Common Characteristics in Compound Formation: Evidence from Bilingual Acquisition and L2 Language Learning

Styliani S. Kalligiannaki and Marina Tzakosta

University of Crete

stella_kalligiannaki@hotmail.com, martzak@edc.uoc.gr

Abstract

The aim of the paper is to explore the mechanisms underlying compound formation in Greek L1 and L2. The focus is on Albanian, Russian and Swedish speakers of Greek. The data of these L2 groups are cross-checked with data of native speakers in order to assess the proficiency level of learners of Greek as well as the degree to which these learners may be characterized as bilinguals. The data reveal that learners of Greek employ the same mechanisms as native speakers do in the formation of compound forms and provide high production scores, though not as high as native speakers. We further assume that typological language adjacency determines language proficiency level.

1. Introduction

Compounding provides important information regarding the order of acquisition of word formation processes as well as the characteristics of a language's vocabulary. More specifically, compounding presupposes the acquisition of inflection and derivation, since, on the one hand, inflection is an obligatory process contra to derivation and compounding which are non-obligatory processes, and, on the other hand, compounding is a form of derivation, though even more complex than derivation (cf. Tzakosta 2009, 2010, 2011, in press).

According to Selkirk (1982) compounds in English and cross-linguistically are word structures usually consisting of two major constituents belonging to the category of either a **N**(oun), an **A**(djective), a **V**(erb) or a **P**(reposition). It has also been argued that compound heads are located at the right edge of the newly formed form (Williams 1981).

There are plenty of theoretical studies on Greek compounding focusing on, first, the internal structure of compound forms with emphasis on the

determinant role of heads, second, the existence of linking vowels and, third, the relation holding between compound elements (cf. Pállη 1999, Nespor & Ralli 1996, Ralli 2005). For Greek, it has been proposed that compounds belong to two major categories, namely, they may be lexical or morphosyntactic. Lexical compounds are of two types; they may either have the structure [[stem + stem] + derivational suffix] or the structure [stem + word].¹ Representative data of both structures are given in (1a) and (1b), respectively:

(1a) pali-ó-fílos 'old friend-MASC.NOM.SG.'

(1b) pali-o-fílos 'old friend-MASC.NOM.SG.'

In (1a) none of the compound constituents retains all of its morphophonological properties. More specifically, only the stem of the first constituent is preserved, while the second constituent preserves its grammatical but not all of its prosodic properties; stress is moved to a neutral element of the newly formed word, namely, the linking vowel. Stress readjustment is a fundamental characteristic of [s + s] compounds. (1b), on the other hand, is an example of [s + w] compounds in which the second constituent, which also happens to be the head of the word, retains all of its morphophonological characteristics, especially its stress.

Morphosyntactic compounds consist of two words not combined in one form. Both constituents retain their morphophonological characteristics, i.e. the number of their syllables, their stress pattern, their grammatical category and other grammatical characteristics, such as gender, case and number. The constituents of morphosyntactic compounds may be separated by a hyphen but not another word. Therefore, (2a) is a possible morphosyntactic compound but (2b) is not. In this study, the focus is on lexical compounds.

(2a) to pedi-thávma 'the wonder child – NEUT.NOM.SG.'

(2b) **to** pedi **to** thávma '(the) wonder (the) child – NEUT.NOM.SG.'

The linking element –o– is considered to be a relic from ancient Greek (cf. Anastasiadi-Simeonidi 1983, Ralli & Raftopoulou 1999, Ralli 2005, 2007). Linking elements appear in compound forms cross-linguistically, though they take different shapes in languages other than Greek (cf. Tzakosta 2009, 2010, 2011, in press). In Greek it takes the shape of a vowel and usually appears

¹ From this point on [[stem + stem] + derivational suffix] compounds are referred to with the abbreviation [s + s] and [stem + word] compounds are referred to with the abbreviation [s + w].

when the second compound constituent starts with a consonant, as shown in (3).²

(3) pefk-ó-dasos/ pefk-o-dásos 'pine forest-NEUT.NOM.SG.

