

## Syntactic and tonal correlates of focus in Greek and Russian

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### Abstract

*This is an experimental study of syntactic and tonal correlates of focus in Greek and Russian. Three experiments were carried out the results of which indicate: First, the dominant word order is SVO in both Greek and Russian. Second, focus distinctions have inverse word order effects, according to which syntactic elements of focus elicitation are dislocated at sentence beginning and sentence end for Greek and Russian respectively. Third, focus has a local tonal range expansion and a global tonal range compression in both Greek and Russian.*

### Introduction

This study is in the spirit of the forthcoming ISCA Workshop "Experimental Linguistics" to be held in Athens, Greece, in 2006 (see Botinis et al. 2005, this volume). Three experiments were carried out the main questions of which are (1) which is the unmarked word order? (2) which are the word order correlates of focus production? (3) which are the tonal correlates of focus production? These questions are also related to contrastive linguistics and language typology with reference to sentence structure production in Greek and Russian.

### Experimental methodology

The basic language material of the three experiments in this study consists of controlled speech situations, in which experimenters from Athens and Saint Petersburg for Greek and Russian respectively were asked to produce utterances with reference to pictures on the computer screen in apparent agent-action-goal semantic relations. The language material was directly recorded into computer disc and tonal analysis was carried out with Waveserfer.

The main objective of the first experiment was to investigate unmarked word order of written sentence production. Lexical words corresponding to syntactic categories subject (S), verb (V) and object (O) were copied from the basic language material and were written in

a random disposition on a piece of paper. Experimenters were asked to compose and write nine full sentences with the most natural word order. The language material of this experiment consists of 1206 (9 sentences x 134 experimenters) and 657 (9 sentences x 73 experimenters) individual sentence productions for Greek and Russian respectively.

The second experiment was to investigate word order of the basic language material used in the first experiment as a function of five different questions, which were designed to elicit five focus distinctions, i.e. one neutral and the remaining four with focus on subject, verb, verb phrase and object respectively. The ten sentences were organised in ten respective series and each series was in turn organised in four sets with different word order. Each set was led by a statement followed by five different questions, i.e. one question for the elicitation of each of the five focus distinctions. Experimenters were asked to fill in a form with two main options, i.e. if the statements were accepted or non-accepted and, if accepted, which of the five alternative questions were most appropriate as answers to these questions. The language material of this experiment consists of 3400 (10 sentences x 5 focus distinctions x 85 experimenters) and 1850 (10 sentences x 5 focus distinctions x 37 experimenters) word order individual sentence options as a function of focus distinctions for Greek and Russian respectively.

The third experiment was to investigate unmarked word order of spoken language production as a function of contextual information on the computer screen as well as syntactic and tonal correlates of focus distinctions elicited by different questions. Experimenters were asked to produce neutral as well as variable focus distinctions. The language material of this experiment consists of 480 (12 sentences x 4 focus distinctions x 10 experimenters) and 720 (12 sentences x 4 focus distinctions x 15 experimenters) sentence productions in Greek and Russian respectively.

## Results

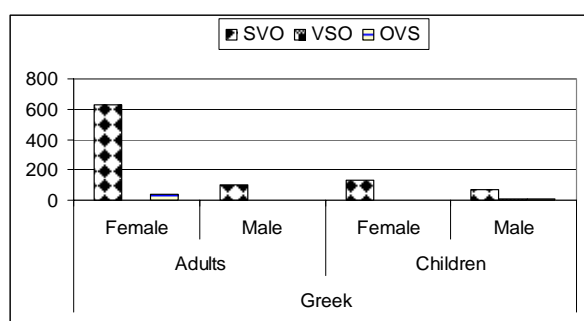
The results of the three experiments described in the previous section are shown in Figures 1 and 2 with reference to syntactic and tonal correlates of focus distinctions respectively.

In Figures 1a and 1b, SVO is the dominant word order structure in unmarked written production in both Greek (1a) and Russian (1b), with marginal word order variability across speaker's age and gender.

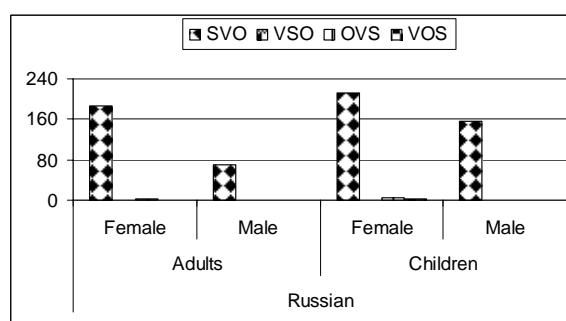
In Figures 1c and 1d, the neutral elicitation of spoken productions has a dominant SVO structure in Russian (1d) but not in Greek (1c).

Focus elicitation have dislocation effects, according to which syntactic categories are dislocated at sentence beginning and sentence end for Greek and Russian respectively and this dislocation is most evident in Russian.

