The Acquisition of Verbal and Nominal Suffixes by Greek Learners of Turkish

1. Introduction

Inconsistent use of inflection has been observed not only in early first-language (L1) acquisition but also in the grammars of second-language (L2) learners. The variability in the use of inflection in the L1 and L2 grammars has instigated a lengthy debate on the nature of functional categories and the features associated with the missing inflectional elements. The debate is grounded on the fact that L2 learners exhibit variability or even optionality in the use of verbal (e.g. tense, agreement) and nominal (e.g. case, gender) morphology as well as in the use of functional elements like auxiliaries, complementizers and determiners.

According to a number of researchers, functional categories are initially absent in the grammars of L2 learners and develop gradually as acquisition proceeds on the basis of positive evidence from the morphological paradigm of the input language. For example, Vainikka & Young-Scholten (1994; 1996) argue that only lexical categories are present in early stages of L2 acquisition. The impoverished agreement paradigm in Korean and Turkish L2 speakers of German, complemented by

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the absence of verb raising, the lack of auxiliaries, modals, and other functional words, provide evidence in support of this view. According to this approach, the underspecified functional projection (FP) of early acquisition is gradually replaced by a fully specified IP/AgrP, which, in turn, is followed by a CP level. In a recent reformulation of Vainikka & Young-Scholten’s account, known as Organic Grammar, early L2 grammars consist of minimal trees that consist of lexical categories of the type found in L1-acquisition. Such minimal trees become the target in L2 and fully develop when new linguistic evidence becomes available to the learner during the course of acquisition (Vainikka & Young-Scholten 2006; 2007; 2009).

In contrast, other L2 theories propose that all functional projections are transferred already at the initial stage of acquisition from the L1 to the L2. This view, broadly known as the Full Transfer / Full Access Hypothesis (Schwartz & Sprouse 1994; 1996), implies that L2 development is guided by the Universal Grammar. The morphological variability observed in the L2 grammar, therefore, is not due to an impairment in the underlying representations of L2 learners but it rather reflects a disparity in the realization of surface morphology. According to this view, therefore, mistakes in inflectional suffixes are attributed to a mapping problem between syntactic projections or features and the morphological forms they correspond to (cf. the so-called Morphological Deficit accounts; Lakshmanan 1993; Gavruscva & Lardiere 1996; Grondin & White 1996; Haznedar 1997; Haznedar & Schwartz 1997; Lardiere 1998a; 1998b; White 1998; Prévost & White 2000; Haznedar 2006). For instance, White (2003) reports on production data from a Turkish learner of English, which demonstrate a high level of accuracy in the verbal domain and a relatively lower level in the use of definite and indefinite articles. Interestingly, based on the fact that the syntactic properties associated with the verbal (i.e. argument drop, verb placement) and the nominal (i.e. +/- definiteness) domains are not impaired, White attributes the optionality attested in the L2 data to problems in the morphological realization of such features rather than to the structural deficiency of the underlying syntactic representations.

With respect to final stages of L2 acquisition, approaches such as the Failed Functional Features Hypothesis (Hawkins & Chan 1997; Hawkins & Hattori 2006) and the Interpretability Hypothesis (Tsimpli 2003; Tsimpli & Dimitrakopoulou 2007) assume a more localized representational deficit in L2 grammars and, in particular, one that affects uninterpretable features which are not grammaticalized in the L1. For instance, Tsimpli & Dimitrakopoulou (2007) compared the performance of Greek speakers of English on acceptable gaps and unacceptable resumptive pronouns in *wh*-questions. They concluded that the resumption strategy is active in the L2 due to L1 interference and, moreover, it is affected by the interpretability of the features involved. Moreover, Hawkins & Hatori (2006) investigated the interpretation of bi-clausal *wh*-questions by Japanese speakers of English and found that the uninterpretable feature involved in English *wh*-questions, which is absent in Japanese, was not fully acquired by the learners.
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The aim of the present study is to explore the acquisition of case and verbal suffixation of Turkish by Greek learners and provide novel data that would, hopefully, highlight important questions on the ongoing debate regarding the L2 acquisition of syntactic features and their morphological realization. At the same time, our research aims at (a) investigating whether there is a split in the acquisition of case and verbal inflection of Turkish by speakers of Greek and (b) unearthing the reasons which lie behind this discrepancy. For this purpose, we conducted three experimental tasks, a cloze-task, a sentence-picture matching task and an on-line grammaticality judgment task. Before we move on to reviewing the results of the experimental component of our research, we present a short overview of the case and verbal suffixation in Turkish and Greek.

