

Vowel harmony in Dolgan

*Depthi Gopal¹, Stephen Nichols²,
László Károly¹ & Pavel Iosad²*

¹Uppsala University

²University of Edinburgh

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The diachronic trajectory of vowel harmony

Stability or breakdown?

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 - Phonologisation of vowel reduction.
 - ‘Language contact’.
- **Is harmony decay inevitable if these factors co-occur?**

Harmony decay & harmony retention

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- Reduction also implicated in the **emergence** of harmony (e.g. Hyman 2002).

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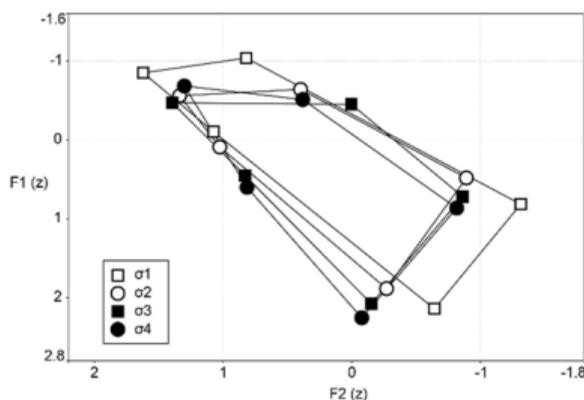
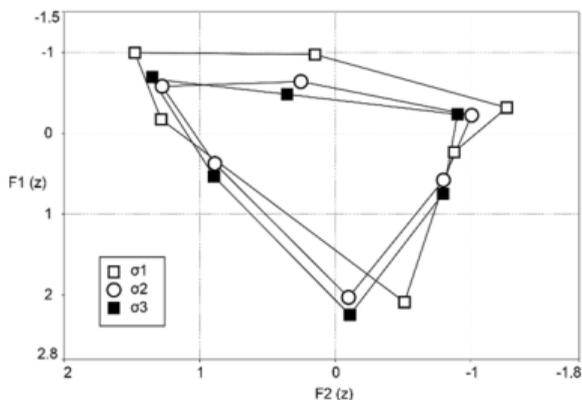
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McCollum (2020): Vowel reduction in Kyrgyz.

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 - **Decay.** Bobaljic (2018): harmony decay in Itelmen (Chukotko-Kamchatkan) depends crucially on both *structural factors* (vowel merger) and *borrowing* from Russian.
 - Closely-related Chukchi retains harmony for structural reasons.

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- **Question.** What drives harmony retention in the face of conditions that favour decay?

Dolgan

The picture across Turkic

- Where does Dolgan fit in?

Dolgan

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Language	Harmony loss?	Centralisation?	Russian contact?	Phonemic length?	Sources
Crimean Tatar	yes (rounding)	yes	yes	no	McCollum & Kavitskaya 2022
Kazakh	yes (rounding)	yes	yes	no	McCollum 2015
Kyrgyz	no	yes	yes	yes	McCollum 2020
Sakha	no	yes	yes	yes	Chan & Kuang 2023
(Kazan) Tatar	yes (rounding)	yes	yes	no	Conklin & Dmitrieva 2018
Uighur	no	yes	no	no	McCollum, Durvasula & Abudushalamu 2024
Uzbek	yes (total)	yes	yes*	no	Sjoberg 1963; Harrison, Dras & Kapicioglu 2006

* Uzbek VH loss predates Russian contact, but is due to contact with a different non-VH lg.

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- Long-term contact up to the present day with Evenki (Tungusic) and Nganasan (Samoyedic), and historical contact with Mongolic .

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- The diphthongs /ie̞, yœ̞, uo̞/ historically descend mainly from long *mid* vowels; occasionally also from lenitions in VCV sequences (especially of velars).
 - E.g. *bēš̄ > /bi̞e̞/ ‘five’, *tōrt̄ > /ty̞œ̞rt̄/ ‘four’, *ōn̄ > /uo̞n̄/ ‘ten’.
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- /ɨ̞a/ seems to derive from /aCI/ sequences.
 - E.g. **tabul* > /ti̞a̞l/ ‘wind’, **bagir* > /bi̞a̞r/ ‘liver’.

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Non-high target	/u:-lAr/ u:lar ‘water-PL’ /yŋy:-lAr/ yŋy:ler ‘spear-PL’	/ok-lAr/ oktor ‘arrow-PL’ /børø-lAr/ børølør ‘wolf-PL’

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- Diphthongs behave like high vowels (Däbritz 2022: 55), as in Sakha (Chan & Kuang 2023: 3296).

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- Montreal Forced Aligner (McAuliffe et al. 2017) for segmentation; trained a customised model for Dolgan; manual checking in progress.

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 - z-score normalised.
 - Data tagged by us for: details of vowel (phonemic length, rounding, fronting, height); syllable count; root vs. affix status, along with morphological material; preceding & following consonantal context; underspecification.

Dolgan

Language contact

- **Can we evaluate how much borrowing we see?**
 - Focusing on lexical borrowing; plenty of morphological borrowing from Mongolic and Evenki, largely early.

Borrowing source	tokens	% tokens	stems	% stems
Native lexicon	45030	77.9	3274	51.2
Russian	9097	15.7	2765	43.2
Mongolic	3318	5.74	447	3.85
Evenki	359	0.621	171	1.38
Sakha	13	< 0.1	8	0.124
Nganasan	10	< 0.1	5	< 0.1

Dolgan

Language contact

- Can we evaluate how much borrowing we see?
 - We can also break this down by genre: conv conversational data, flk folklore, nar narrative, misc miscellaneous.
 - For all tokens:

Borrowing source	conv		flk		nar		misc	
	n	%	n	%	n	%	n	%
Native lexicon	12625	74.6	7440	83.9	24887	77.9	78	78.0
Russian	3179	18.8	903	10.2	5009	15.7	6	6.0
Mongolic	1064	6.3	429	4.8	1809	5.7	16	16.0
Evenki	45	0.3	93	1.1	221	0.7	0	0.0
Sakha	8	0.0	0	0.0	5	0.0	0	0.0
Nganasan	3	0.0	0	0.0	7	0.0	0	0.0

