

## Final Stress in Turkic Languages? The Case of Uzbek

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A general typological assumption about Turkic languages is that stress is word-final - with some exceptional stress patterns. This view is essentially based on Turkish, for which there is now considerable research (see Özçelik,<sup>1</sup> Kamali<sup>2</sup> for reviews); however, the prosody of other Turkic languages remains severely understudied. We investigate the acoustic properties of stress in both non-focus and focus positions in Uzbek, and suggest that Uzbek may no longer exhibit lexical stress, as previously described,<sup>3-6</sup> either in the canonical final or the exceptional penult position.

Ten native Uzbek speakers (university students 20-24 years old) were recorded in Tashkent, producing real 3-syllable words in short dialogues (Table 1) priming focus on a word following the target (Non-focus Condition), or on the target (New Information Focus Condition). There were ten instances of each of /i, u, a/ in CV syllables in all three syllable positions (except /u/ not found in Syll3), with stress in the canonical word-final position<sup>3-6</sup> (e.g., /tʃakana/ 'retail'; target /a/ in all syllables), and in the first two syllables, where certain suffixes were expected to induce penultimate stress (e.g., /kapa-man/ 'tent-1SG, COP'); all suffixes were CVC, so their vowels were not included in the analysis. The data from two speakers was excluded for technical reasons, yielding 1920 and 1440 vowels in final and penult stressed words, respectively. The vowels were analyzed with Praat. The data were normalized with Z-scores and pooled across speakers.

We hypothesize that in the case of canonical stress, the standard prominence properties (duration, F0, and intensity) are enhanced (longer or higher) on the final syllable compared to the initial and penult syllables; and in the presence of a pre-stressing suffix, the enhancement is observed on the penult compared with the other syllables. Moreover, we hypothesize that when a word is in a focused position, the properties of its stressed syllable (final or penult) are further enhanced in comparison with the properties observed when the word is pre-focal.

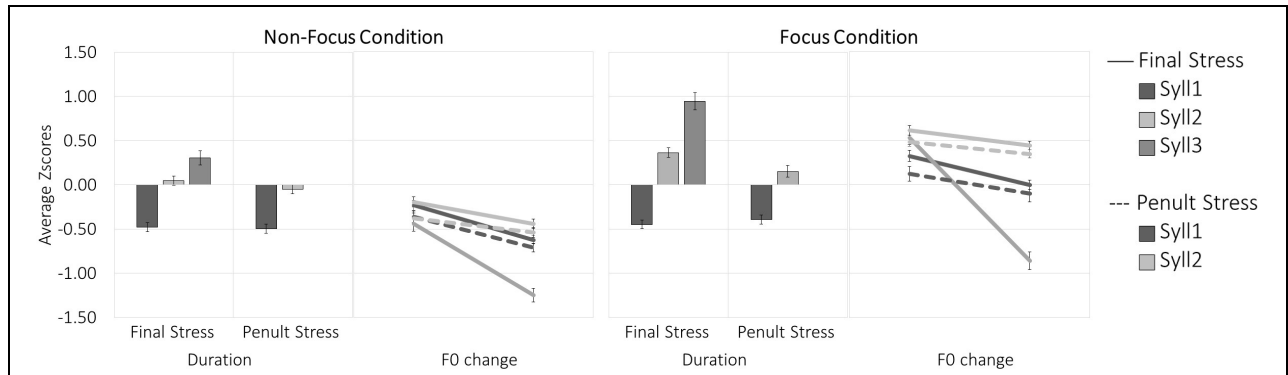
Figure 1 shows the results for F0 and Duration (Dur), the two main prominence properties found in our data. Intensity and vowel centralization differences were not significant, and they are not discussed here due to space limitations. In the Non-Focus condition, without confounding properties from focus, Dur is longest on Syll3 in words with canonical final stress; however, there is an overall increase across the syllables. In the penult stressed words, there is essentially the same increase from Syll1 to Syll2 as seen in the canonical stress pattern, suggesting that the increased Dur may be part of a larger prosodic pattern, rather than localized lexical stress. Additionally, there is a falling F0 in Syll3 with canonical stress, while both Syll1 and Syll2 have similarly higher F0. For penult stress, Sylls1 and 2 show essentially the same pattern as with canonical stress. In the Focus condition, where enhancement is expected on the final syllable with canonical stress, Dur and F0 are, instead, increased on all three syllables (except Dur on Syll1 which does not change). The patterns of Sylls1 and 2 with penult stress are again identical to those with canonical stress.

In sum, we fail to find evidence of penultimate stress in words with "pre-stressing" suffixes as distinct from those with canonical stress. Moreover, the combination of increased duration and lower F0 on Syll3 in words with canonical stress suggests the possibility of a prosodic pattern applying to a domain above the word (e.g., phonological phrase, intonational phrase), rather than lexical stress. In this case, Uzbek would no longer adhere to the final stress pattern as previously described,<sup>3-6</sup> and typically associated with Turkic languages based primarily on the properties of Turkish, which itself is reported to have weak, or no, stress cues.<sup>1,2</sup> We discuss the possibility that Uzbek is a stressless language, similar to Indonesian.<sup>7</sup> Systematic investigations of other Turkic languages will be crucial in determining to what extent they retain lexical stress, and if so,

whether it is always word-final, or whether certain suffixes result in stress on a preceding syllable, maintaining this typological expectation about Turkic prosody.

**Table 1.** Carrier Dialogues for Non-Focus (NF) and New Information Focus (NIF). The target is underlined; focused word is bolded. Only the target words in the answers were analyzed.

NF	Q:	<i>O'tgan yili <u>chakana</u> so'zi <b>Lolaning</b> sevimli so'zing edimi?</i> 'Last year, was <u>retail</u> <b>Lola's</b> favorite word?'
	A:	<i>Yo'q, o'tgan yili <u>chakana</u> so'zi <b>mening</b> sevimli so'zim edi, Lolanikimas.</i> 'No, last year, <u>retail</u> was <b>my</b> favorite word, not Lola's.'
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 <u>chakana</u> so'zi mening sevimli so'zim edi.</i> 'Last year, <u>retail</u> was my favorite word.'



**Figure 1.** Duration and F0 (Z-scores) by syllable, stress position, and focus condition. F0 is measured in the first and last quarters of each vowel.

## References

- <sup>1</sup> Özçelik, Ö. 2017. The Foot is not an obligatory constituent in the Prosodic Hierarchy: "stress" in Turkish, French and child English. *The Linguistic Review*, 34, 157 - 213.
- <sup>2</sup> Kamali, B. (2011). *Topics at the PF interface of Turkish*. PhD Dissertation: Harvard University. Cambridge, MA.
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- <sup>7</sup> Athanasopoulou, A., Vogel, I., & Pincus, N. (accepted). Prosodic Prominence in a Stress-less Language: An acoustic investigation of Indonesian. *Journal of Linguistics*.