2. Inflectional suffixation in Turkish and Greek

2.1 Case suffixation

Both Greek and Turkish employ morphological case in order to mark certain grammatical functions and categories. In what follows, we discuss the case systems of the two languages with focus on the cases associated with the subject and the direct object of main clauses, which is the topic under investigation in this article.

2.1.1 Turkish

Turkish morphology distinguishes six cases, namely nominative, accusative, genitive, dative, ablative and locative. As an agglutinative language, Turkish exhibits transparent morphological marking. This entails that the category of case is marked with distinct specialized suffixes that appear at the end of the nominal element. Case allomorphy is phonologically determined, since the suffixal vowel is subjected to vowel-harmony, whereas the presence or absence of an initial consonant and its voicing value depends on the segmental and featural composition of the final syllable of the preceding root (Lewis 2000; Göksel & Kerslake 2005). The formatives for each case and their various phonological outputs are given in [1]:

<table>
<thead>
<tr>
<th>nominative</th>
<th>accusative</th>
<th>genitive</th>
<th>dative</th>
<th>ablative</th>
<th>locative</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Ø</td>
<td>-(y)I → -(y)i,</td>
<td>-(n)In → -(n)ın,</td>
<td>-(y)A → -(y)a,</td>
<td>-DA → -da,</td>
<td>-DA → -da,</td>
</tr>
<tr>
<td></td>
<td>-(y)u, -(y)i,</td>
<td>-(n)un, -(n)ın,</td>
<td>-y)</td>
<td>-dan, -den,</td>
<td>-de, -ta, -te</td>
</tr>
<tr>
<td></td>
<td>-(y)ı</td>
<td>-(n)ın</td>
<td></td>
<td>-tan, -ten</td>
<td></td>
</tr>
</tbody>
</table>

The main functions of these case suffixes are the following (Kornfilt 1997; Göksel & Kerslake 2005):

[2] nominative: subject

Hasan-Ø uyandı
Hasan-nom wake up-past
‘Hasan woke up’
D. PAPADOPOULOU, S. VARLOKOSTA, V. SPYROPOULOS, H. KAILI et al.

[3] accusative: object
Ali Hasan-ı gör-dü
Ali Hasan-ACC see-PAST
‘Ali saw Hasan’

Hasan-un kitab-ı
Hasan-GEN book-3SG
‘Hasan’s book’

[5] dative: indirect object, direction
Ali kitab-ı Hasan-a ver-di
Ali book-ACC Hasan-DAT give-PAST
‘Ali gave the book to Hasan’

[6] ablative: origin, source
Hasan Ankara-dan gel-di
Hasan Ankara-ABL come-PAST
‘Hasan came from Ankara’

[7] locative: location
kitap masa-da
book table-LOC
‘The book is on the table’

2.1.2 Greek

Greek distinguishes three cases: nominative, which is the case for the subject (cf. [8]), accusative, which prototypically marks the direct object (cf. [9]), and genitive, which predominantly marks oblique arguments (cf. [10a]) and adnominal functions, such as the possessive (cf. [10b]), etc. (Holton, Mackridge & Philippaki-Warburton 1997).