Dolgan

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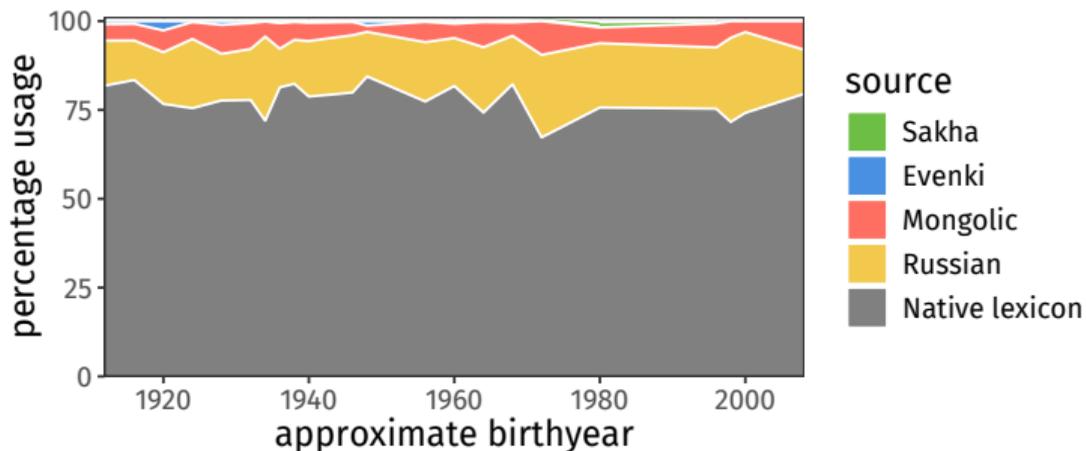
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 - And for unique stems:

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Russian	1270	46.2	184	12.7	1734	39.2	4	5.88
Mongolic	113	4.1	91	6.3	189	4.2	9	13.4
Evenki	21	0.8	30	2.1	61	1.4	0	0.0
Sakha	6	0.2	0	0.0	3	0.1	0	0.0
Nganasan	2	0.1	0	0.0	5	0.1	0	0.0

Dolgan

Language contact

- Can we evaluate how much borrowing we see?
 - *Inter-speaker variation?*



Some variation, no statistically-significant trend.

Dolgan

Language contact & disharmony

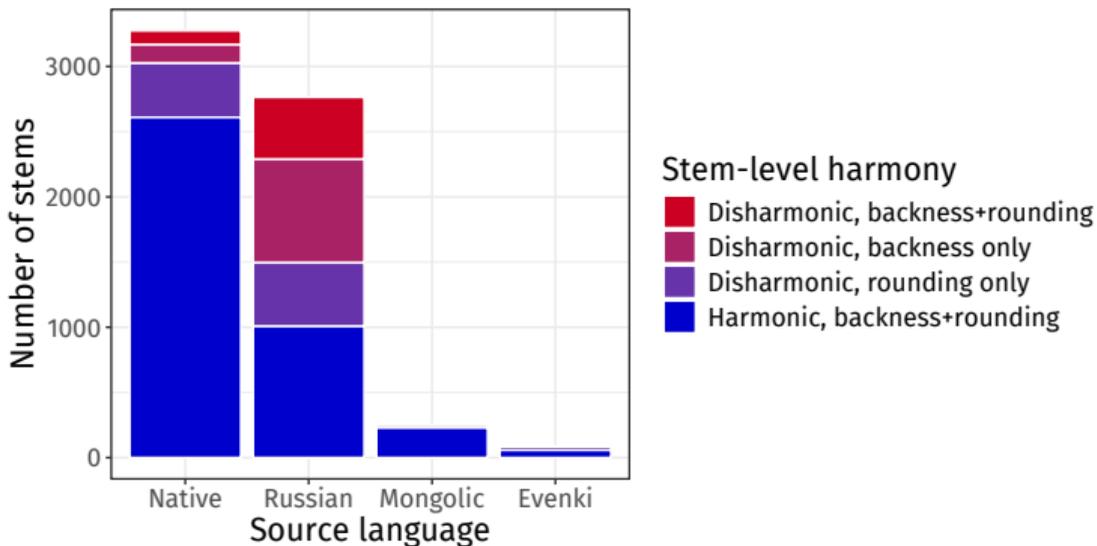
- How much disharmony do we see?
- Overall:

	tokens	% tokens	stems	% stems
Harmonic, backness+rounding	50575	87.5	3804	60.9
Disharmonic, rounding only	4231	7.32	920	14.9
Disharmonic, backness only	1891	3.27	932	14.9
Disharmonic, backness+rounding	1134	1.96	584	9.35

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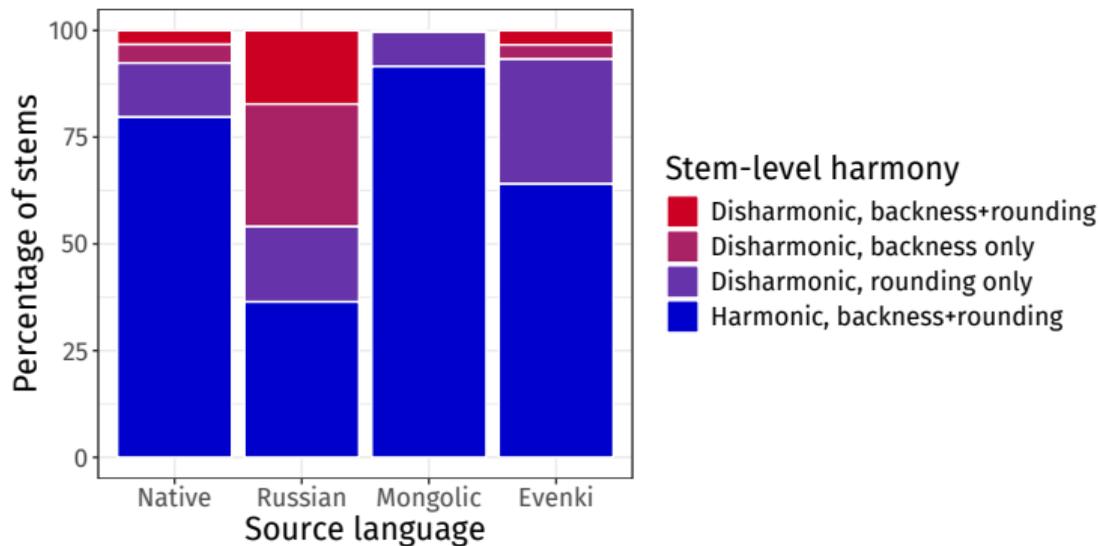


