations but not in incorporation structures. Accordingly, the acquisitional task involves the association of a [µ specific] determiner feature with the lack of plural inflection inside the compound.

In her study, the non-native participants were of three different L1 backgrounds: a) Czech, a language without articles but one which marks number (as well as case and gender) with inflections on nouns and has compounds of the English type, although these are not very productive; b) Chinese,

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1 See Alegre & Gordon (1996) and Pinker (1999) among others.
which has no articles or plural inflections but in which compounds are very productive; and c) German, which has articles, plural inflections and very productive compounds. On the basis of her DP analysis, she predicted that the first two groups, whose languages do not associate plural morphology with specificity features, would use plural NHNs, whereas the Germans would not. However, results disconfirmed the hypothesis, as plural NHNs were produced by all groups, and even more so by the Germans. Because of the differences between the L1s mentioned and, in addition, because German compounds have many plural allomorphs inside them, except the default plural –s, she suggests that these results show an impairment traceable to the L1 D-system and L1 morphology and calls for further research on the nature of the interlanguage D-systems, pointing out that “especially relevant will be evidence from learner intuitions about the referential properties of the incorporated noun in noun-noun compounds which coincide with the ban on regular plurals” (2000, p.181). Here I pursue this with facts from Greek, a language typologically different from all the languages dealt with so far.

2. The Present Study

2.1 Relevant facts from Greek – Experimental evidence

Greek is a highly inflectional language, with overt determiners and overtly realized morphological agreement in number, gender and case between articles, adjectives and nouns (2a). In noun+noun phrasal combinations, the head is on the left and is modified by a noun in the genitive (2b), in a prepositional phrase, or in an appositional construction. These may sometimes alternate (2c).

(2) a. I eksipn-i kopel-a ‘the clever girl’
The-fem,sing,nom clever-fem,sing,nom
b. I —isagog-is (Ø/ton) tsigar-on
The-nom, pl importers-nom, pl (Ø/the-gen, pl) cigarettes-gen, pl ‘cigarette importers’
c. Ena kopad-i (me/apo) provat-a / provat-on
A-nom, sin herd-nom, sing with/from sheep-acc / sheep-gen ‘a herd of sheep’

There is a type of noun combination with characteristics of both compounds and noun phrases. These are left-headed, consist of phonologically and morphologically autonomous words and have internal inflections. However no syntactic operation can affect their internal structure, a characteristic of compounds. Even when there is a determiner in some of them (3c), it is optional, and, according to Anastasiadis-Simeonidis (1986), it is non-referential. Following Ralli (1992), I will call these ‘phrasal compounds’. In some of their categories, there is obligatory number and case agreement (see (3a) but cf. (3b), in others the head noun assigns genitive case to the non-head noun, as in (3c):

(3) a. i léksis - *klidí /klidiá
the-pl,nom words-pl,nom key-sing,nom keys-pl,nom ‘key words’

b. i soupes - manitari / ?manitaria
the-pl,nom soups-pl,nom mushroom-sing,nom mushrooms-pl,nom ‘mushroom soups’

c. ena koutáli (tis) supas
a-sing,nom spoon-sing,nom (the-sing,gen) soup-sing,gen ‘soupspoon’

‘Compounds proper’ are productive single morphophonemic units, formed by combining two stems which are often linked by an inserted vowel -o-. They bear one primary stress, are right-headed and inflections are suffixed on the head (4a,b).

(4) a. to(the) maliotrávighm-a < mali (hair) + o + trúvighma (pulling) ‘hair tearing’

b. to(the) rızálevr-o < rizi (rice) + alévri (flour) ‘rice flour’

2 Although the status of –s as a default plural in German had been questioned; see Lardiere (op. cit.) and Dressler et al. (1999) among others.
According to the facts above, and assuming that Bongartz’s analysis is correct, the underlying representation for (1b) should be the same for Greek compounds too. This leads to the following hypothesis:

**H:** Because their L1 associates plural morphology with specificity features and, in addition, no affixes are allowed inside L1 compounds, the Greek learners will not ascribe referential features to NHNs and will not use regular plurals inside compounds.