[8] o yianis kimate
the-NOM John-NOM sleep-3SG
‘John is sleeping’

[9] o filakas xtipise to yiani
the-NOM guard-NOM hit-PAST.3SG the-ACC John-ACC
‘The guard hit John’

[10]
a. i maria edose tu yiani ena fili
the-NOM Maria-NOM give-PAST.3SG the-GEN John-GEN a-ACC kiss-ACC
‘Maria gave a kiss to John’
b. o fakos tu filaka
the-NOM torch-NOM the-GEN guard-GEN
‘The guard’s torch’

Moreover, Greek employs prepositional phrases to express the indirect object (cf. [11]) as well as functions such as origin/source (cf. [12]) and location (cf. [13]).
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[11]  o alì edose sto xasan to vivlio
the-NOM Ali-NOM give-PAST.3SG to.the-ACC Hasan-ACC the-ACC book-ACC
‘Ali gave the book to Hasan’

[12]  o xasan irθe apo tin agira
the-NOM Hasan-NOM come-PAST.3SG from the-ACC Ankara-ACC
‘Hasan came from Ankara’

[13]  to vivlio ine sto trapezi
the-NOM book-NOM is on-the-ACC table-ACC
‘The book is on the table’

Due to the synthetic character of its morphology, Greek exhibits a great degree of fusion in the marking of grammatical categories. Case is fused with number and there is extensive lexically determined allomorphy depending on the inflectional class the relevant noun belongs to (Ralli 2000). Thus, for the same case, there are different formatives for the singular and the plural (andr-as ‘man-NOM.SG’, andr-es ‘men-NOM.PL’) as well as for different inflectional classes (andr-as ‘man-NOM.SG’, naft-is ‘sailor-NOM.SG’).

2.2 Tense and subject agreement suffixation

Both Greek and Turkish involve morphological exponents for marking the tense and the subject agreement of the verb. The basic difference is that Greek, being a synthetic language, uses fused formatives for tense and subject agreement, whereas Turkish as an agglutinative language employs separate formatives for marking these features.

2.2.1 Turkish

Turkish has three basic tense suffixes: one for present, one for past and one for future. Like case, tense and subject-verb agreement, allomorphy is phonologically determined, i.e. the suffixal vowel is also subject to vowel-harmony, whereas the voicing of the initial consonant depends on the segmental and featural composition of the final syllable of the preceding root (Lewis 2000; Göksel & Kerslake 2005). The formatives for each tense and their various phonological outputs are given in [14]–[16]:

[14]

a. Present
   -(I)yör → -(I)yör, -(U)yör, -(I)yör, -(I)ıyör
b. Fatma şimdi oku-yör
   Fatma now read-PRES
   ‘Fatma is reading now’

[15]

a. Past
   -DI → -di, -du, -di, -ti, -tu, -ti, -tı
b. Dün tiyatroya git-tı
   yesterday theatre-DAT go-PAST
   ‘S/he went to the theatre yesterday’

[ 381 ]
Subject-agreement suffixes occur after the various tense, aspect and modality suffixes. There are two subject-verb agreement paradigms, as shown in Table 1:

<table>
<thead>
<tr>
<th></th>
<th>Paradigm 1</th>
<th>Paradigm 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SG</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>-m</td>
<td>-(y)lm</td>
</tr>
<tr>
<td>2</td>
<td>-n ~ nlz (formal)</td>
<td>-sln ~ -slnlz (formal)</td>
</tr>
<tr>
<td>3</td>
<td>-Ø</td>
<td>-Ø</td>
</tr>
<tr>
<td><strong>PL</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>-k</td>
<td>-(y)lz</td>
</tr>
<tr>
<td>2</td>
<td>-nlz</td>
<td>-slnlz</td>
</tr>
<tr>
<td>3</td>
<td>(-lAr)</td>
<td>(-lAr)</td>
</tr>
</tbody>
</table>

Table 1: Subject-verb agreement paradigms in Turkish

Each paradigm is selected by certain tense, aspect and modality formatives. As far as tense is concerned, the suffixes of paradigm 1 are selected by the past suffix, whereas the suffixes of paradigm 2 are selected by the suffixes of present and future.