Finally, like in other languages, Greek lexical compounds' heads emerge at the right edge of the word no matter which compound type they belong to (Drachman & Malikouti-Drachman 1994; Malikouti – Drachman 1997; Nespor & Ralli 1994, 1996). The aim of the present study is to assess the proficiency level of different groups of L2 learners of Greek as opposed to Greek preschool children, i.e. children who are still in the process of acquiring Greek as a mother language. It is important to note that the learners' proficiency level is defined on the basis of the experimental data and not any tools of proficiency assessment.

The remainder of the paper is organized as follows: section 2 reviews previous theoretical and experimental findings on Greek compounding. Sections 3, 4 and 5 are short introductions to the principles governing compounding in Albanian, Russian and Swedish, respectively. Section 6 discusses the experimental results, while section 7 concludes the paper.

2. Previous Research and Goals of the Present Study

Experimental data from adult native speakers of Greek (Tzakosta 2009) and Dutch, German and Turkish learners of Greek (Tzakosta 2010, 2011, in press) have highlighted that both native speakers and L2 learners of Greek - irrespective of their linguistic backgrounds - provide equivalent results regarding the strategies which govern compound formation and the statistical frequencies of the latter. This entails that native speakers and L2 learners of a language draw from the same pool of repair mechanisms empowering the role of Universal Grammar (hereafter UG) in language acquisition and language learning. In addition, good or low performance rates for L2 learners depend on the language proficiency level of the latter.

² There are relatively sparse cases in which the linking vowel appears in Consonant _ Vowel environments, as in *μεγαλ-ο-απατεώνας* 'big cheater – MASC.NOM.SG.' However, such cases are considered to be semantically and morphologically less coherent compared to phonological environments in which the linking vowel is missing. See Ralli (2007) for relevant and detailed discussion.

More specifically, native speakers and L2 learners of Greek exhibit a high degree of variation in the formation of [s + s] and [s + w] forms which are semantically indifferent and can be used interchangeably, as demonstrated in (4a). In addition, both groups display that head misperception leads to semantic ambiguity (4b) (see also Jarema et al. 1999; Kehayia et al. 1999; Tsapkini et al. 1999; Tzakosta 2009, 2010, 2011, in press).

(4a) pon-**o**-kefalos **vs.** kefal-**ó**-ponos 'headache- MASC.NOM.SG.'

(4b) kreat-**ó**-**rizo** **vs.** riz-**ó**-**kreas** 'meat & rice-NEUT.NOM.SG.'

The linking vowel appears in environments where it could be phonologically prohibited, i.e. in C/V_V contexts (5a). Finally, variation – also being the cause of head misperception – appears more systematically in novel compounds, i.e. in forms which are morphologically possible but semantically ambiguous (5b). It appears that variation in existing compounds is restricted by mnemonic mechanisms.

(5a) xion-**o**-ánθropos **vs.** xio-nánθropos 'snowman-MASC.NOM.SG.'

(5b) aftj-**ó**-ponos **vs.** pon-aftí 'ear-ache-MASC.NOM.SG.'

In the present study we rely on the above theoretical and experimental findings with the aims, first, to assess the proficiency of additional groups of native speakers and L2 learners and, second, to categorize the latter as bilinguals or L2 learners of Greek. More specifically, while Tzakosta (2009) tested 40 adult native speakers of Greek (age range 18-58 years) for the present study we recruited a group of five Greek preschoolers (age range 4-6 years) who served as controls, as well as six more preschoolers, four of whom are native speakers of Albanian (age range 20-30 years), one is a native speaker of Russian (30 years old) and one is a native speaker of Swedish (45 years old). We need to clarify that we are not interested in the time of exposure of L2 participants to Greek. In addition, we are not interested in whether, if bilinguals, our L2 participants are successive or simultaneous bilinguals. We rather rely on the experimental findings in order to prove whether they are bilinguals or not. Given the above, our working hypotheses are summed up in the following: first, we expect that if L2 speakers are true bilinguals, they will exhibit as high performance rates as native speakers in the experimental task, second, L2 language learners may exhibit equivalent but lower rates than native speakers regarding their performance in compound formation. Finally, we expect that true bilinguals will demonstrate higher rates in the novel compounds task compared to L2 learners. This will be evidence of the fact that bilinguals are capable of making productive use of various word formation mechanisms.

