

Prosodic phrasing and focus productions in Greek

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Abstract

This is an experimental study of tonal correlates of prosodic phrasing and focus production in Greek. The results indicate: (1) the tonal correlates of phrasing are a rising tonal command at phrase boundaries and a deaccentuation of the preboundary lexical stress; (2) the tonal correlates of focus are a local tonal range expansion aligned with the stressed syllable of the last lexical unit in focus and a global tonal range compression, which is most evident for the speech material after focus; (3) phrasing and focus have significant interactions, according to which the phrasing tonal command is suppressed as a function of focus production at the same linguistic domain.

Introduction

This study is within a multifactor research context in linguistic structuring. We examine the relation between sound and meaning as a function of linguistic distinctions and linguistic structures in an integrated experimental framework, which is in the spirit of the ISCA Workshop "Experimental Linguistics" (see Botinis, Charalabakis, Fourakis and Gawronska, 2005).

Phrasing and focus are abstract linguistic categories with distinctive functions in linguistic structuring. The basic functions of phrasing and focus are the segmentation of continuous speech into a variety of meaningful linguistic units and the marking of variable linguistic units as more important than others respectively. We do have basic knowledge with reference to both phrasing and focus from earlier research (e.g. Botinis, 1989, Fourakis, Botinis and Katsaiti, 1999, Botinis, Bannert and Tatham, 2000, Botinis, Ganetsou and Griva, 2004) but we do not have any knowledge with reference to phrasing and focus interactions at the same linguistic domains.

In this study, we present production data whereas perception research with reference to phrasing and focus interactions is being carried out. In the remainder of the paper, the experimental methodology is presented next followed by results and concluded by discussion.

Experimental methodology

One experiment was designed in order to investigate distinctive phrasing and focus structures. The speech material consists of two compound test sentences with a phrasing distinction as well four focus distinctions. The phrasing distinction involves the attachment of a surface subject to either subordinate or main clause. The focus distinctions involve one neutral production as well as three productions with focus on different constituents of the test sentences. The neutral production of the test sentences had no contextual information whereas the focus productions of the test sentences were preceded by a question which elicited focus in different constituents of the test sentences.

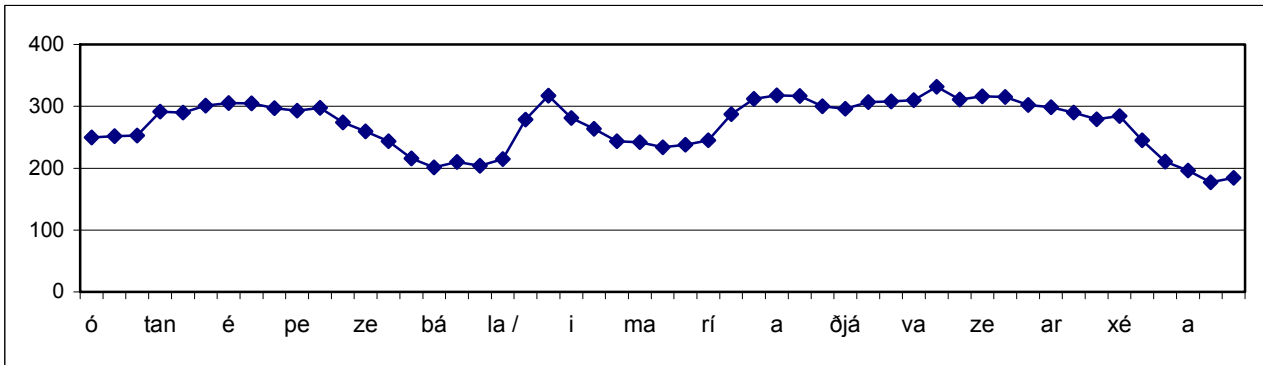
The two test sentences were {ótan épeze bála, i maría ðjavaze arxéa} (When (he) was playing football Maria was studying Ancient (Greek)) and {ótan épeze bála i maría, ðjavaze arxéa} (When Maria was playing football (he) was studying Ancient (Greek)). Thus, the noun "Maria" is the subject of the subordinate and main clause in pre-comma and post-comma position respectively. With different elicitation questions, focus was assigned on the test sentences in three different ways, i.e. on the subordinate clause, on the main clause and on the subject "Maria".

Two female students of the Linguistics Department at Athens University produced the speech material in five repetitions at normal speech tempo. The speech material was directly recorded in to a computer disc and analysed with the Waveserfer software package.