### 2.2 Method

The participants were 30 intermediate and 30 advanced Greek learners of English, as well as 20 L1 English controls, all adults. The tasks were done on an individual basis, and consisted of a grammaticality judgement task (GJT) and a referentiality judgement task (RJT) taken in this order (see Appendix).

In the GJT participants read sentences one at a time, while they also listened to them at intervals of 3 seconds. These had been recorded by a native speaker, were randomized, and controlled for length as well as simplicity of vocabulary. Out of 72 items in total, 36 included the compound forms under investigation (18 ungrammatical with their 18 grammatical counterparts) and 36 distractors. There were 6 regular plurals inside 3 root and 3 deverbal compounds, and within the two categories each compound was headed by a different determiner (i.e. a, the, Ø). Only those headed by a null determiner had plural head-nouns. All compounds were novel or at least as little infrequent as possible. First, participants were presented with a detailed instruction sheet which informed them that they would have to judge sentences by ticking a number from -2 to +2 which corresponded to definitely incorrect, rather incorrect, I’m not sure, rather correct, definitely correct. Before they started, they had some practice with examples and it was made clear that they were asked to judge whether they liked it, rather than think of grammar rules.

The RJT was a preference task with 3 options for each item; participants had to tell whether the pronoun ‘it’ could refer to the non-head noun in a complex DP, in a DP+DP paraphrase, or in either of them. These were later coded on a scale of 1 to 3 with 3 as the correct answer, corresponding to the second choice. This task consisted of 12 items in total, which included 3 deverbal, 3 root compounds, and 6 distractors.

### 3. Results and Discussion

A statistical analysis of total results in the RJT (Table 1) shows significant differences between the non-natives and the controls (C), and no differences between the non-native groups.

| Table 1: Successful performance (SP) in Referentiality Judgements |
|---|---|---|---|---|
| Levels | SP | SD | Levels | MD |
| C (n=20) | 80%(96/120) | .2682 | C-ADV: | .2222* |
| ADV(n=30) | 61%(110/180) | .3439 | C-INTER: | .3722* |
| INT (n=30) | 51%(91/180) | .2991 | ADV-INTER: | .1500 |

*SD=standard deviation, MD=mean difference, *mean difference is significant at the .05 level

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3 They were classified in groups of proficiency according to their scores in the OPT (Allan, 1992).
4 These took place after a picture elicitation task, in which, too, Greek participants produced N1 regular plurals.
5 The rest included irregular plural and –s genitive NHNs.
6 I am fully aware of the difficulty involved in testing reference, but note that it is equally difficult to do so either with non-natives or natives. I also report here that all groups fared almost equally well on distractors.
7 The method of statistical analysis used was a two-way ANOVA followed by Bonferroni and Scheffe tests.
Total results in the GJT (Table 2) reveal statistically significant differences between the non-natives and the controls and no differences between the non-native groups in their acceptance of regular plural NHNs; importantly, they also reveal an article- and/or head noun- related effect (see Table 3), as the only significant difference between the non-native groups was with respect to mean judgements on bare plurals, where intermediates fared significantly worse than in compounds headed by the indefinite article. Also, although not always statistically significant, note that both non-native groups present an article-related gradience. Finally, results show no root/deverbal discrepancy (Table 4), despite the already mentioned differences in child data and those discussed in theoretical analyses.

Table 2: Acceptance of regular plural NHNs

<table>
<thead>
<tr>
<th>Levels</th>
<th>AP (n=20)</th>
<th>SD</th>
<th>MD</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>14.16% (17/120)</td>
<td>.5970</td>
<td>C-ADV: -1.0583*</td>
</tr>
<tr>
<td>ADV(n=30)</td>
<td>36.66% (66/180)</td>
<td>.8847</td>
<td>C-INTER: -1.6083*</td>
</tr>
<tr>
<td>INT (n=30)</td>
<td>56.66 (102/180)</td>
<td>.9878</td>
<td>ADV-INTER: -.5500</td>
</tr>
</tbody>
</table>