The testing material is an off-line task which takes the shape of two distinct questionnaires (adopted from Tzakosta 2009, 2010, 2011, in press) distributed to all groups. These two questionnaires demanded the formation of existing compounds (T1) and the formation of novel compounds which are morphologically possible but semantically vague (T2). Both questionnaires consist of 138 items. Representative examples of T1 and T2 are provided in (6a) and (6b), respectively.

- (6a) *péfko* + *dásos* → *pefkódasos* AND *pefkodásos*
'pine forest – NEUT. NOM.SG.' (T1)
(6b) *velóna* + *dásos* → *velonódasos* AND *velonodásos*
'needle forest – NEUT.NOM.SG.' (T2)

3. Compounding in Albanian

In sections 3 to 5 we briefly review the principles which govern compound formation in Albanian, Russian and Swedish, the languages which are related to our study. In Albanian compounding there are no length restrictions with respect to the number of syllables of the compound forms. In addition, compounds are written as two separate words with or without hyphens. There is sporadic use of the linking elements */a/* and */o/* (Orel 2000, Elsie 2006), but the conditions which determine their emergence are not clearly defined. Some representative data adopted from Newmark et al. (1982: 175) are given in (7).

(7a)	gusht- o -vjeshtë	<	gusht, vjeshtë
	'end of August-beginning of September'		'August', 'autumn'
(7b)	dash- a -mir	<	dash mirë
	'beloved'		'love', 'good'

The fact that Albanian compounds are written as two separate words entails that they do not undergo stress readjustment, unlike Greek (Orel 2000, Elsie 2006).

4. Compounding in Russian

Russian compounding shares more properties with Greek compound formation than Albanian. More specifically, Russian has one and two-word compounds. In one-word compounds the use of the linking vowels /e/ and /o/ are reported, as illustrated in (8). There is only one main stress which is carried by the compound head. In Russian, like in Greek, compounds are right-headed (cf. Gouskova & Roon 2009).

- (8) ùgli-**e**-do-bitʃ-a < ùg(o)li-Ø, do-bitʃ-a
 'coal', 'mine' 'coal mine'
(adopted from Cubberley 2002: 270)

5. Compounding in Swedish

In Swedish, compounding is a very productive and recursive word formation process (Friberg 2008). In other words, two or more word roots may be involved in the newly formed word. Like Russian and Greek, the rightmost constituent is the head of the compound. In one-word compounds, there are two stress peaks, namely a primary and a secondary one. In addition, Swedish makes extensive use of linking elements. These are */s, e, a, u, o, and Ø/* (Hedlund 2002). Representative examples of compound formation in Swedish are provided in (9) below.

- (9a) järnindustri < järn + industri 'iron industry'
(9b) skol+bok-**s**+hylla 'book shelf for school books'

6. Results and Discussion

In what follows we present the statistical analyses of the data and make some theoretical proposals. Table 1 summarizes the frequency rates for answered (A) and correctly answered ($\sqrt{A}$) questions. It becomes obvious that native speakers exhibit much higher rates for both answered and correctly answered questions compared to all L2 tested groups. However, Russian and Swedish learners perform much better than Albanian speakers of Greek. It is interesting to notice that, although native speakers score high with respect to their answered questions, they do not score as high in their correctly answered questions. Apparently, native speakers are positive in answering the questions of both T1 and T2, though they make many mistakes. On the other hand, L2 learners are more reluctant to answer the questions, though they perform well when it comes to their correctly answered rates.

Table 1.

Rates of answered and correctly answered questions

Nom	A	√-A	A	√-A	A	√-A	A	√-A
	Native		Albanian		Russian		Swedish	
T1	73%	70%	37,4%	72,3%	51,4%	83%	50%	56%
T2	88%	74%	34,9%	43,1%	57%	70%	60%	71,4%
Total	80,5%	72%	36,1%	57,7%	54,3%	76,5%	55%	63,7%

Table 2 provides a first general picture of the performance of all groups regarding the major tested variables, namely, right-headedness (RH), the position and the use of the linking vowel (LV), the preferred compound types (CT), and repairs that are involved in compound formation, such as stress readjustment (Stress R) and syllable reduction (SR).

Table 2.