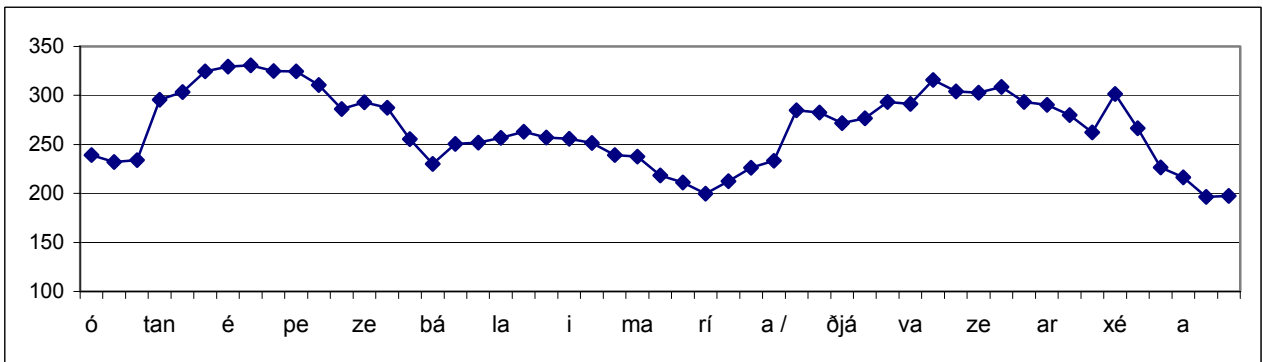
Three tonal measurements were taken at each syllable, i.e. at the beginning, middle and end, regardless the segmental structure of syllable. This methodology normalizes tonal measurements with reference to temporal and tonal alignments of produced utterances.

Results

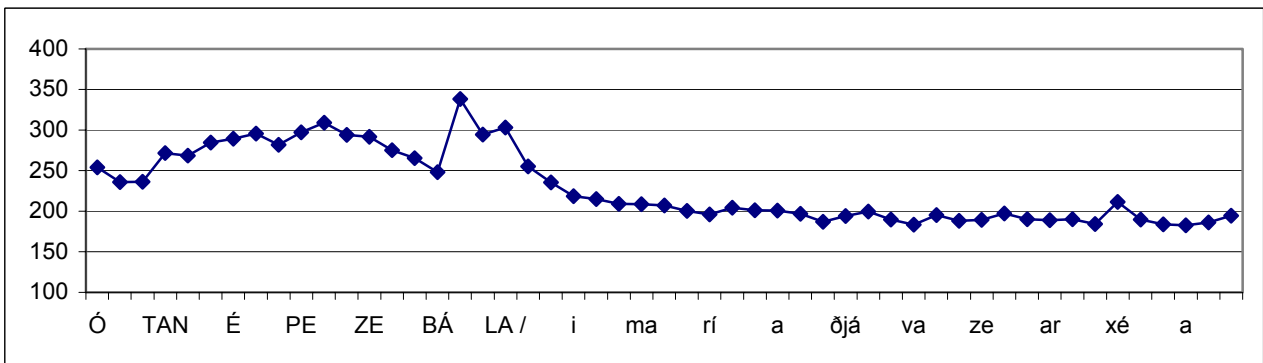
The results of this study, in accordance with the experimental methodology described in the previous section, are presented in average values of the tonal measurements in Figure 1.