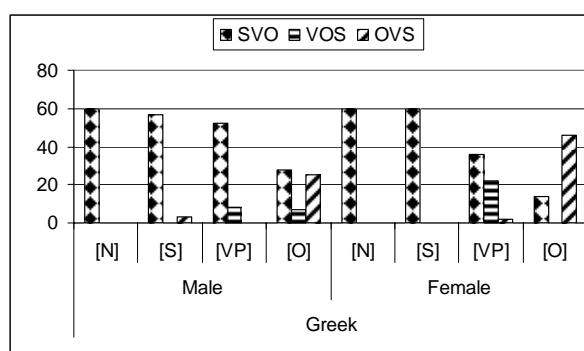
In Figures 1e and 1f, the neutral elicitation of written production has VSO and SVO dominant structures in Greek and Russian respectively. Focus involves inverse syntactic dislocations at the beginning of sentence and end of sentence for Greek and Russian respectively. These dislocations are more evident for Russian than for Greek and also for Greek females than Greek males.



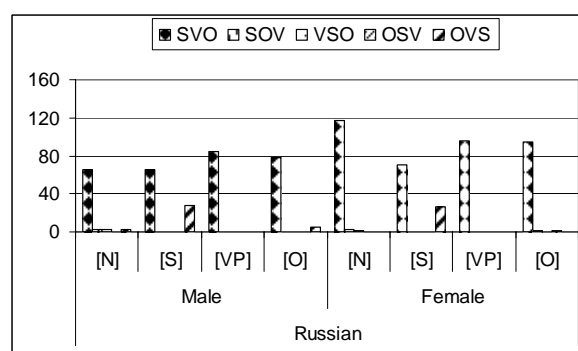
a



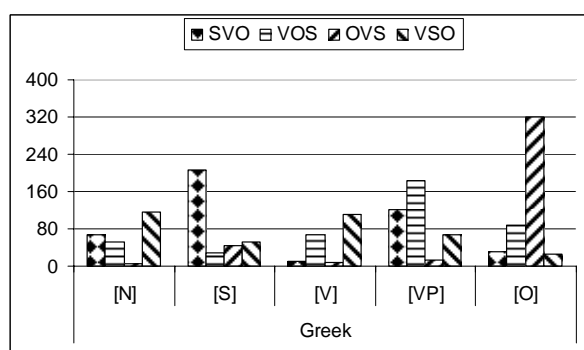
b



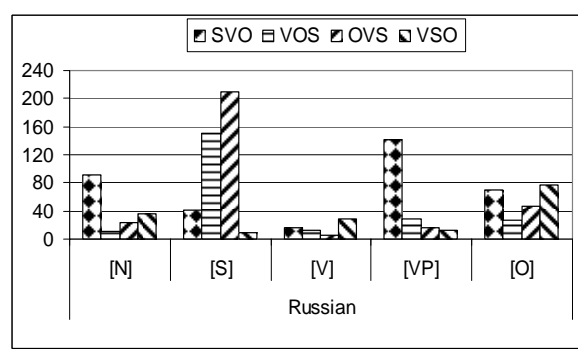
c



d



e



f

Figure 1. Greek (left) and Russian (right) word order of basic syntactic categories as a function of speaker's age and speaker's gender written production (a-b), focus elicitations of spoken production (c-d) and focus elicitation of written production (e-f).