By source:

Dolgan

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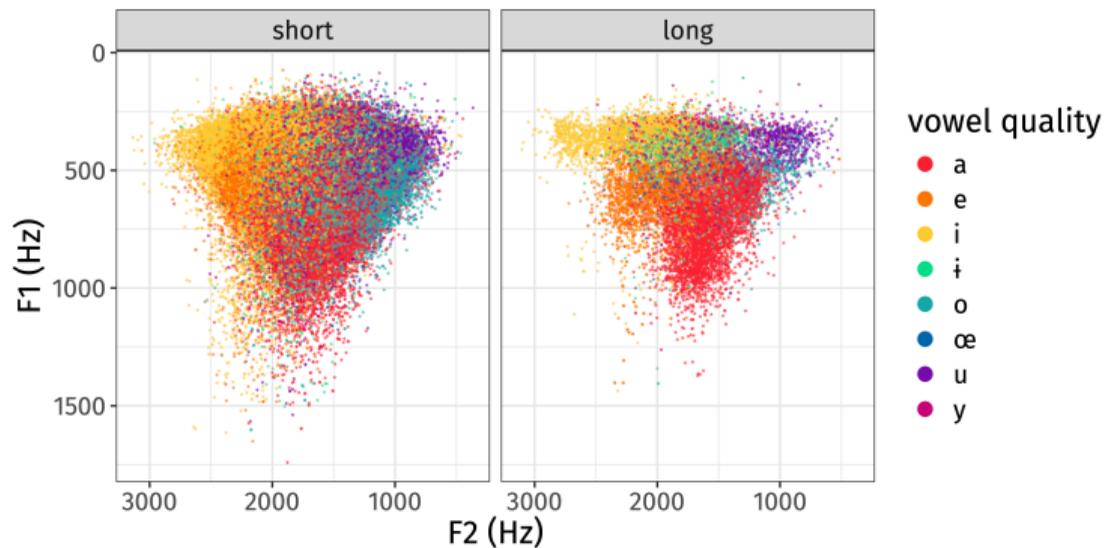


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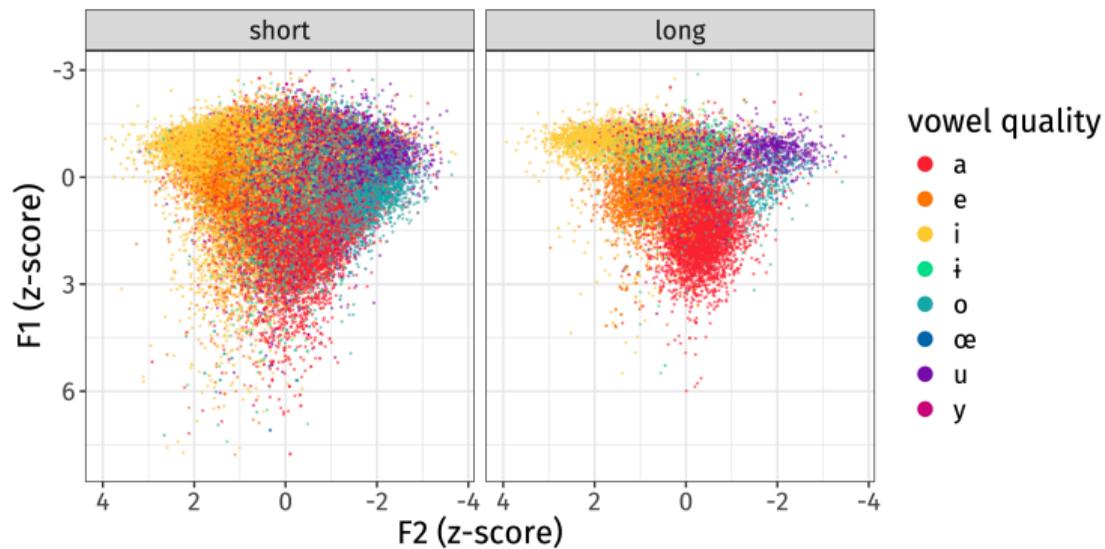
- How much disharmony do we see?
- Plenty of disharmony, mostly driven by Russian borrowing.

Data quality?



Raw data.

