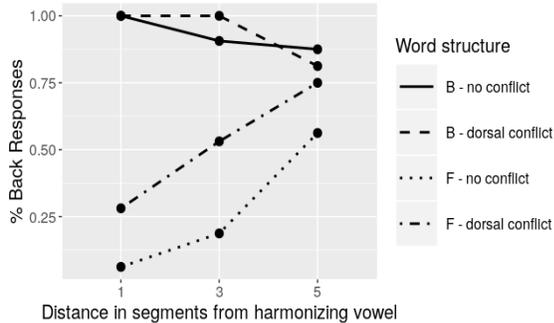


Wug-testing Uyghur Vowel Harmony: trigger conflicts, variation, and distance-based decay

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Introduction. Many suffixes in Uyghur (SE Turkic: China, Kazakhstan, Uzbekistan) harmonize for backness with the stem. Lindblad (1990), relying on written data, claims that suffixes harmonize with the final front (/æ, ø, y/) or back (/u, o, a/) stem vowel. The vowels /i, e/ are transparent to harmony. If no harmonizing vowel is present, suffixes harmonize with the final front (/k, g/) or back (/q, ɣ/) dorsal. In stems with both a harmonizing vowel and a conflicting harmonizing dorsal between the vowel and the suffix, the vowel takes precedence (e.g., *rak-ta/*tæ* ‘in/on shrimp’). In the absence of harmonizers, suffix backness is specified lexically, with a preference for back suffixes. The present study tests the productiveness of this reported pattern, providing new empirical data. We show that Uyghur backness harmony is more gradient than previously described, exhibiting distance-based decay (Frisch et al. 2004, Hayes & Londe 2006, Walker & Empiranya 2006) and interactions between conflicting triggers (Kimper 2011).

Methodology. Wug words allow us to characterize the phonological pattern without influence from lexical effects. We generated Uyghur wug words with a single harmonizing vowel, varying the distance between the vowel and suffix by inserting syllables with transparent vowels, and varying whether a conflicting dorsal intervened. The dorsal always occurred word-finally. Words were vetted by a native Uyghur speaker for phonotactic plausibility. We elicited the wugs from 8 native Uyghur speakers living in Kazakhstan. Wugs were embedded in short, naturalistic paragraphs that required them to be produced with the locative suffix, which has front (/dæ, tæ/) and back (/da, ta/) allomorphs. We coded for which form of the suffix was used for each wug.



Results. The results are shown in the figure. F and B indicate words with front and back vowel triggers, and “dorsal conflict” indicates that a dorsal of conflicting backness intervenes between vowel and suffix. There is an overall bias towards back suffixes. Suffixes that conflict with the vowel become more common as the distance between vowel and suffix increases, and when there is a dorsal conflict, though there is considerable variation.

Analysis. We provide an analysis using Maximum Entropy Harmonic Grammar (Smolensky 1986, Goldwater and Johnson 2003) which is well-suited to capturing phonological gradience. The most successful model we tested, as determined by AIC (Akaike 1974), used three constraints: *S_F, which disfavors front suffix forms, as well as a pair of Agree/Disagree constraints (Kimper 2011), V_{AGREE} and C_{AGREE}, that penalize clashes between the suffix form and the final harmonizing vowel and consonant respectively. We follow Zymet (2014) in calculating violations of these latter two constraints using a non-linear decay function $d(x) = 1/x$ that generates lower violations as the number of segments x between the trigger and suffix increases. The table below shows the derivation of frequencies for one example wug form.

Conclusion. We show that Uyghur backness harmony is more gradient than previously described, and can be modeled using mechanisms proposed independently to capture distance-based decay and conflicting trigger interaction.

	Observed Frequency	Predicted Frequency	*S _F	V _{AGREE}	C _{AGREE}
			1.23	8.01	0.95
<i>dʒøpimex-da</i>	0.75	0.699	0	$d(6) = 1/6$	0
<i>dʒøpimex-dæ</i>	0.25	0.301	1	0	$d(1) = 1$