2.2.2 Greek

Tense and subject-verb agreement are fused in Greek and expressed by the same formative. As far as tense is concerned, Greek morphologically distinguishes between past and non-past. There are two groups of suffixes, one for the non-imperative and another for the imperative. Tense distinctions are only relevant for the first group of endings, which involves four paradigms of suffixes expressing tense, subject-verb agreement and voice. Different sets of suffixes are employed by each of the two conjugations. For the sake of convenience we present the suffixes relevant to the first conjugation in Table 2:

<table>
<thead>
<tr>
<th></th>
<th>Group A: – imperative</th>
<th>Group B: + imperative</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Par(adigm) 1</td>
<td>Par 2</td>
</tr>
<tr>
<td></td>
<td>– past</td>
<td>+ past</td>
</tr>
<tr>
<td><strong>1SG</strong></td>
<td>-o</td>
<td>-a</td>
</tr>
<tr>
<td><strong>2SG</strong></td>
<td>-is</td>
<td>-es</td>
</tr>
<tr>
<td><strong>3SG</strong></td>
<td>-i</td>
<td>-e</td>
</tr>
<tr>
<td><strong>1PL</strong></td>
<td>-ume</td>
<td>-ame</td>
</tr>
<tr>
<td><strong>2PL</strong></td>
<td>-ete</td>
<td>-ate</td>
</tr>
<tr>
<td><strong>3PL</strong></td>
<td>-un(e)</td>
<td>-an(e)</td>
</tr>
</tbody>
</table>

Table 2: Subject-verb agreement formatives of 1st conjugation verbs in Greek
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3. The present study

Case and verb suffixation were investigated by means of three tasks: a written elicitation, an on-line grammaticality judgment and a sentence-picture matching task. The learners of Turkish who participated in our study were all native speakers of Greek. They started learning Turkish as a foreign language at the Department of Mediterranean Studies of the University of the Aegean and they were all post-puberty learners. Their exposure to Turkish is through instruction and none of them had spent more than six months in a Turkish-speaking environment when tested. The L2 learners have been divided into three proficiency levels based on whether they were attending the first, second or third level of studies on the Turkish language at the University at the time of testing. More specifically, the beginners (level I) had attended Turkish lessons for two years, the low intermediates (level II) for three years and the high intermediates (level III) for four years. The courses on Turkish in each proficiency level lasted for 24 weeks, 6 hours per week. All three tasks have also been administered to 16 native speakers of Turkish (13 females & 3 males; mean age: 29,75 years). In what follows, we present the method and the findings from each task.

3.1 Written elicitation task

The written elicitation task has been conducted with 35 beginner, 37 low intermediate and 39 high intermediate learners of Turkish.

3.1.1 Method

The written elicitation task consisted of a text created by two native speakers of Turkish and contained 61 gaps. All the gaps involved nominal and verbal morphemes denoting case, number, tense and person. More specifically, there were 31 gaps for case suffixes and 30 for verbal (1st & 3rd singular of imperfective present and perfective future as well as 1st singular and 3rd plural of perfective past) suffixes. The accusative case morpheme was tested in definite direct object positions (4 gaps), where non-specific objects had to be left unsuffixed (2 gaps). The dative suffix was required in 11 gaps, the genitive suffix in 4, the locative suffix in 6 and the ablative suffix in 5 gaps.

3.1.2 Results

The native speakers did not produce any errors in this task. The learners’ correct percentages on verbal suffixes are presented in Graph 1:
The data in Graph 1 indicate a clear developmental effect, which is statistically significant; namely, the beginners are significantly worse than the low intermediates (Agreement: $\chi^2=109.436; p<.001$, Tense: $\chi^2=91.416; p<.001$), who are significantly worse than the high intermediates (Agreement: $\chi^2=108.743; p<.001$, Tense: $\chi^2=63.676; p<.001$).

Turning to the data from the case suffixes (see Graph 2), the learners’ performance also improves in higher proficiency levels with the exception of non-specific direct objects (Accusative: I vs II: $\chi^2=11.647; p<0.01$, II vs III: $p>.1$, I vs III: $26.337; p<0.001$, Non-specific objects: $p>.1$ in all comparisons; Dative: I vs II: $\chi^2=5.140; p<.03$, II vs III: $\chi^2=28.593; p<.001$, I vs III: $\chi^2=56.100; p<.001$, Locative: I vs II: $p>.1$, II vs III: $\chi^2=10.803; p<.01$, I vs III: $\chi^2=11.855; p<.01$, Ablative: I vs II: $\chi^2=5.613; p<.02$, II vs III: $\chi^2=7.777; p<.01$, I vs III: $\chi^2=25.917; p<.001$, Genitive: I vs II: $\chi^2=78.696; p<.001$, II vs III: $\chi^2=12.663; p<.001$, I vs III: $\chi^2=139.198; p<.001$).

