Out of the 203 languages in 26 families that we investigated, we found 14 languages from 6 families with ablaut reduplication.

**German** (Indo-European, Germanic):
- [hak hak] 'bickering'

**Bargam** (Papuan):
- [kwasi kwasa] 'various edible greens,'
- [gimi gimi] 'various plural EMP things'

**Italian** (Indo-European, Romance):
- [rina rina] 'lullaby'

Also: **English** (Indo-European, Germanic)

**Indonesian** (Austronesian, Malayo-Sumbawan):
- [basn basi] 'polite language'
- [ Dzięki Dżąkt 'see-saw'

**Javanese** (Austronesian, Javanese):
- [cełak celek] 'to call a name repeatedly'
- [ćelaw ćelaw] 'remember'

**Toba Batak** (Austronesian, Northwest Sumatra Barrier-Islands):
- [mağabas mağebus] 'to strike right and left (like the tail of a crocodile)'

**Turkish** (Altaic, Turkic):
- [umuk umuk] 'lopsided'

Also: **Malaysian** (Austronesian, Malayo-Sumbawan), **Balinese** (Austronesian, Malayo-Sumbawan), **Minangkabau** (Austronesian, Malayo-Sumbawan), **Madurese** (Austronesian, Malayo-Sumbawan)

**Thai** (Thai-Kedai):
- [sāʔdūŋ sāʔdī] 'flinging manner',
- [khiyak khayik] 'lending'

**Hungarian** (Finno-Ugric):
- [ haj 'unimportant, insignificant',
- [rok rók] 'very bad'

**High vowel - low vowel**

**Low vowel - high vowel**

**Back-vowel - front vowel**

**Front-vowel - back vowel**

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**Generalization**

For ablaut reduplicative structures:
- The contrast between the two vowels is maximally distinct in terms of height and/or backness. We have not found cases in which the distinction is expressed in terms of tenseness or roundness.
- The linear order of the vowels is fixed (for example, high vowel in the first element and a low vowel in the second).
- The relative order of the base and reduplicant varies to accommodate the order of the vowels. For example, in English the base can be either on the left ([nlessly-naclely]), or on the right (criss-cross).

**Analysis**

We adopt Minkova’s (2002) INTEREST constraint, which enforces a maximum perceptual difference between the vowels of the two parts of the pair. She formulates INTEREST as a constraint that avoids height identity, in which violations are gradient.

*Ident-Br (High): Correspondent segments have different values for the feature [high]

We extend this approach to account for the less common distinction along the backness parameter.

*Ident-Br (Back): Correspondent segments have different values for the feature [back]

Minkova employs FINAL-LENGTH to account for the ordering of vowels in English ablaut reduplicative structures: the low (longer) vowel is part of the second constituent, reflecting a universal preference for longer segments in final position. This cannot be extended to the other languages we investigated, as the high vowel is sometimes in the second constituent, and this does not apply to the front-back distinction. We propose that the ordering of the vowels is stipulated by language-specific constraint rankings.

The only exception we found to the patterns identified above is Farsi where the reduplicant is always the rightmost constituent, and the relative order of the vowels shifts: high-low with a base containing a high vowel ([piaf pof] ‘brand name of insecticide’), low-high with a base containing a low vowel ([ciči ciči] ‘go outside in a fun way’). Thus, it appears that Farsi ranks the constraint that specifies the position of the reduplicant relative to the base higher than the constraint that stipulates the ordering of the vowels.

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**References**