Tested variables and compound formation repairs

	R-H	LV	CT	Stress-R	SR
Greek	✓	✓	✓	✓	✓
Albanian	✓	✓↓	✓	x	x
Russian	✓	✓	✓	x	x
Swedish	✓	✓↑	✓	x	x

All groups satisfy the RH, LV and CT variables; however, the Albanian group scores badly when it comes to the use of the LV while the Swedish group scores well. This is expected given that in Albanian the emergence of the LV is rare and in Swedish there is extensive use of various linking elements. The repairs of stress-R and SR appear only in the native speakers' group. It seems that L2 learners prefer to consistently preserve the stress of one of the two compound constituents in the compound form rather than readjust stress in the newly formed form. Besides, stress readjustment is not operative in either Albanian, Russian or Swedish.

Table 3 illustrates the rates of native and L2 speakers with respect to the position of compound heads ((R)ight or (L)eft). As already discussed, morphophonological heads tend to appear at the right edge of the word cross-linguistically (Williams 1981). The data seem to support this claim. More specifically, native speakers place heads at the right edge of existing compounds across-the-board. The rate remains very high (R, 88%) for non-existing/ novel compounds. Albanian, Russian and Swedish learners exhibit high rates of right-

headedness for existing compounds, though the rate falls radically for non-existing compounds. All L2 findings are equivalent.

Table 3.

Head position

Heads	R	L	R	L	R	L	R	L
	Native		Albanian		Russian		Swedish	
T1	100%	0%	75%	25%	81%	19%	84%	16%
T2	88%	12%	40%	60%	44%	66%	45%	65%
Total	94%	6%	57,5%	42,5%	62,5%	42,5%	64,5%	40,5%

The linking vowel (LV) appears to be an important cue for compound formation in Greek L1 and L2. This is evident by the fact that native speakers not only prefer (Pr) to use the LV in 90% of the cases in T1, but the rate of LV use is even higher in T2 (96% of the cases). Albanian speakers of Greek employ the LV more frequently in T1 than T2. However, the Russian and Swedish speakers, like Greek native speakers, use the LV more often in T2 than T1. As already mentioned, the LV is an important indicator of compound formation in Russian and Swedish but not in Albanian. This may give an answer as to why the LV is less frequently found in the data of the Albanian speakers of Greek.

Table 4.

Use of the linking vowel (LV)

LV	Pr	N-Pr	Pr	N-Pr	Pr	N-Pr	Pr	N-Pr
	Native		Albanian		Russian		Swedish	
T1	90%	10%	84%	16%	86%	14%	82,3%	17,7%
T2	96%	4%	69%	31%	95%	5%	95,3%	4,7%
Total	93%	7%	76,5%	23,5	90,5%	9,5%	88,8%	11,2%

The picture is vague with respect to the preference of specific compound types over others. More specifically, native speakers preferably form [s + w] compounds in both T1 and T2. This finding goes contra the findings of Tzakosta (2009) according to which adult native speakers of Greek prefer to form [s + s] compound words. [s + s] forms presuppose the knowledge of the mechanism of stress readjustment, as shown in (1a) above, while in [s + w] forms the second constituent, which also happens to be the head of the compound, retains its morphophonological characteristics, especially its stress position. Therefore, it

is expected that [s + w] rather than [s + s] compounds are easier to be realized by preschool native speakers who may not have already acquired all word formation mechanisms. On the contrary, adult native speakers are in a better position to master complex word formation mechanisms; therefore they prefer to form [s + s] forms.

Similarly to the preschool native speakers' data, the Russian and Swedish speakers prefer [s + w] to [s + s] compounds, though Albanian speakers prefer [s + s] compounds for both T1 and T2.

Table 5.

Preferred compound types (CT)

CT	[s + w]	[s + s]	[s + w]	[s + s]	[s + w]	[s + s]	[s + w]	[s + s]
	Native		Albanian		Russian		Swedish	
T1	51%	49%	41% ⁰	59%	40%	60%	76,4%	23,6%
T2	61%	39%	37%	63%	60%	40%	52,3%	38%
Total	56%	44%	39% ⁰	61%	50%	50%	64,3%	44%

In relation to the above table, table 6 presents the frequencies of correct (R) and non-correct (W) stress readjustment in compound words. Depending on the preferred compound type, native speakers readjust stress correctly (R) in 98% in both T1 and T2. Albanian speakers perform better in T1 than T2. It is interesting that, although in Swedish two stress peaks appear in compound forms, the Swedish speaker readjust stress correctly across-the-board in both T1 and T2; so does the Russian speaker.