Moreover, we compared the learners’ accuracy on the verbal and case suffixes. As the data in Graph 3 indicate, all proficiency groups performed significantly better on the verbal than the case suffixes (beginners: $\chi^2=56.016, p<.001$, low intermediates: $\chi^2=253.831, p<.001$, high intermediates: $\chi^2=447.324, p<.001$).
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Graph 3: Cloze task (learners’ performance on verbal vs case suffixes)

Furthermore, error analyses have been performed for every case tested. Table 3 portrays the accuracy scores as well as the error patterns for each case suffix per proficiency level:

<table>
<thead>
<tr>
<th>Required suffixes</th>
<th>Given suffixes</th>
<th>ACC</th>
<th>Ø</th>
<th>DAT</th>
<th>LOC</th>
<th>ABL</th>
<th>GEN</th>
<th>OTHER</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accusative</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level I</td>
<td>29 (21%)</td>
<td>74 (53%)</td>
<td>20 (14%)</td>
<td>12 (8.5%)</td>
<td>0</td>
<td>0</td>
<td>5 (3.5%)</td>
<td>140</td>
<td></td>
</tr>
<tr>
<td>Level II</td>
<td>58 (39%)</td>
<td>68 (46%)</td>
<td>7 (5%)</td>
<td>3 (2%)</td>
<td>1 (0.5%)</td>
<td>1 (0.5%)</td>
<td>9 (6%)</td>
<td>148</td>
<td></td>
</tr>
<tr>
<td>Level III</td>
<td>77 (49%)</td>
<td>60 (38%)</td>
<td>7 (5%)</td>
<td>3 (2%)</td>
<td>0</td>
<td>0</td>
<td>9 (6%)</td>
<td>156</td>
<td></td>
</tr>
<tr>
<td>3 Levels</td>
<td>164 (37%)</td>
<td>202 (45%)</td>
<td>34 (8%)</td>
<td>18 (4%)</td>
<td>1 (0.5%)</td>
<td>1 (0.5%)</td>
<td>24 (5%)</td>
<td>444</td>
<td></td>
</tr>
<tr>
<td>Non-spec DO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level I</td>
<td>4 (6%)</td>
<td>53 (75%)</td>
<td>4 (6%)</td>
<td>4 (6%)</td>
<td>0</td>
<td>0</td>
<td>5 (7%)</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>Level II</td>
<td>10 (14%)</td>
<td>47 (64%)</td>
<td>1 (1%)</td>
<td>1 (1%)</td>
<td>0</td>
<td>0</td>
<td>15 (20%)</td>
<td>74</td>
<td></td>
</tr>
<tr>
<td>Level III</td>
<td>19 (24%)</td>
<td>48 (62%)</td>
<td>1 (1%)</td>
<td>0</td>
<td>0</td>
<td>1 (1%)</td>
<td>9 (12%)</td>
<td>78</td>
<td></td>
</tr>
<tr>
<td>3 Levels</td>
<td>33 (15%)</td>
<td>148 (67%)</td>
<td>6 (2.5%)</td>
<td>5 (2%)</td>
<td>0</td>
<td>1 (0.5%)</td>
<td>29 (13%)</td>
<td>222</td>
<td></td>
</tr>
<tr>
<td>Dative</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level I</td>
<td>19 (5%)</td>
<td>147 (38%)</td>
<td>110 (29%)</td>
<td>69 (18%)</td>
<td>14 (3%)</td>
<td>0</td>
<td>26 (7%)</td>
<td>385</td>
<td></td>
</tr>
<tr>
<td>Level II</td>
<td>33 (8%)</td>
<td>97 (24%)</td>
<td>147 (36%)</td>
<td>88 (22%)</td>
<td>7 (1.5%)</td>
<td>9 (2%)</td>
<td>26 (6.5%)</td>
<td>407</td>
<td></td>
</tr>
<tr>
<td>Level III</td>
<td>25 (6%)</td>
<td>53 (12%)</td>
<td>234 (55%)</td>
<td>63 (15%)</td>
<td>9 (2%)</td>
<td>8 (2%)</td>
<td>37 (8%)</td>
<td>429</td>
<td></td>
</tr>
<tr>
<td>3 Levels</td>
<td>77 (6%)</td>
<td>297 (24%)</td>
<td>491 (41%)</td>
<td>220 (18%)</td>
<td>30 (2.5%)</td>
<td>17 (1.5%)</td>
<td>89 (7%)</td>
<td>1221</td>
<td></td>
</tr>
<tr>
<td>Locative</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level I</td>
<td>9 (4.5%)</td>
<td>80 (38%)</td>
<td>16 (8%)</td>
<td>85 (40%)</td>
<td>12 (6%)</td>
<td>1 (0.5%)</td>
<td>7 (3%)</td>
<td>210</td>
<td></td>
</tr>
<tr>
<td>Level II</td>
<td>13 (6%)</td>
<td>65 (29%)</td>
<td>25 (11%)</td>
<td>92 (41%)</td>
<td>7 (3%)</td>
<td>9 (4%)</td>
<td>11 (6%)</td>
<td>222</td>
<td></td>
</tr>
<tr>
<td>Level III</td>
<td>13 (6%)</td>
<td>27 (11%)</td>
<td>27 (11%)</td>
<td>133 (57%)</td>
<td>7 (3%)</td>
<td>9 (4%)</td>
<td>18 (8%)</td>
<td>234</td>
<td></td>
</tr>
<tr>
<td>3 Levels</td>
<td>35 (5%)</td>
<td>172 (26%)</td>
<td>68 (10%)</td>
<td>310 (47%)</td>
<td>26 (4%)</td>
<td>19 (3%)</td>
<td>36 (5%)</td>
<td>666</td>
<td></td>
</tr>
</tbody>
</table>
As shown in Table 3, the omission rates of the case suffixes are relatively high. However, the error patterns in each case suffix indicate that the speakers have some knowledge of its function, since the suffix they use shares certain properties with the grammatical one. More specifically, the dative suffix is used over the one for the accusative since both formatives are employed to denote objects. In non-specific objects, the accusative suffix is the one which is overgeneralised; this indicates that the learners have linked the formative with its syntactic function. Furthermore, the locative suffix is overused in dative and ablative contexts, whereas in locative contexts the dative morpheme is overgeneralised. These overgeneralizations indicate that the learners are aware of the adverbial functions of these suffixes, but confuse their specific uses, also because adverbial relations are encoded by means of PPs in Greek.