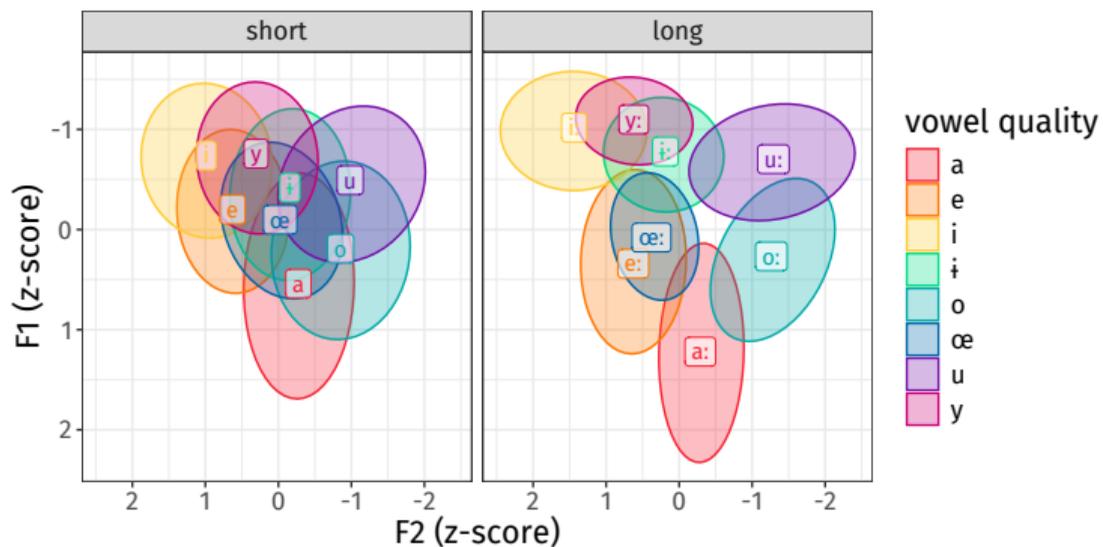
Data quality?



z-score-normalised data.

Properties of the vowel space

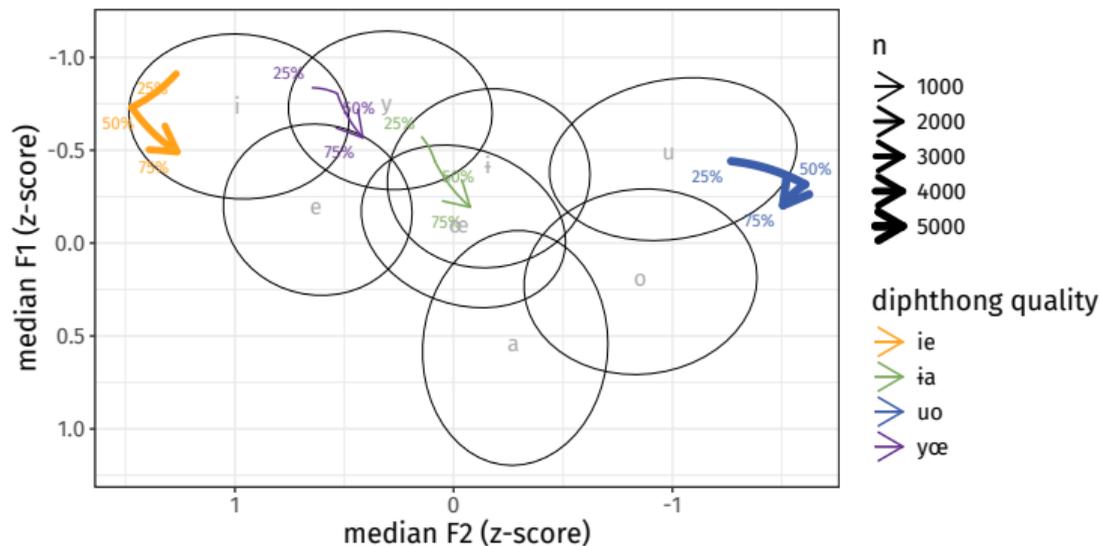
The overall picture



z-score normalised vowel space for monophthongs, 75% confidence.

Properties of the vowel space

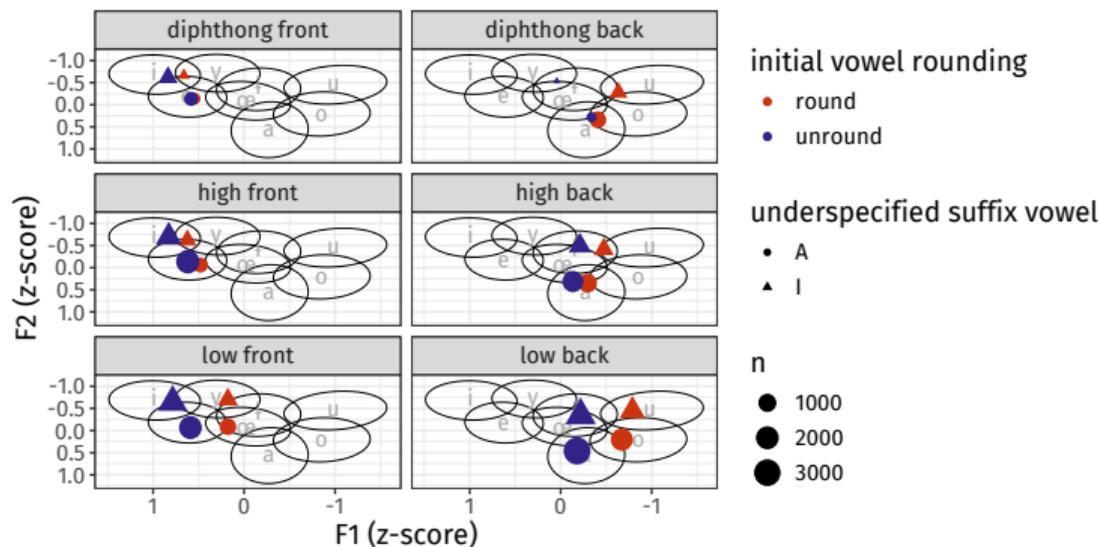
The diphthongs



25%, 50% & 75% means for (normalised) diphthong F1 and F2, shown with short monophthong CIs for reference.