AP=acceptance percentage, *mean difference is significant at the .05 level

Table 3: Article/Head noun effect in acceptance of regular plural NHNs

<table>
<thead>
<tr>
<th>Controls</th>
<th>Advanced</th>
<th>Intermediate</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+N1plural+N2singular</td>
<td>8% (3/40)</td>
<td>25% (15/60)</td>
</tr>
<tr>
<td>The+N1plural+N2singular</td>
<td>22.5% (9/40)</td>
<td>38.33% (23/60)</td>
</tr>
<tr>
<td>Ø+N1plural+N2plural</td>
<td>10% (5/40)</td>
<td>47% (28/60)</td>
</tr>
</tbody>
</table>

Table 4: Acceptance of regular plural NHNs

<table>
<thead>
<tr>
<th>Controls</th>
<th>Advanced</th>
<th>Intermediate</th>
</tr>
</thead>
<tbody>
<tr>
<td>In root compounds</td>
<td>13.33% (8/60)</td>
<td>31.11% (28/90)</td>
</tr>
<tr>
<td>In deverbal compounds</td>
<td>15% (9/60)</td>
<td>42.22% (38/90)</td>
</tr>
</tbody>
</table>

Results from both tasks show that learners accept regular plural N1s because they view them as referential and the hypothesis is disconfirmed. Subsequently, Bongartz’s analysis of compound formation does not seem valid. Moreover, this analysis seems problematic for other reasons too. In addition, Bongartz’ suggestion seems problematic for other reasons, too. I briefly mention here that irregular NHNs had a total acceptance of about 41%, 74% and 82% by the control, the advanced and the intermediate groups respectively. So, first, how can the DP analysis account for such a high acceptance of plural NHNs, whose occurrence indicates a [-specific] set value of the D2-feature, regardless of whether they are irregular? Second, what can the status of this [μ specific] D2-feature be with respect to learnability considerations? Third, what kind of feature value does the noun get from the D1 either when it moves, through attraction, or in situ, through percolation?

It seems that we are left without a convincing syntactic account of compounds. Besides, all known analyses of Greek compounds regard them as morphological objects. For instance, Kakouriou et al. (1997) as well as Smirniotopoulos & Joseph (1998) following Baker’s (1988) definition of incorporation, maintain that because incorporated items in composite forms in Greek are not referential, as happens in true incorporating languages, Greek compounding is not a syntactic phenomenon; on the same grounds, Spencer remarks that “very little is gained by treating Greek incorporation as syntactic” (1995: 461, mentioned in Smirniotopoulos & Joseph 1998). They also claim that it cannot be the result

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8 In the case of compounds headed by ‘the’ they differ with respect to one item only. This, however, may be due to the high acceptance of plural NHNs in this category by the controls. See footnote 10.
9 This was so in Bongartz’s study, too.
10 This is the mean of a 20% and 25% acceptance rate of the towels box and the snakes trainer respectively. Although I have no explanation for such a high percentage of acceptance here, evidently it does not correlate with variation in the non-native judgements.
11 With the sole exception of Rivero (1992), who supports the view that adverb incorporation in Greek compounds is syntactic.
of syntactic rules because, in addition, compounds are not quite productive. A lengthy discussion on these matters is beyond the scope of the present paper, so I will limit myself to a few points: In Greek, although compounding seems to be very productive, it is much more usual to modify a noun by an adjective or by another noun in the genitive. Also, in translating compounds from English into Greek, if neither of these two structures is employed - although novel compounds are sometimes coined - the most usual option is phrasal compounds. Ralli remarks that “This may be due to the fact that their internal structure does not involve any application of phonological amalgamation process” (1992:172). In addition - and most probably due to the same factor12 - though L1 English children start forming novel compounds from age 2 (see Clark et al., 1986), to my knowledge, no such forms are attested in L1 Greek child acquisition studies.