### 3.2 On-line grammaticality judgment task

The on-line grammaticality judgment task has been conducted with 14 beginner, 14 low intermediate and 28 high intermediate learners of Turkish.

#### 3.2.1 Method

The on-line grammaticality judgment (GJ) task consisted of 48 test sentences, 24 grammatical and 24 ungrammatical; 4 practice items were also used. All sentences consisted of 3 words. In this article, we focus on items (18 ungrammatical and 6 grammatical) which involved case (9 items) and verb morphology (9 items). The grammatical items contained predication constructions, negative sentences and sentences consisting of a subject, a PP and a verb. The ungrammaticalities involved either erroneous case suffixes, as in [17], or subject-verb agreement violations, as in [18].

1 Bold letters indicate correct performance.
2 See Papadopoulou et al. (forthcoming) for a lengthy discussion on the findings of this task.
The experiment was designed through the e-prime paradigm (Schneider, Eschman & Zuccolotto 2002). The subjects read the sentences on a computer screen. Each word automatically appeared in the middle of the screen and remained there for 2 seconds. At the end of each sentence, a question mark appeared “?” at which point the subjects had to judge the grammaticality of the sentence they had read in 4 seconds. If no response was given after 4 seconds, the experiment continued with the presentation of the next sentence. There was a familiarization phase of 10 trials before each session.

