

Variation in the prosody of focus in head- and head/edge-prominence languages



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Abstract

This study explored the prosodic realization of focus in four typologically unrelated languages: American English, Paraguayan Guaraní, Moroccan Arabic, and K'iche'. American English and Paraguayan Guaraní mark prosodic prominence culminatively on the head of the prosodic unit, whereas Moroccan Arabic and K'iche' mark prosodic prominence demarcatively on the right edge of the prosodic unit. To allow for cross-linguistic comparisons, the same interactive task was used for all four languages in their respective countries. Utterances were elicited in which a color-denoting adjective, a shape-denoting noun, or the noun phrase consisting of the adjective and the noun was focused. Data from each language were annotated phonologically using an autosegmental-metrical approach and analyzed acoustically. The results suggest that the prosodic realization of focus is partially orthogonal to the distinction between head-prominence and head/edge-prominence languages, and may be due to differences in macro-rhythm. American English and Paraguayan Guaraní, the head-prominence languages, share deaccenting as a means for marking non-focused expressions, but only English uses pitch accent type to mark focused elements. Moroccan Arabic, a head/edge-prominence language, uses phrasing and duration cues to focus, but K'iche', also a head/edge-prominence language, does not. In addition, American English shares phrasing cues, and both American English and Paraguayan Guaraní share duration cues with Moroccan Arabic, despite their structural prosodic differences. © 2014 Elsevier B.V. All rights reserved.

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1. Introduction

In many languages, information-structural properties of utterances, including information about focus, are conveyed by the prosody of the utterance. A diverse range of phonetic and phonological properties contribute to the prosodic marking of focus across languages, including the presence, type, and location of pitch accents and boundary tones, duration and timing, f_0 range, and the alignment of pitch targets to the segmental string (Féry, 2013; Jun, 2005; Ladd, 2008). This project specifically looks at the prosodic marking of focus within the noun phrase, which has previously been studied in English (e.g., Ito and Speer, 2006; Katz and Selkirk, 2011), and which exhibits cross-linguistic variation in that some languages may not mark this type of focus prosodically (Swerts et al., 2002). The development of a cross-linguistic theory of the relationship between prosody and focus requires detailed analyses of the prosodic marking of focus in a wide range of languages. The goal of this project was to advance the development of such a theory through the exploration of how

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focus is prosodically marked in the noun phrase in four typologically unrelated languages: American English and three languages whose prosody is comparatively under-described, namely Paraguayan Guaraní (Tupí-Guaraní), Moroccan Arabic (Arabic) and K'iche' (Mayan). Our approach is grounded in both a formal semantic/pragmatic theory of focus and a formal phonological theory of prosodic structure.

To obtain comparable data on the four languages, we conducted an experiment, an interactive game, similar to that described by [Krahmer and Swerts \(2001\)](#). The data gathered in this experiment inform our detailed discussion in Section 2 of the prosodic structures of Paraguayan Guaraní, Moroccan Arabic, and K'iche'. Our discussion relies on [Jun's \(2005, 2014\)](#) framework of prosodic typology and incorporates the distinction between head- and head/edge-prominence languages, as well as the macro-rhythm parameter. The experiment, which we conducted in the countries in which the four languages are spoken, is described in Section 3, together with our theoretical assumptions about the information-structural notion of focus. Section 4 presents in more detail the results of the experiment and describes the prosodic realization of focus in the noun phrase in each language. Section 5 compares the prosodic realization of focus in the noun phrase across the four languages and Section 6 concludes the article.

2. Prosodic structures of the languages under investigation

This section introduces the prosodic structures of the four languages under investigation. We assume an autosegmental-metrical approach in which high and low f_0 targets are associated with prominent syllables and phrase edges ([Ladd, 2008](#)). The f_0 targets associated with prominent syllables are pitch accents; the f_0 targets associated with phrase edges are boundary tones. These boundary tones may associate with either the left or the right edge of a phrase. Since the prosodic structures of Paraguayan Guaraní, Moroccan Arabic, and K'iche' are under-described, we begin by describing what is known about the prosody of each of these languages, based on previous descriptions and our own data. The examples from our data were produced in an interactive game task, described in Section 3, in which native speakers of each language instructed another native speaker to fill numbered boxes with objects of different shapes and colors.

Our descriptions of the prosodic structure of the four languages follow [Jun's \(2005, 2014\)](#) prosodic typology. [Jun \(2014\)](#) outlined three orthogonal parameters on which the prosodic structure of languages can vary. The first parameter is the type of word prosody: whether or not the language has lexical stress, tone/lexical pitch accent, both, or neither. The second parameter is whether phrase-level prosodic prominence is marked on the head of the phrase, the edge of the phrase, or both. Head-prominence languages are characterized by phrase-level prominence-marking on the phrase head, which is identified either as the head of a word through lexical stress, pitch accent, or tone, or as the head of the phrase through post-lexical pitch accenting ([Jun, 2014](#), p. 527). Edge-prominence languages are characterized by phrase-level prominence-marking on the left or right edge of the phrase through boundary tones. The typology outlined by [Jun \(2005\)](#) only distinguishes between head- and edge-prominence languages; however, [Jun \(2014\)](#) added a third category of languages, namely, head/edge-prominence languages, which are characterized by both head- and edge-marking of phrasal prominence. The third parameter in [Jun's \(2014\)](#) typology is degree of macro-rhythm. Strong macro-rhythm is characterized by regular alternations of high and low f_0 targets (regardless of whether these alternations are the result of pitch accents, boundary tones, or both), whereas weak macro-rhythm is characterized by irregular alternations in f_0 . Degree of macro-rhythm is determined based on three criteria: (i) the number of possible phrase-medial pitch accents, accentual phrase tones, and/or word tones, (ii) the type (e.g., rising, falling, flat, etc.) of the most common phrase-medial pitch accents, accentual phrase tones, and/or word tones, and (iii) the frequency or domain of the pitch accents, accentual phrase tones, and/or word tones ([Jun, 2014](#), p. 526). Macro-rhythm strength is gradient; however, [Jun \(2014\)](#) categorizes languages into three groups: strong, medium, and weak macro-rhythm. How macro-rhythm is realized depends on the prosodic structure of the language. For example, one way in which a head-prominence language can have strong macro-rhythm is by having a small inventory of pitch accents, of which the most frequent is rising or falling, and relatively little deaccenting so that the regularity of the alternations of high and low f_0 targets is maximized. In an edge-prominence language or a head/edge-prominence language without pitch accents, strong macro-rhythm can be realized by frequent accentual phrase tones.

Given that the prosodic structures of three of the languages we examined are relatively under-described, the following descriptions of these languages' prosodic structures are unavoidably based on a smaller sample of sentence types and contexts than the English description. Our overall approach to describing these languages was conservative and we avoided positing pitch accents or levels of prosodic structure without strong evidence for their existence. Future research may reveal additional information about the prosodic structures of these languages.

2.1. American English

American English exhibits both prominence-lending pitch accents associated with lexically stressed syllables and unit-demarcating boundary tones associated with the right edges of prosodic phrases ([Beckman et al., 2005](#)). The pitch accent

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