Vowel harmony

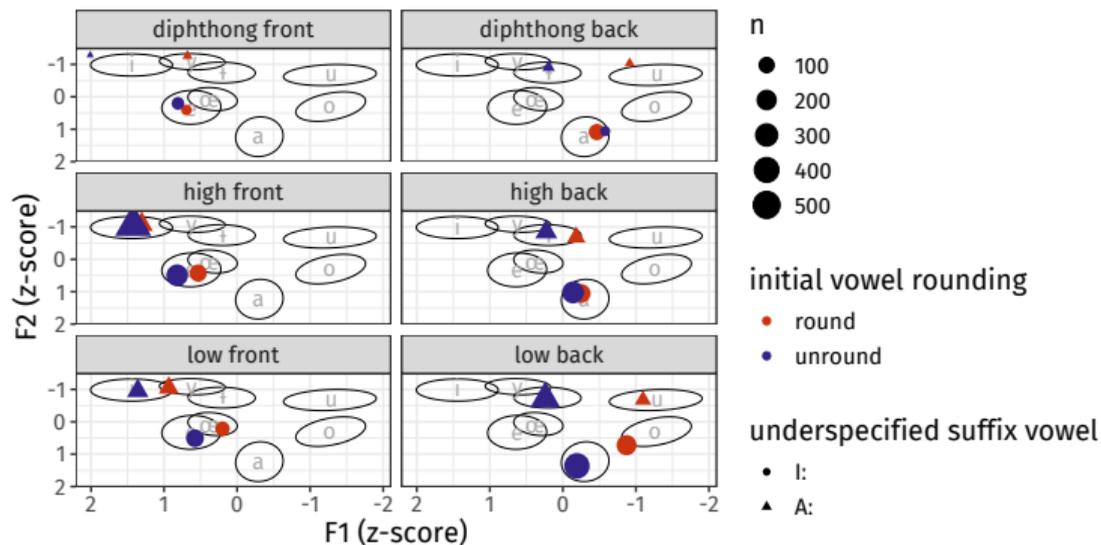
Underspecified short monophthongs in suffixes



Low vowels trigger rounding harmony across the board; **high vowels** are poorer triggers, and can only reliably trigger rounding harmony in high vowels. **Diphthongs** pattern with **high vowels** as triggers of harmony.

Vowel harmony

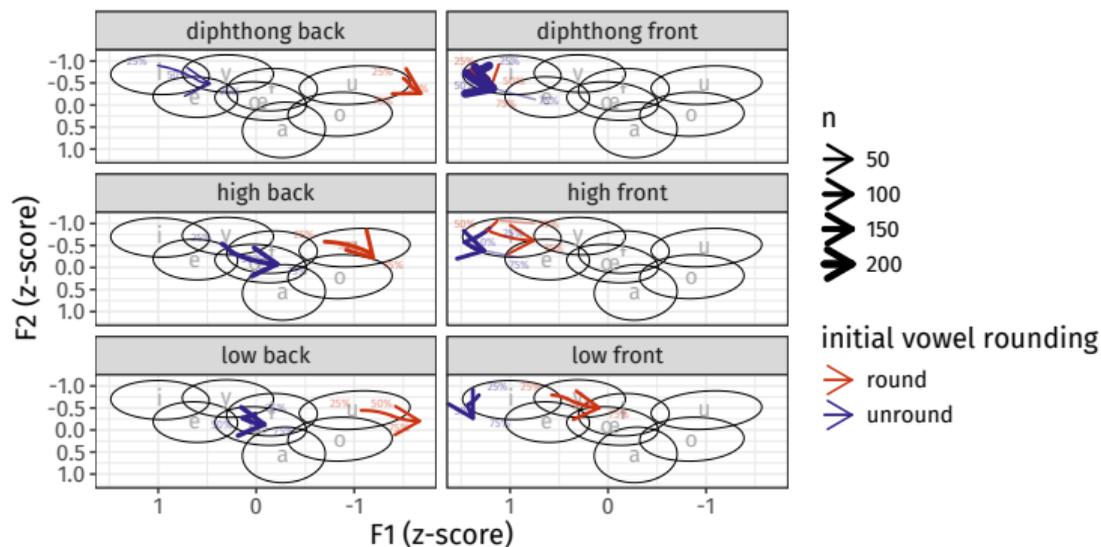
Underspecified long monophthongs in suffixes



Essentially similar patterning in the long vowels.

Vowel harmony

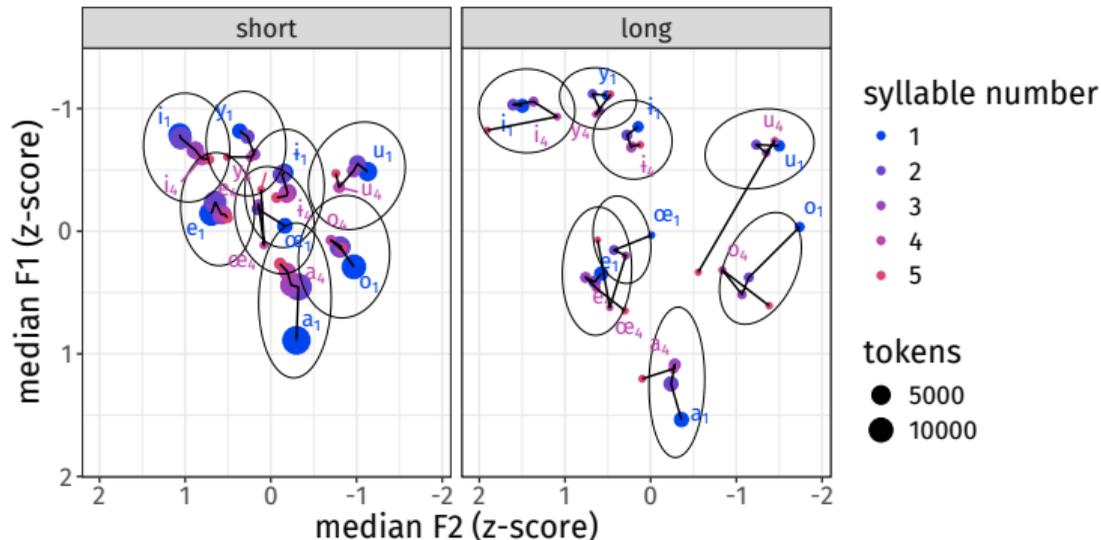
Underspecified diphthongs in suffixes



Affixes containing /IA/ underspecified diphthongs undergo harmony across the board (note small token numbers in post-*/y/*, post-*/yœ̃/* position). **Diphthongs pattern with high vowels as targets, too.**