3.2.2 Results

The accuracy percentages on the grammatical and the ungrammatical sentences are depicted in Graph 4:

![Graph 4: On-line GJ task (participants' performance on grammatical and ungrammatical sentences)](image)

An ANOVA with Grammaticality (grammatical vs ungrammatical sentences) as the within-subjects factor and with Group (native speakers vs beginners vs low vs high intermediates) as the between-subjects factor revealed (i) a significant main effect of Grammaticality (F(1,68)=20.392; p<.001; η²=0.231), due to the fact that overall the grammatical sentences were judged significantly more accurately than the ungrammatical ones; (ii) a significant Group effect (F(3,68)=23.275; p<.001; η²=0.507).
Planned post-hoc comparisons showed that the Group effect is due to the fact that (a) the native speakers performed significantly better than all L2 groups \((p<.001)\); (b) the beginners performed significantly worse than the high intermediate group \((p<.03)\). One-way ANOVAs performed on each proficiency level showed that the grammatical sentences were judged significantly better than the ungrammatical ones only by the low \((F(1,26)=6.782; p<.02)\) and the high \((F(1,55)=19.383; p<.001)\) intermediate groups.

Furthermore, we performed separate analyses on the ungrammatical sentences to explore whether a specific type of ungrammaticality is more problematic for the L2 learners tested. Graph 5 illustrates the accuracy percentages for the sentences involving erroneous verbal and case suffixes per proficiency group:

**Graph 5: On-line GJ task (participants’ performance on ungrammatical sentences)**

A two-way ANOVA with Structure as the within-subjects factor and Group as the between-subjects factor revealed a significant main effect for Structure \((F(2,67)=28.589; p<.001; \eta^2=0.460)\) and Group \((F(3,68)=20.526; p<.001; \eta^2=0.475)\), as well as a significant interaction between Structure and Group \((F(3,68)=9.233; p<.001; \eta^2=0.289)\). The Bonferroni post-hoc comparisons showed that all L2 groups performed significantly worse than the native speakers \((p<.001)\), whereas the L2 groups did not significantly differ from each other \((p>.1)\). Furthermore, one-way ANOVAs performed on each ungrammatical structure revealed significant group effects (Verbal morphemes: \(F(3,68)=3.902; p<.05\); Case: \(F(3,68)=40.034; p<.001\)). Nevertheless, the Bonferroni post-hoc comparisons illustrated that the native speakers significantly differed from all L2 groups in the ungrammatical sentences involving erroneous case suffixes \((p<.001)\), whereas they were significantly different only from the beginners in the sentences involving erroneous verbal suffixes. This finding reaffirms the discrepancy between the nominal and the verbal domain also attested in the results from the cloze-task.
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3.3 Sentence-picture matching task

The sentence-picture matching (SPM) task was conducted with 9 beginner, 20 intermediate and 19 high intermediate learners of Turkish.

3.3.1 Method

The SPM task contained 42 items. For the purpose of this article, we focus on the results from 24 sentences which involved case morphology. More specifically, 6 sentences involved specific direct objects marked with the accusative (cf. [19]), 6 sentences involved indirect objects marked for dative and direct objects marked for accusative (cf. [20]), 6 sentences involved nouns in dative denoting the direction of motion (cf. [21]), and 6 sentences involved nouns in locative denoting the location of motion (cf. [22]):

[19] Erkek  kadını  kucaklıyor
  man  woman-ACC  holds
  ‘The man holds the woman’

[20] Dede  nineye  bir ciòcek  veriyor
  grandpa  grandma-DAT  a  flower-ACC  gives
  ‘The grandpa gives the grandma a flower’

[21] Papağan  ormana  uçuyor
  parrot  forest-DAT  flies
  ‘The parrot flies into the forest’

[22] Papağan  ormanda  uçuyor
  parrot  forest-LOC  flies
  ‘The parrot flies in the forest’

