

Acoustic Properties of Word and Phrasal Prominence in Uzbek

Angeliki Athanasopoulou, Irene Vogel, Hossep Dolatian

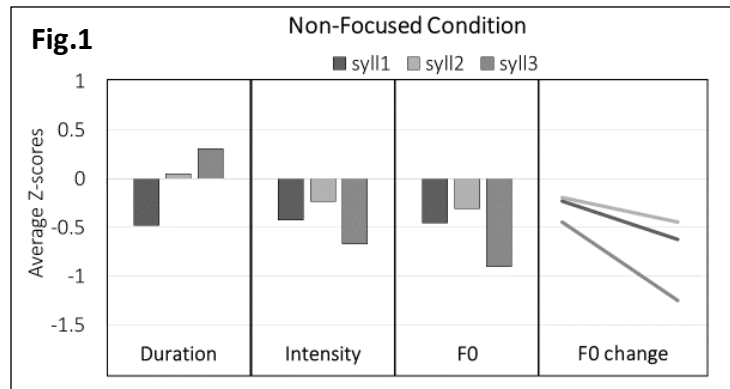
There is minimal information about the prosodic phenomena of Turkic languages, with the notable exception of Turkish. We contribute to addressing this gap with the present investigation in Uzbek of both word-level prominence (lexical Stress) and two types of phrasal prominence (referred to here as Contrastive Focus and New Information Focus). We provide a systematic acoustic analysis of the phenomena based on a large corpus of recorded speech.

Recordings were made of ten Uzbek speakers (5 Females, 20-24 years) in Tashkent reading real three-syllable words in three short dialogues (Table 1), priming focus on a word *after* the target word (Non-Focus Condition = NF), *on* the target in a contrastive context (Contrastive Focus Condition = CF), and *on* the target in context providing new information (New Information Focus = NIF). Two speakers' data were excluded for technical reasons.

The vowels used for our measurements appeared in open (CV) syllables. In each of the three syllables, there were 10 instances of each /i, u, a/ (except /u/ is not found in syll3), with stress in the canonical word-final position¹⁻⁴ (e.g., /ʃabada/ 'breeze': target /a/ in all syllables). Additional words with penultimate stress due to the presence of "stress-shifting" suffixes were also included, but not analyzed in the present paper. As noted, each target appeared in three prosodic conditions, yielding a total 2160 vowels for this analysis.

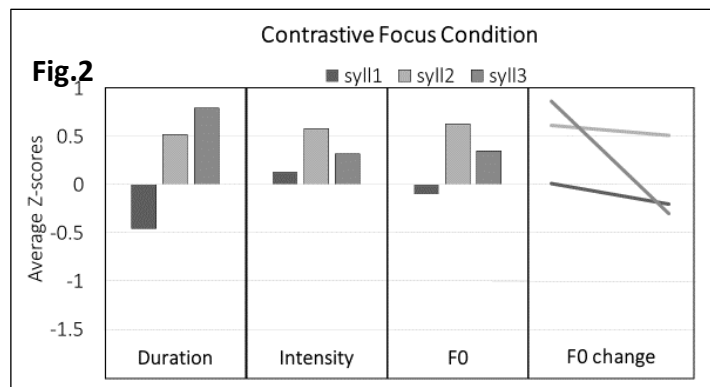
The target vowels were segmented and measured for the acoustic properties associated with prominence (F0, Duration, Intensity, Vowel Centralization) using Praat. The measurements were normalized for speaker and vowel using z-scores, and the data pooled across participants.

Taking the NF Condition (Fig.1), without the confound of focus properties, as a baseline for the word prosodic patterns, the only acoustic property that indicates prominence on the final syllable, the position of canonical lexical Stress, is Duration, which is longer than in the other syllables. F0 and Intensity are lower on the final syllable, whereas greater values would indicate greater prominence. Syll3 also exhibits a more pronounced falling F0 trajectory than the other syllables.

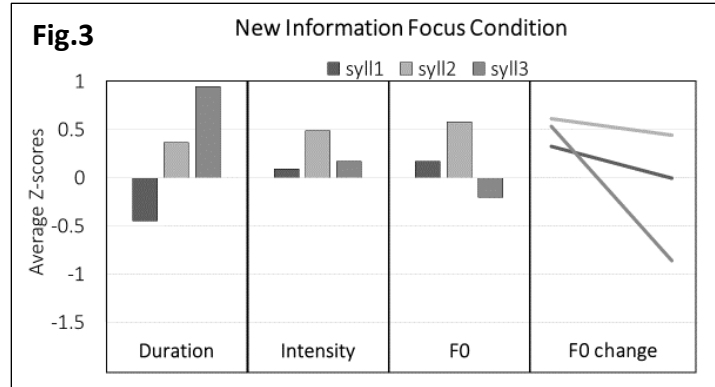


Syll3 also exhibits a more pronounced falling F0 trajectory than the other syllables.

Syll2 is longer than Syll1, yielding a general duration increase from the beginning to the end of the word. The other properties show similar patterns, though the differences are quite small: Syll1 has slightly lower F0 and intensity than Syll2, and (minimally) less of a falling F0 trajectory. Both types of Focus, CF (Fig.2) and NIF (Fig.3) enhance the acoustic properties under



consideration. Both considerably increase the duration of the final syllable, consistent with its bearing the lexical Stress, and thus serving as the locus of Focus enhancement, especially since Duration was the only consistent Stress cue in the NF Condition. The duration of Syll1 is not affected by Focus, but both CF and NIF enhance Syll2 more than Syll1. We also find that



while Syll2 has higher F0, Syll3 again exhibits the falling pattern we saw in NF. This falling trajectory could be the reason of the lower average F0 as opposed to Syll2. The differences between the two Focus conditions are quite small, so it is unclear whether the two types of Focus are perceptibly distinct for listeners on the basis of their acoustic cues.

In sum, our systematic acoustic investigation of three types of prominence in Uzbek confirms the presence of lexical Stress on the final syllable, where it is, however, only consistently manifested by increased Duration. Both types of Focus considerably enhance the Duration of the stressed syllable, and enhance the other properties across the word, with somewhat greater effects on Syll2 than Syll1.

Table 1. Carrier Dialogues for Non-Focus (NF), Contrastive Focus (CF), New Information Focus (NIF) Conditions. Target is underlined; focused word is bolded.

NF	Q:	<i>O'tgan yili <u>tovuq</u> so'zi Lolaning sevimli so'zing edimi?</i> 'Last year, was <u>chicken</u> Lola's favorite word?'
	A:	<i>Yo'q, o'tgan yili <u>tovuq</u> so'zi mening sevimli so'zim edi, Lolanikimas.</i> 'No, last year, <u>chicken</u> was my favorite word, not Lola's.'
CF	Q:	<i>O'tgan yili olma so'zi sening sevimli so'zing edimi?</i> 'Last year, was apple your favorite word?'
	A:	<i>Yo'q, o'tgan yili "<u>olma</u>" emas, tovuq so'zi mening sevimli so'zim edi.</i> 'No, last year, <u>chicken</u> was my favorite word, not apple.'
NIF	Q:	<i>O'tgan yili qaysi so'z sening sevimli so'zing edi?</i> 'Last year, which word was your favorite word?'
	A:	<i>O'tgan yili tovuq so'zi mening sevimli so'zim edi.</i> 'Last year, <u>chicken</u> was my favorite word.'

References

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