However, to assume that English compounds are syntactic but Greek compounds morphological objects on elusive measures of productivity would be undesirable and, anyway, most view English compounding too as a lexical process. For all these reasons, I assume that compounds in both languages result from lexical incorporation, and are morphological (X0) objects, having the general structure:

(5) \[ \text{Word} \rightarrow \text{Stem Word} \]

Nevertheless, this analysis cannot account for the interlanguage data either, as it views compounds the same in L1 and in L2. Unless the learners themselves do not identify them as the same, for a very simple reason: In Greek, a highly inflectional language, NHNs in compounds are obviously stems, but in English there is no difference between stems and singular nouns. If this is the case, the results can be explained as follows: The interlanguage compounds reflect a) mere juxtaposition (or adjunction) of two words, which explains why they accept plural NHNs in general, and b) application of L1-type agreement relations. Therefore I suggest that the compounding interlanguage representation is as in (7).

(6) e.g. *flies nets

The functional category (FP) in the diagram proposed for various languages, has been postulated for Greek to host among other things, evaluative/descriptive adjectives (Ralli & Stavrou 1998; Giannakidou & Stavrou 1999). For the present purposes and in line with Panagiotidis (2000) I call it Num(ber) and I assume that it has strong features in Greek, in connection with the rich morphology of the language. For instance, as already shown, adjectives agree overtly with the nouns they modify in number (as well as case and gender). Also recall that in a very productive category of N-N phrasal compounds (3a), there is overt agreement between their members. So (6) depicts what causes non-target forms: Both the modifying noun N2 and the head noun N1, attracted by the strong [Num] feature, raise from their initial positions (the latter in two successive movements) and adjoin at the head of FP,

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12 Note also that Greek compounds are polysyllabic words with one stress, e.g. mirmig-o-foliá (=ánt hôle). This makes their production a difficult task for young children.
F[Num]. Thus there is number agreement between the dependency D – F – N and between modifiers and members of the dependency; hence, the higher acceptance of plural NHNs in bare plurals.

4. Conclusion

I have shown that a DP account which presumes a role for D-features in compounds and, consequently, a cross-linguistic effect on the basis of this, is questionable. Nevertheless, I must acknowledge my debt to Bongartz’s DP analysis for giving me the idea of investigating interlanguage compounds as linked with a possible article effect. This showed that L1 feature strength of functional categories in syntax can affect interlanguage lexical formation. Here I briefly mention that, in results from a picture elicitation task in the same study, the advanced learners did not differ from the control group. Judging by this, one could have assumed that the relevant impairment is remediated at a later developmental stage. However the other two tasks reveal that the target-like forms of the advanced participants do not reflect native-like representations, as is often the case in second language acquisition studies.

In line with Roberts and Roussou (1999), I see feature strength as linked with morphophonological realization. In Greek, strength of functional elements is manifested through a PF reflex in the form of, for example, modifier-head number agreement morphemes. The [Num] feature of the agreement functional category, which is strong in Greek and weak in English, constitutes a parametric difference with ramifications extending to the domain of morphological processes presumably the same in L1 and L2. Therefore L1/L2 parametric differences with respect to the feature strength of functional categories may cause a local impairment. Finally I suggest that this analysis could probably be extended to account for English plural NHNs in compounds in other interlanguage studies which involve L1s with strong number agreement features between heads and modifiers. This would require a multiplicity of tasks to elucidate the nature of non-native-like interlanguage representations.

Appendix

A. Sentences with non-target compounds used in the Grammaticality Judgement Task:

Jack and Mary are shoes exporters.
The children made a bananas bag.
The snakes trainer had an accident.
Your book is on the towels box.
After the party I called a carpets cleaner.
Flies nets are very useful in the summer.

B. Example from the Referentiality Judgement Task:

1. In which of the following sentences is ‘it’ more likely to refer only to ‘radio’?
   (a) The radio music made him throw it out of the window.
   (b) The music on the radio made him throw it out of the window.
   A. In sentence (a)       B. In sentence (b)       C. No difference

References

Anastasiadi-Symeonidi, Anna. (1986). Neology in Modern Greek koine (in Greek). Thessaloniki, Greece.


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