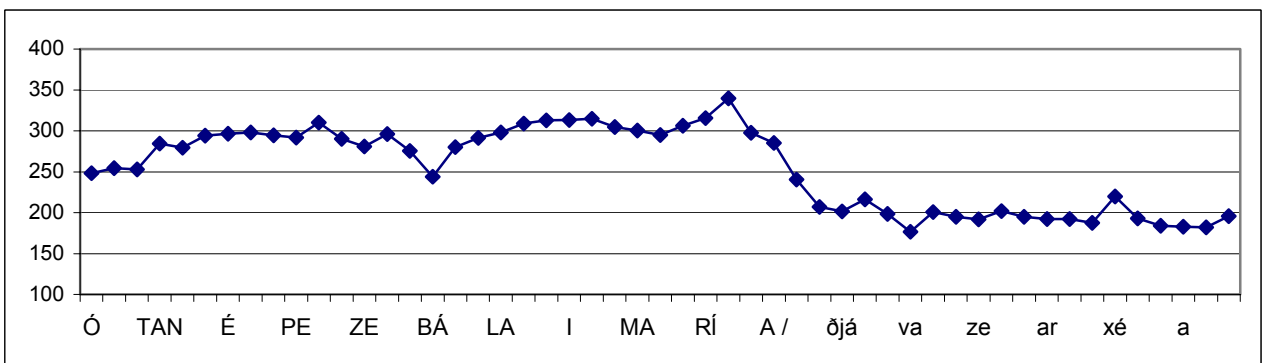
1a



2a

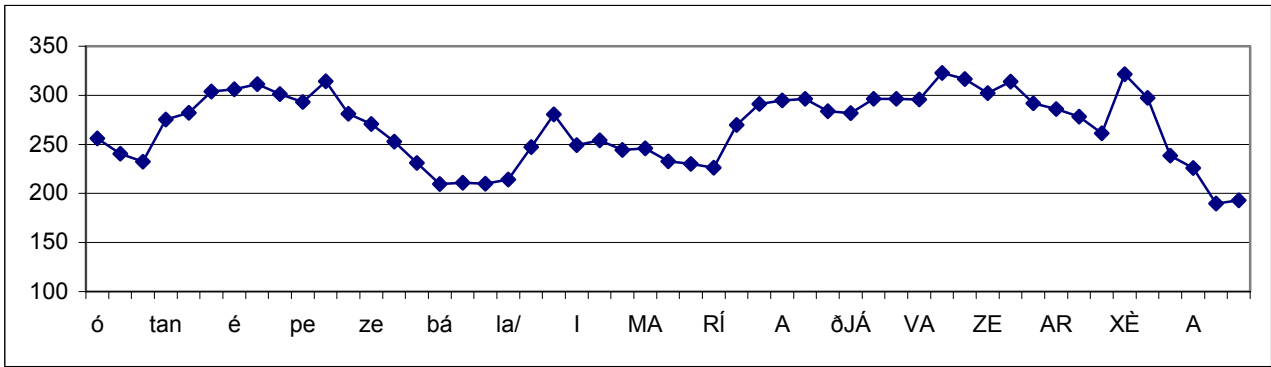


1b

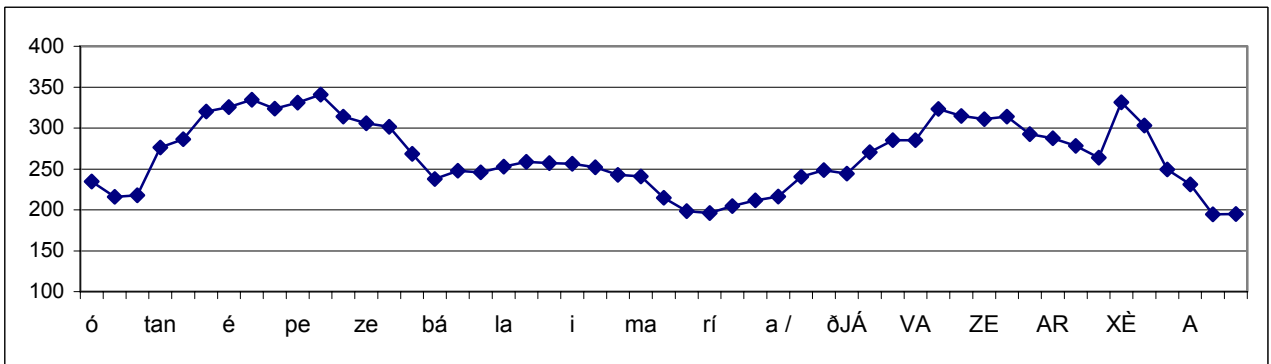


2b

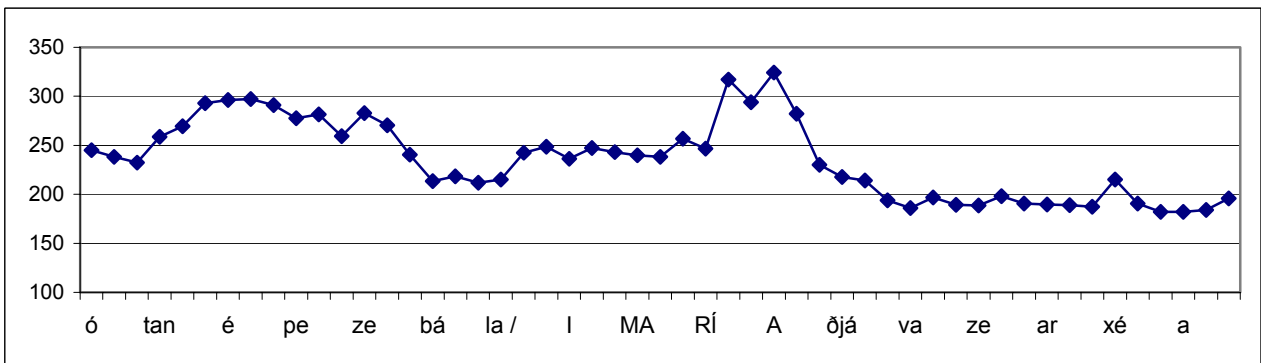
Figure 1. Continuous next page.



