

## **Gradient vowel harmony in Canadian French**

Will Dalton  
University of Ottawa  
wdalt017@uottawa.ca

High vowels in Canadian French are involved in several sound patterns. One such pattern is the laxing or lowering of high vowels in word-final closed syllables. A related sound pattern is the apparent spreading of "laxness" to a high vowel in a preceding open syllable. This process is usually identified as harmony, specifically ATR harmony. This paper presents the results of acoustic and articulatory analyses of vowel harmony in the speech of fourteen Canadian French speakers. An articulatory analysis of tense and lax high vowels using ultrasound imaging reveals that these vowels are not distinguished solely by tongue root position (advanced and retracted, respectively) as is commonly assumed. A slim majority of the speakers distinguished these vowels through tongue height alone, while the remaining speakers use both height and tongue root position to implement the tense/lax contrast. Canadian French vowel harmony, then, may be best construed as a case of height harmony. Acoustic analysis of harmony target vowels (such as in the initial syllable of 'Philippe') shows that vowel-midpoint F1 values (the acoustic correlate of the tense-lax contrast) are intermediate between mean F1 values of non-harmonic tense and lax vowels. These results are duplicated in the articulatory analysis: harmony target vowels are produced with an intermediate tongue body height. The "in-between" nature of harmonic vowels indicates that Canadian French harmony is a gradient, not categorical, phenomenon. A possible interpretation of these findings is that this particular sound pattern represents an intermediate stage in the development of harmony from vowel-to-vowel coarticulation.