Table 6.

Stress readjustment

Stress-R	R	W	R	W	R	W	R	W
	Native		Albanian		Russian		Swedish	
T1	98%	2%	82%	18%	85,7%	14,5%	100%	0%
T2	98%	2%	62,5%	37,5%	100%	0%	100%	0%
Total	98%	2%	72% ⁰	27%	93%	7,3%	100%	0%

Finally, syllable reduction (SR) is a strategy non-frequently employed in any of the participating groups. Apparently, native speakers and L2 learners, although of preschool age, have passed off the stage of syllable reduction being used as a process which facilitates language development. Stress reduction was never activated for L2 learners either.

Table 7.
Syllable reduction

SR	Pr	N-Pr	Pr	N-Pr	Pr	N-Pr	Pr	N-Pr
	Native		Albanian		Russian		Swedish	
T1	2%	98%	0,3%	99,7%	5,7%	94,3%	3%	97%
T2	0%	100%	0%	100%	0%	100%	0%	100%
Total	1%	99%	0,15%	98,5%%	2,85%	97,2	1,5%	98,5%

The data in (10) are representative cases of syllable reduction. The second piece of data in (10a) and the first in (10b) are reduced regarding the number of their syllables.³ Both examples in (10a) are equally acceptable, while the first example in (10b) is not acceptable. In both cases the reduced syllable belongs to the first constituent. Put differently, the head of the compound retains all of its morphophonological properties because of the firmed character of the former.

(10a) a.ste.r-**o**-ci.ni.gós (N6) vs. a.str-**o**-.ci.ni.gós (N5)
'star hunter – MASC.NOM.SG.'

(10b) kli.d-**o**-.tri.pa (N4) vs. kli.da.r-**o**-.tri.pa (N5)
'key hole – FEM.NOM.SG.'

7. Conclusions

The aim of the present study was to assess the capacity of Greek native speakers of preschool age and the proficiency level of Albanian, Russian and Swedish L2 learners of Greek in order to investigate whether L2 speakers could potentially be (or become) bilinguals. The data lead us to two major findings; first L2 groups provided equivalent results to L1 preschool acquirers of Greek, though they did not score as high as native speakers. Second, there is clear variation in the scores of different L2 groups; more specifically, the Russian and Swedish speakers performed better than Albanian learners in the formation of both existing (T1) and non-existing (T2) compounds. The discussion regarding the general characteristics of compound formation in Greek, Albanian, Russian and Swedish revealed that Greek is typologically more adjacent to Russian and Swedish than Albanian. In other words, typological similarity is responsible for the fact that the

³ The number of syllables is indicated in the parentheses. Syllable boundaries are indicated by dots.

Swedish and Russian speakers perform better in forming compound words than the Albanian speakers. Therefore, the closer two languages are regarding their morphological synthesis the easier and faster they are learned or acquired. This entails that the inter-typological language adjacency should be seriously taken into consideration in the design and substantiation of the relevant teaching material and teaching methods.

As far as our main research question is concerned, namely whether our non native participants are bilinguals or L2 learners, we assume that the scores of non native participants cannot lead us to safe theoretical claims. In addition to that, we argue that typological language adjacency in combination with the fact that the participants of all groups are preschoolers provides them with the possibility to develop as bilinguals with time. To be more specific, although L2 learners exhibit lower scores than native speakers, they are potential bilinguals due to the fact that, as preschoolers, they are still in the process of language acquisition. As a result, adequate exposure to the relevant linguistic stimuli in combination with the benefit of language structural adjacency will help L2 groups to develop into true bilinguals and not into mere L2 learners. We recognize that our experimental groups, especially the Russian and Swedish groups, consist of the minimal possible number of participants; therefore our findings and our claims are difficult to be generalized. However, we believe that even such small groups provide us with the necessary basis in order to expand our research.

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