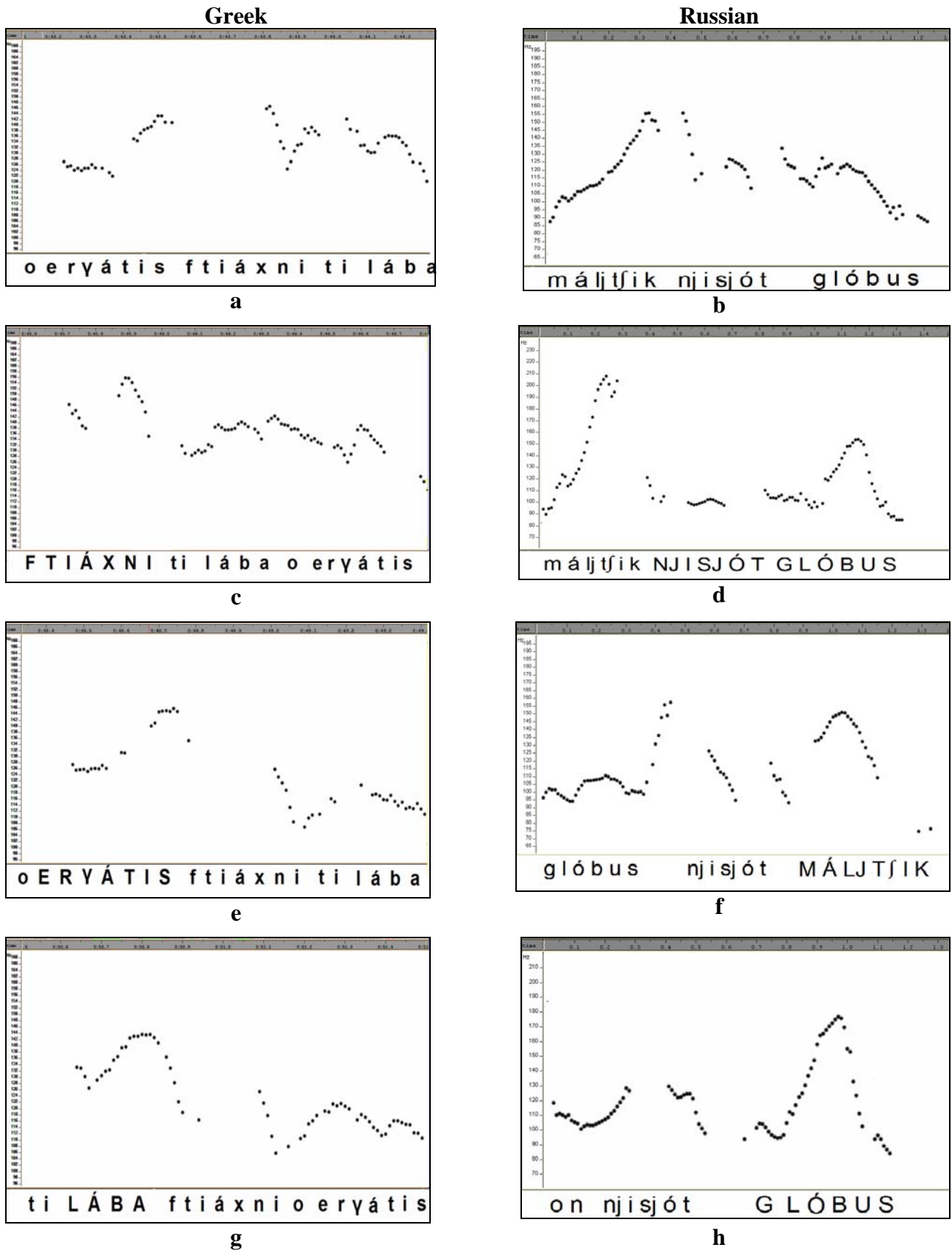


Figure 2. Tonal structures of variable word order and distinctive focus productions of the sentences /o eryátis ftiáxni ti lába/ (The worker repairs the lamp) and /máljtjik njisjót glóbus/ (The boy carries the globe) in Greek (left) and Russian (right) respectively (capital letters indicate focus).

In figure 2 some typical examples of tonal structures as a function of focus distinctions in Greek and Russian are presented. In both languages, the neutral productions (a and b) have a regular tonal structure, according to which stressed syllables of lexical words are as a rule associated with local tonal commands which are aligned with respective stress group boundaries.

Focus productions, on the other hand, modify the tonal structure in both Greek and Russian in three main ways. First, speech material in focus has a local tonal range expansion in relation to the corresponding local tonal range of the neutral productions. Second speech material out of focus undergo deaccentuation. Third, speech material out of focus undergoes major tonal compression. These three ways may operate simultaneously or in combinations in variable linguistic domains.

Our results indicate that focus productions have constant tonal correlates which operate independently from syntactic correlates, although both tonal and syntactic structures may function complementary with reciprocal reinforcement for focus structures and focus distinctions.

## **Discussion and conclusions**

Although much research has been conducted on each word order and tonal structures in a variety of languages, including Greek and Russian (Botinis, 1989, Svetozarova, 1998, Yoo, 2003.), little attention has been paid to interactions between word order and prosody, especially with reference to semantic impacts and focus assignments in linguistic structures. Furthermore, although several languages, such as Greek and Russian, have traditionally been described as free word order languages, in the sense that main syntactic categories may have variable word order, the conditions and factors that trigger alternative word order structures are underexamined.

The results of this study, based on the experimental methodology and the investigated language material described previously, indicate that both Greek and Russian have a dominant word order syntactic structure as well as a regular tonal structure. On the other hand, focus has a major effect on both tonal and syntactic structures in the two languages. The dominant unmarked word order structure is SVO, whereas the regular tonal structure consists of local tonal

commands aligned with stressed syllables, which may have variable tonal range as a function of focus distinctions. Dislocation of syntactic elements, which bear required information, at the beginning of sentence and end of sentence are syntactic correlates of focus in Greek and Russian respectively, whereas local expansions in relation to global compressions of the tonal range are tonal correlates of focus in both Greek and Russian.

Focus is a complex linguistic category with a heavy functional load, according to which some linguistic units are marked as more important than other ones in communication situations. The basic linguistic function of focus is thus semantic weighting of variable linguistic units in relation to information structure and contextual specifications of actual utterances. Despite prosodic variability in different languages, tonal correlates are most usually reported as prosodic correlates of focus distinctions in the majority of analysed languages (see e.g. Hirst and Di Cristo, 1998). However, although focus has both local and global tonal correlates, which has been evidenced in several studies in Greek and Russian, it is the global tonal structure that determines focus perception rather than any local tonal variability of the linguistic units in focus (Botinis, 2000).

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