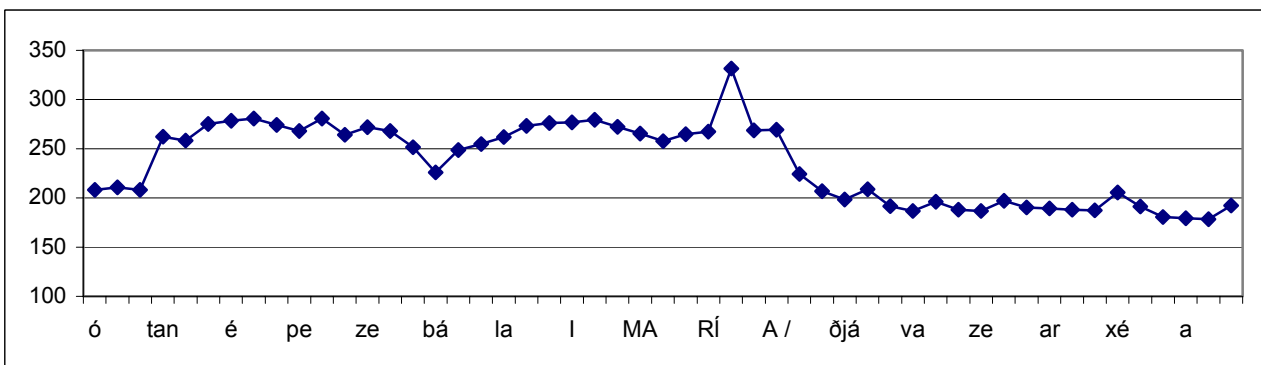
1c



2c



1d



2d

Figure 1. Average values of tonal measurements as a function of prosodic phrasing (1-2), indicated by solidus (/), and focus productions (a-d), indicated by capital letters (see text).

Figures 1a and 2a show tonal structures of the test sentences as a function of neutral productions. There is a prosodic phrasing aligned with the respective clause boundaries of the test sentences which is a tonal command aligned with the edge of the subordinate clause. This phrasing tonal command is a tonal rise with no lexical stress alignment. On the other hand, the last lexical stress in relation to the prosodic boundary is not correlated with any distinct tonal command.

Figures 1b and 2b show tonal structures of the test sentences as a function of focus production on the respective subordinate clause. No prosodic phrasing is correlated with clause boundaries. Instead, a bidirectional tonal command is correlated with the right edge of the subordinate clause, which is a tonal rise aligned with the stressed syllable of the last word in focus followed by a tonal fall aligned with the poststressed syllable. The end of the tonal fall spreads to the right to the end of the sentence.

Figures 1c and 2c show tonal structures of the test sentences as a function of focus productions on the respective main clause. The tonal structure of these productions is fairly similar to the tonal structure of the neutral productions shown in Figures 1a and 2a, i.e. a prosodic phrasing with a tonal rise aligned with the edge of the subordinate clause.

Figures 1d and 2d show tonal structures of the test sentences as a function of focus production on the subject of either subordinate or main clause. A distinct tonal command is correlated with the clause boundaries in 1d, i.e. when the noun "Maria" is the subject of the main clause, whereas no tonal command is correlated with the clause boundaries in 2d, i.e. when the noun "Maria" is the subject of the subordinate clause. On the other hand, the focus productions in 1d and 2d have fairly similar tonal correlates, which involve a bidirectional tonal command aligned with the subject "Maria" in focus and a substantial compression of the postfocus global tonal structure.

Discussion and conclusions

In accordance with the results of the present study, some old knowledge has been corroborated and some new knowledge has been produced. The old knowledge refers to tonal correlates of phrasing and focus whereas the new knowledge refers to interactions between these two prosodic categories.

Phrasing and focus may have distinct tonal correlates each in speech production. Phrasing has thus a relative local tonal effect, which defines syntactic boundaries as a function of coherence distinctions (see Botinis, Ganetsou and Griva, 2004), whereas focus has a global effect, which defines semantic weighting as a function of information structure distinctions (see Botinis, 1989).

Each phrasing and focus may be applied on different linguistic domains with distinct tonal structures. However, at the same linguistic domains, phrasing tonal structures are suppressed as a function of focus applications. This is an indication that focus is a higher prosodic category with global rather than local prosodic effects in relation to phrasing. On the other hand, phrasing is a higher prosodic category, which suppresses lexical stress on the domain of its immediate application.

The results of the present study may have several theoretical implications. With reference to prosodic theory, prosody is organized in a hierarchical structure, according to which different linguistic levels are associated with different prosodic categories (see Botinis, 1989). Higher prosodic categories are thus associated with higher linguistic levels in the domain of which prosodic rules operate to produce related prosodic structures. Accordingly, the prosodic correlates of lower and higher prosodic categories are relative local and global ones respectively, which results in variable suppressions of lower prosodic category correlates as a function of higher prosodic category applications.

References

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