The experiment took place in a quiet room, where the participants were individually tested by one of the researchers. The participants were given a booklet that contained 42 quartets of pictures. For sentences such as the ones in [19] and [20], one picture was the target one, another picture depicted the same action with reversed thematic roles, i.e. a woman holding a man for [19] and a grandma giving a flower to a grandpa for [20]. The other two pictures described a different action, i.e. the action of greeting for [20], performed by the same protagonists; in one of the pictures the thematic roles were as in the target picture (a man greeting a woman) whereas in the other the thematic roles were reversed (a woman greeting a man). For sentences such as the ones in [21] and [22], one picture was the target one, another depicted non-target movement, and the remaining two pictures depicted a different manner-of-motion event, e.g. walking, in a locative or directed movement. The participants looked carefully at each quarter while at the same time they were listening to a Turkish sentence. They were instructed to indicate the picture that best illustrated the sentence they heard. All 42 sentences were uttered by a female native speaker of Turkish and were tape-recorded.
3.3.2 Results

The native speakers were 100% correct in this task. Since the main aim was to test the learners’ performance on case suffixation, all lexical errors, i.e. the selection of a picture depicting a different action (e.g. walking in) than the target one (e.g. flying in), were considered correct, provided that the morphosyntactic structure of the sentence describing the picture was the same as the one of the sentence heard. The accuracy scores of this task are illustrated in Graph 6:

![Graph 6: Sentence picture matching task (learners’ performance)](image)

The data in Graph 6 illustrate that all L2 groups perform above chance on all structures (ACC: I: $\chi^2=25.000$, $p<.001$, II: $\chi^2=49.000$, $p<.001$; III: $\chi^2=29.160$, $p<.001$; DAT-IO: I: $\chi^2=10.667$, $p<.01$, II: $\chi^2=11.111$, $p<.01$; III: $\chi^2=26.741$, $p<.001$; LOC: I: $\chi^2=7.407$, $p<.01$; II: $\chi^2=16.000$, $p<.01$; III: $\chi^2=21.407$, $p<.01$) with the exception of the sentences denoting direction of motion with the dative case. However, the learners exhibit chance performance on the sentences in which the dative expresses directed motion ($p>.1$ in all comparisons). In addition, there were no significant differences among the three groups in either structure.

4. Conclusions

The results from the sentence completion, the grammaticality judgement and the sentence-picture matching tasks indicate that the Greek learners of Turkish experience more difficulties with case morphology rather than with verbal morphology. Furthermore, the learners’ performance on the verbal and on the case suffixes improves in higher proficiency levels; however, difficulties with case morphology persist with non-specific objects as well as with the dative case when it denotes direction. The error analysis for the case suffixes shows that the non-native speakers have internalised the function of the cases and the difficulties attested may be due to the morphological realization of case morphemes.
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The high accuracy scores for verbal morphology (even for the beginners) shows that the functional categories T and AgrS are available in early interlanguage, contrary to theories which argue that all functional categories are absent at the initial state (cf. Vainikka & Young-Scholten 1994; 2009). However, this finding cannot be taken as evidence in support of the Morphological Deficit account, since our data revealed a discrepancy between verbal and nominal morphology. We believe that this discrepancy is related to the way the relevant features are manifested in the two languages. More specifically, T and AgrS are always morphologically manifested in both Greek and Turkish, which may explain the learners’ high accuracy rates (cf. Hawkins & Chan 1997; Tsimpli & Dimitrakopoulou 2007, among others). On the other hand, features relevant to case functions may have different manifestations in Greek and Turkish. Thus, locality and directionality are manifested by means of locative and dative suffixes respectively in Turkish, whereas they are expressed by Prepositional Phrases in Greek; these PPs may be headed by the same preposition, i.e. se. In addition, all direct objects in Greek are morphologically marked by accusative case regardless of their specific or non-specific status. Recall that in Turkish the appearance of the accusative suffix is controlled by specificity. We propose that these structural differences between the L1 and the L2 may explain the low scores observed with the case morphology.

References


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