

The manifestation of focus as a function of word prosodic properties

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One of the main strategies for expressing sentential prominence (narrow focus) is the enhancement or hyper-articulation of particular acoustic attributes (duration, F0, etc.) of the prominent element, e.g., focused word.^{1,2} The enhancement is primarily manifested on the stressed syllable of the focused word,²⁻⁷ and while this option is not available in languages lacking stress, such languages may still manifest focus prosodically. We investigate the acoustic properties of focus prominence in different word prosodic systems, and demonstrate that languages exhibit systematic differences corresponding to their word prosody, but also similarities in the use of boundary phenomena.

The languages examined represent three main types of word prosodic systems: stress (Turkish, Arabic, and Portuguese), tone (Mandarin), and neither stress nor tone (Indonesian). The latter two languages lack stress, and thus an obvious location for the manifestation of focus, we consider focus in such languages in relation to phonological phrasing,^{1-3,8-10} and specifically, the possibility that the focused element forms a prosodic unit, although its nature is somewhat controversial.² Given the association between focus and prosodic structures,⁹⁻¹² we additionally examine the stress languages, to assess whether they, too, express focus with phonological phrasing.

The corpus consists of recordings of 10 speakers of standard dialects of Mandarin (Beijing), Indonesian (Jakarta), Arabic (Amman), Portuguese (Northeast Brazil), and Turkish (Istanbul). The target vowels /i, u, a/ appeared in each syllable of 10 real three-syllable words, and in the stress languages, in both stressed and unstressed conditions. In Mandarin, we examined Tone 1, a high level tone. To examine the properties of focus, we compared the targets produced in focus and non-focus contexts, as primed by different dialogues. For each target vowel we measured duration, intensity, F0, and vowel centralization, and analysed them with binary logistic regression analyses. The results provided in Table 1 show which properties were used at the boundaries in all three types of language; and for syllable enhancement in the stress languages.

The non-stress languages exhibited a combination of boundary phenomena consistent with the right edge of a major prosodic constituent: increased final-syllable duration, and in Indonesian, also lowered F0. As a tonal language, Mandarin does not exhibit a lowering of F0 on the final syllable, but instead an expansion of the F0 range. The stress languages similarly exhibited boundary phenomena in the manifestation of focus, mainly related to pitch changes at the right or left edge.

In sum, while stress languages enhance the syllable with word stress, this is not necessary for the prosodic expression of focus, as seen in languages without lexical stress. In Indonesian and Mandarin, focus is manifested in terms of boundary phenomena, specifically, final lengthening and F0 changes, although the latter depends on the presence of lexical tone (i.e., lower F0 in Indonesian; increased tonal range in Mandarin). Despite this difference, and the enhancement of a stressed syllable in stress languages, we also find commonality in the use of boundary phenomena consistent with major prosodic constituent breaks indicating focus in the languages, regardless of their word-prosody.

Table 1. Results of the focus manifestation by language.

Language	Syllable Enhancement	Boundary Phenomena	
		Left	Right
Portuguese	longer stressed syll	high F0	low F0
Turkish	longer stressed syll	X	low F0
Arabic	higher F0 on stressed syll	high F0	final lengthening
Mandarin	X	X	final lengthening & pitch range expansion
Indonesian	X	X	final lengthening & low F0

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