

Properties of nominal stress grammar in Greek

Vasiliki Apostolouda

Department of Linguistics, Aristotle University of Thessaloniki, Greece
<https://doi.org/10.36505/ExLing-2020/11/0006/000421>

Abstract

This study reports on the findings of a production experiment that aimed at exploring the distribution of stress patterns in the internal grammar of young and adult native speakers of Greek, with a special focus on nominal stress, as these are reflected on their decisions on assigning stress in novel inflected words. More specifically, we investigate whether morphological information at the right edge of the word, together with lexical frequency, are potential cues for stress position. We also examine differences in the grammars of young and adults speakers.

Keywords: lexical stress systems, nominal stress, pseudowords, grammar

Introduction

In this study we focus on both adult and younger speakers of Greek. The major objective is to investigate the impact of morphological information and of lexical frequency on their stress decisions. For this purpose, we designed and conducted an experimental task which involved the production of pseudowords with real inflection markers. In order to test the lexical frequency effects, we compared the experimental productions with the results of the quantitative research on the two lexical databases.

Greek is a lexical stress systems, that is, the position of stress is not predictable by phonological rules, but varies depending on the morphological structure of the word (Halle & Idsardi 1995; Alderete 1999; Revithiadou 1999). Nominal stress exhibits a broader variation, as stress patterns vary across the noun classes as well as within nouns of the same class. However, experimental studies on Greek (Apostolouda 2012; Revithiadou & Lengeris 2016) and other lexical systems (Lavitskaya 2014 for Russian) indicate that specific inflectional endings at the right edge of the word are potential cues for the stress position. In order to estimate the distribution of stress patterns over the various noun classes, we conducted a quantitative research on two lexical databases: (a) a Part of Speech (PoS) version¹ of Clean Corpus (CC) (Protopapas et al. 2012), (b) a PoS version of Reverse Dictionary of Modern Greek (RD) (Anastassiadis-Symeonides 2002). The results confirmed that specific noun classes are highly connected with specific stress patterns. A main goal of this study is to discover/unearth the extent in which this distribution is encoded in the stress grammar of native speakers. Several researchers have reported that lexical tendencies do not just leave a statistical imprint on the data but rather they are internalized in the native speakers' grammar (Zuraw 2000; Hayes & Londe

2006). Studies on Greek confirm these findings, as they reveal that native speakers tend to reproduce systematically the lexical stress patterns when they have to decide for the stress position of novel words with real class markers (Apostolouda 2012; Revithiadou & Lengeris 2016). Since previous research on the topic is solely based on adult speakers, it is important to also explore whether young speakers' decisions are affected by lexical frequency effects as well or whether their stress grammar exhibits early grammars' biases, (see the Emergence of the Unmarked, Prince & Smolensky 1993).

Methodology

Participants

The participants were divided into two groups based on their age. Group A consists of 47 adult native Greek speakers, 18-23 years old (mean age: 18.3), students of Aristotle University of Thessaloniki. Group B consists of 46 young native speakers, 7-8 years old (mean age: 7.7), students of 2nd and 3rd Grade of urban primary schools. The Group B participants were controlled for their performance at the standardized background test, Test of expressive vocabulary (Vogindroukas et al. 2009).

Stimuli

The experimental items are disyllabic and trisyllabic pseudonouns with real class markers (/ -os/, / -as/, / -is/, / -a/, / -ifem/, / -o/, / -ineut/, / -(m)a/). The main goal was to construct pseudowords according to the phonotactics of Greek language by taking into consideration the degree of similarity with real words. For this purpose, we utilized specific research tools, as Clean Corpus and Num Tool (Protopapas et al. 2012). These tools can estimate the degree of similarity of each constructed pseudoword, providing quantitative measures for multiple variables (e.g., *Logmean bigram type & token frequency*, *Number of phonological neighbors*, *Phonological Levenshtein Distance*). Pseudowords with a mean score to each variable were considered to be the most suitable for the experiment. In a second round of evaluation, the stimuli were rated by native speakers of Greek. In a 5-scale Likert questionnaire, they had to decide for the degree of familiarity of each pseudoword. Pseudowords with a mean score to the degree of familiarity were finally selected as experimental items.

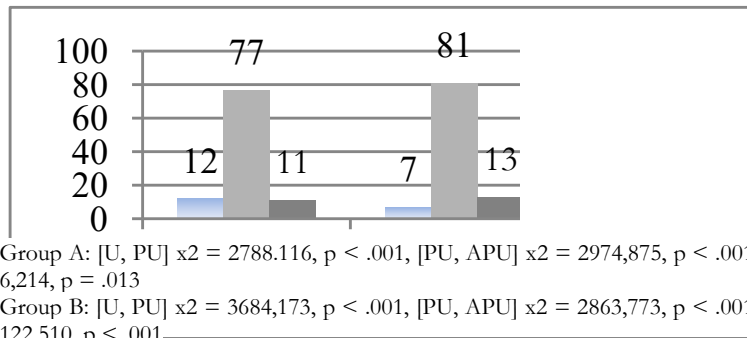
Procedure

The participants had to read out 128 disyllabic (2σ) and trisyllabic (3σ) pseudowords with no time restriction, deciding for the stress position. Pseudowords were presented in capital letters one at a time on Microsoft PowerPoint. In order to ensure that the young participants will complete the task, we embedded the stimulus in a playful context, where pseudowords were supposed to be the language of popular fictional characters. The same context

was utilized for the stimulus presentation to the adults. The utterances were recorded, transcribed and codified according to the experimental conditions.