Vowel harmony

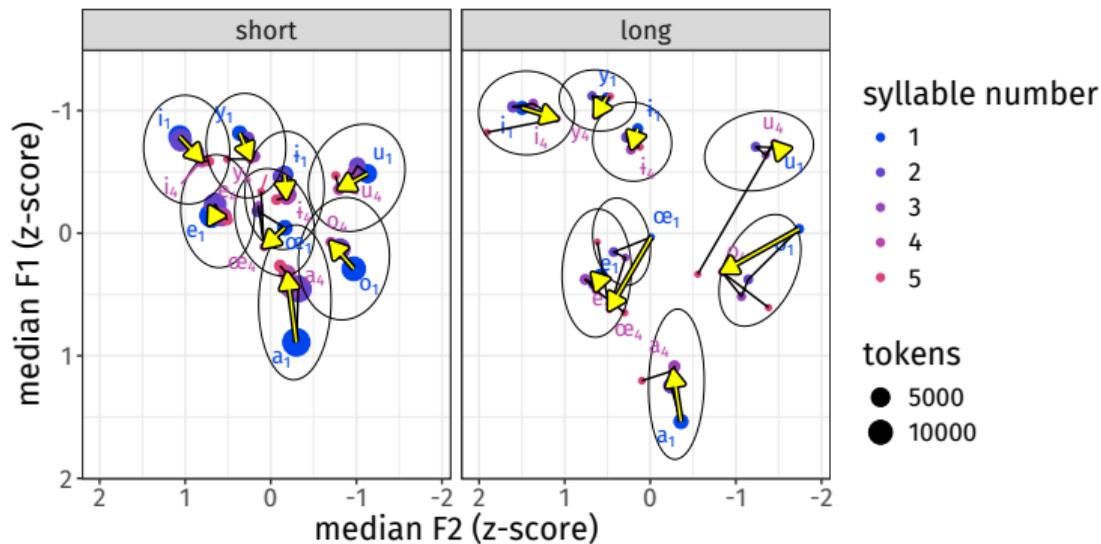
Centralisation & reduction



Short and long vowels organised by position in the word. **Short vowels centralise considerably** with distance from the initial syllable; no such systematic pattern for the long vowels.

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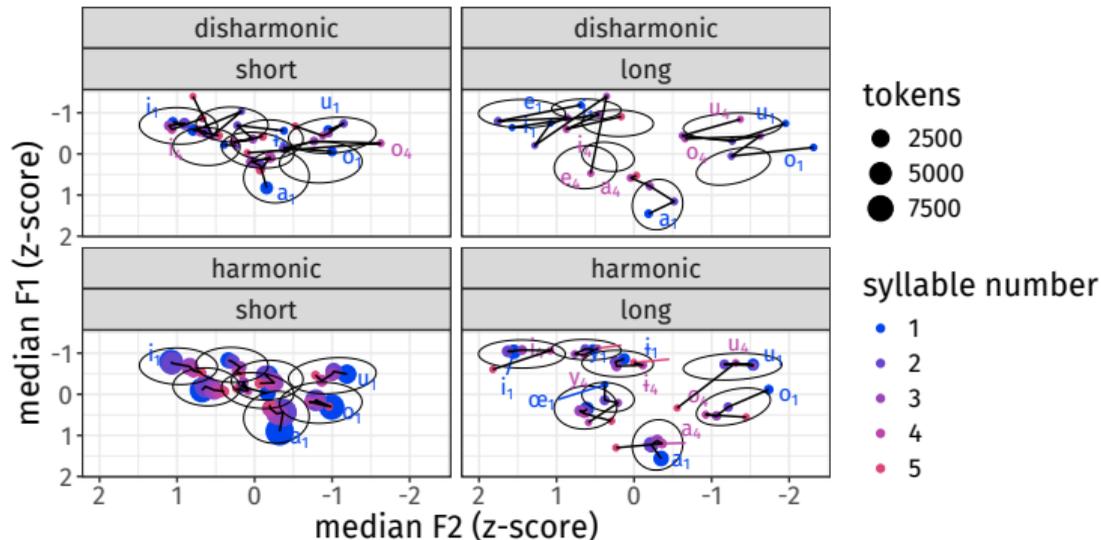
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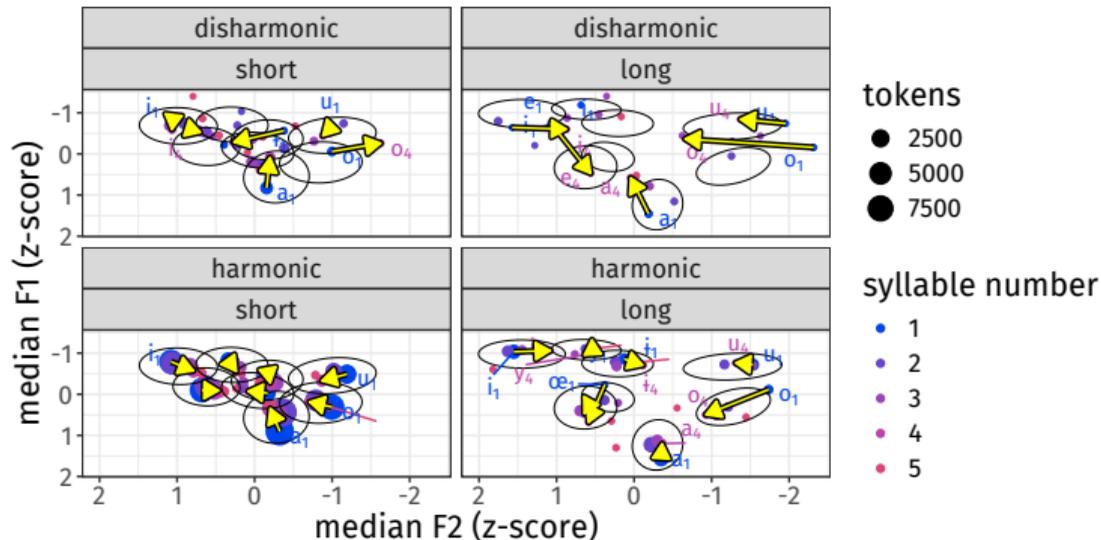
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Centralisation is a property of harmonic items; **front-back disharmonic** words don't show it.
Centralisation = predictability.