Results

The statistical analysis revealed a significant difference between the frequency of penultimate stress and the frequency of the other stress patterns in 5932 items that collected from Group A and 5887 items from Group B (Fig. 1). Pseudonouns were primarily connected with penultimate stress, despite the type of inflection and the size of the word. However, the results between the two groups differentiate, if we focus to specific experimental conditions.



Group A: [U, PU] $\chi^2 = 2788.116, p < .001$, [PU, APU] $\chi^2 = 2974.875, p < .001$, [U, APU] $\chi^2 = 6,214, p = .013$
 Group B: [U, PU] $\chi^2 = 3684.173, p < .001$, [PU, APU] $\chi^2 = 2863.773, p < .001$, [U, APU] $\chi^2 = 122,510, p < .001$

Figure 1. Stress distribution (%) in all items that collected from Group A and Group B (U=ultimate, PU=penultimate, APU=antepenultimate).

The participants’ productions reveal two different tendencies. On the one hand, Group A’s productions are largely affected by lexical frequency effects. For example, according to the lexicon, nouns in /-a/ are mainly associated with penultimate stress, while nouns in /-os/ and /-o/ are mostly associated with antepenultimate stress. In both conditions, Group A’s productions consistently match the lexical frequencies. In contrast, Group B’s decisions exhibit a clear tendency for penultimate stress, which is considered to be the unmarked pattern due to its trochaic nature ($\sigma\sigma$) (McCarthy & Prince 1994, see also Fikkert 1994 for child speech). They tend to overgeneralize penultimate in all conditions, regardless the type of inflection and the size of the word. The differences between the stress hierarchies that arise from both groups are clear in Table 1, especially if we focus on nouns in /-o/ and /-os/.

Table 1. Stress hierarchy for 3σ in /-a/, /-os/, /-o/.

Ending	Group A	Group B	CC	RD
/-a/	PU > APU > U	PU > APU > U	PU > U > APU	PU > APU > U
/-os/	APU > PU > U	PU > APU > U	APU > U > PU	APU > U > PU
/-o/	APU > PU > U	PU > APU > U	APU > PU > U	APU > PU > U

Conclusions

The findings of our research have revealed that lexicon tendencies and morphological information are activated in adult speakers' stress grammar. More specifically, adult speakers seem to systematically connect specific stress patterns with specific inflectional endings, replicating the effects of the Lexicon regarding stress. On the other hand, young speakers exhibit a strong bias for penultimate stress, the cross-linguistically unmarked stress pattern, across all the inflectional classes. This finding suggests that that lexicon frequencies and morphological information are not yet embedded in their grammar, which still shows traces of early grammars' biases, such as the Emergence of the Unmarked. Our findings indicate that the shaping of stress grammar is a dynamic process which is primarily controlled by linguistic factors but also crucially affected by lexical ones. Future research on the speech of (pre-) adolescent speakers may shed light on the way in which lexical factors interfere with linguistic ones.

Notes

1. The PoS version of Clean Corpus was developed by a research team of the Department of Linguistics at AUTH (Revithiadou et al. 2014; Apostolouda 2018).

References

- Alderete, J. 1999. Morphologically Governed Accent in Optimality Theory. PhD dissertation, University of Massachusetts, Amherst.
- Fikkert, Paula. 1994. On the Acquisition of Prosodic Structure. Ph.D. dissertation, HIL/ Holland Academic Graphics.
- Hayes, B., Londe, S. J. 2006. Stochastic phonological knowledge: The case of Hungarian vowel harmony. *Phonology* 23, 59-104.
- Lavitskaya, Y., Kabak, B. 2014. Phonological default in a lexical stress system. *Lingua* 150, 363- 385.
- McCarthy, J. J., Prince, A. 1994a. The Emergence of the Unmarked: Optimality in prosodic morphology. *North Eastern Linguistic Society* 24, 333–379.
- Prince, A. S., Smolensky, P. 1993. Optimality Theory: Constraint interaction in Generative Grammar. Unpublished manuscript, Rutgers University Center for Cognitive Science, New Brunswick, NJ.
- Revithiadou, A., Lengeris, A. 2016. One or many? In search of the default stress in Greek. In Heinz, J., Goedemans, R., van der Hulst, H. (eds.) 2016, *Dimensions of stress*, 263-290. Cambridge, CUP.