Vowel harmony

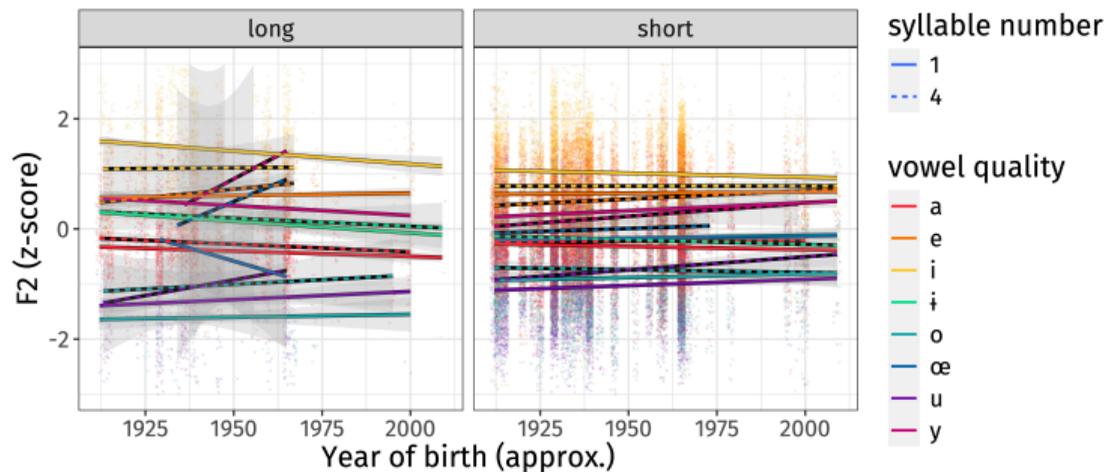
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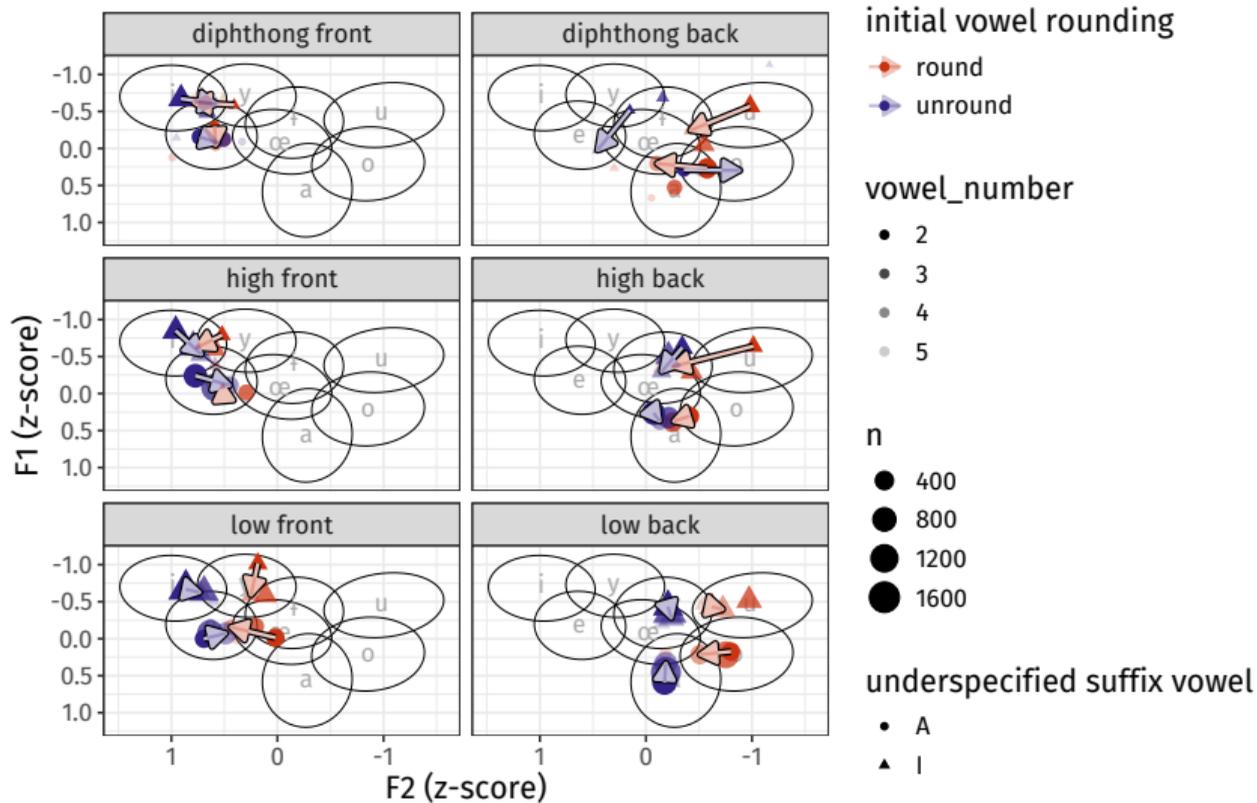
Centralisation & reduction



And no *divergence* between syllable-1 and syllable-4 short vowels in apparent time. **Centralisation is stable?**

Vowel harmony

Centralisation & reduction



Summary & outlook

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- There is some *gradience*: backness and rounding do drop off as suffixes get further from the trigger, in line with reports from many other Turkic languages. But not enough to seriously threaten the system itself.
- There is plenty of *disharmony* in the lexicon, but it doesn't do anything.
- **Why does this work?**

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- If true, ultimately, harmony in Dolgan is protected for reasons that perhaps also extend to lgs. like **Sakha** and **Kyrgyz**.
- **This is work in progress — further ideas very welcome!**

[pasʲibaɫar]!

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References I

- Binnick, Robert I. 1991. Vowel harmony loss in Uralic and Altaic. In William G. Boltz & Michael C. Shapiro (eds.), *Studies in the historical phonology of Asian languages* (Current issues in linguistic theory 77), 35–52. Amsterdam: John Benjamins.
- Bobaljik, Jonathan David. 2018. Disharmony and decay: Itelmen vowel harmony in the 20th century. In Roberto Petrosino, Pietro Cerrone & Harry van der Hulst (eds.), *From sounds to structures: Beyond the Veil of Maya*, 161–192. Berlin: Mouton de Gruyter.
- Chan, May Pik Yu & Jianjing Kuang. 2023. The acoustics of vowel harmony in Sakha. *ICPhS 2023: Phonetics of Lesser Documented and Endangered Languages* 19(331). 3296–3300.
- Conklin, Jenna & Olga Dmitrieva. 2018. Acoustics of Tatar vowels: Articulation and vowel-to-vowel coarticulation. *The Journal of the Acoustical Society of America* 144(3). 1940. doi:10.1121/1.5068486.
- Dawkins, Richard McGillivray & William Reginald Halliday. 1916. *Modern Greek in Asia Minor a study of the dialects of Silli, Cappadocia and Phárasa, with grammar, texts, translations and glossary*. Cambridge: Cambridge University Press.
- Däbritz, Chris Lasse. 2020. The INEL Dolgan corpus: Insights into an endangered language of Northern Eurasia. *Finno-Ugric Languages and Linguistics* 9(1–2). 67–77. <http://full.btk.ppke.hu>.
- Däbritz, Chris Lasse. 2022. *A grammar of Dolgan: A northern Siberian Turkic language of the Taimyr peninsula*. Leiden: Brill. doi:10.1163/9789004516427.
- Däbritz, Chris Lasse, Nina Kudryakova & Eugénie Stapert. 2022. INEL Dolgan corpus. version 2.0. Archived at University of Hamburg. Publication date 2022-11-30. <https://hdl.handle.net/11022/0000-0007-F9A7-4>.
- Harrison, K. David, Mark Dras & Berk Kapicioglu. 2006. Agent-based modeling of the evolution of vowel harmony. In M. Hirotani (ed.), *Proceedings of the Northeast Linguistic Society*, vol. 32, 217–236.
- Hyman, Larry M. 2002. Is There a Right-to-Left Bias in Vowel Harmony? Talk given at the 9th International Phonology Meeting, Vienna, Austria, 1 November. URL: http://www.linguistics.berkeley.edu/~hyman/Hyman_Vienna_VH_paper_forma.pdf.
- Kavitskaya, Darya. 2013. Segmental inventory and the evolution of harmony in Crimean Tatar. *Turkic Languages* 17. 86–114.
- Kavitskaya, Darya & Adam McCollum. 2023. The rise and fall of rounding harmony in Turkic. In Darya Kavitskaya & Alan C. L. Yu (eds.), *The life cycle of language*, Oxford: Oxford University Press. doi:10.1093/oso/9780192845818.003.0002.
- Li, Bing. 1996. *Tungusic vowel harmony: Description and analysis*: University of Amsterdam PhD thesis.
- McAuliffe, Michael, Michaela Socolof, Sarah Mihuc, Michael Wagner & Morgan Sonderegger. 2017. Montreal Forced Aligner: trainable text-speech alignment using Kaldi. In *Proceedings of the 18th conference of the international speech communication association*, .

References II

- McCollum, Adam G. 2015. Labial harmonic shift in Kazakh: Mapping the pathways and motivations for decay. In Anna E. Jurgensen, Hannah Sande, Spencer Lamoureux, Kenny Baclawski & Allison Zerbe (eds.), *The proceedings of the 41st annual meeting of the berkeley linguistics society*, 329–352. doi:10.20354/B4414110012.
- McCollum, Adam G. 2020. Vowel harmony and positional variation in Kyrgyz. *Laboratory Phonology* 11(1).
- McCollum, Adam G. 2024. On how and why vowel harmony decays. In Nancy A. Ritter & Harry van der Hulst (eds.), *The oxford handbook of vowel harmony*, 565–573. Oxford: Oxford University Press.
- McCollum, Adam G. & Si Chen. 2020. Kazakh. *Journal of the International Phonetic Association* 51(2). 276–298. doi:10.1017/s0025100319000185.
- McCollum, Adam G., Karthik Durvasula & Xiayimaierdan Abudushalamu. 2024. O gradience, where art thou? Examining backness harmony in Uyghur. Rutgers University and Michigan State University, ms. URL: <https://ling.auf.net/lingbuzz/007939>.
- McCollum, Adam G & Darya Kavitskaya. 2022. On the status of non-iterativity in feature spreading. *Glossa: a journal of general linguistics* 7(1). doi:10.16995/glossa.5783. <http://dx.doi.org/10.16995/glossa.5783>.
- Pearce, Mary. 2008. Vowel harmony domains and vowel undershoot. *UCL Working Papers in Linguistics* 20. 115–140.
- Pearce, Mary. 2012. Effects of harmony on reduction in Kera. *Linguistic Variation* 12(2). 292–320.
- Sandstedt, Jade J. 2020. Vowel harmony decay in Old Norwegian. *Papers in Historical Phonology* 5. 11–48.
- Shiraishi, Hidetoshi & Bert Botma. 2017. On the diachronic origin of Nivkh height restrictions. In Geoff Lindsey & Andrew Nevins (eds.), *Sonic signatures*, 201–214. Amsterdam: John Benjamins.
- Sjoberg, Andrée F. 1963. *Uzbek structural grammar*. Bloomington, Indiana: Indiana University Press.