

Static and Dynamic Analyses of Canadian Raising in Toronto and Vancouver  
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Canadian Raising, the raising of the diphthongs /aj/ and /aw/ before voiceless consonants, is one of the most salient and best-known phonological phenomena of Canadian English. As Chambers (2006) points out in his review of the long history of Canadian Raising research, impressionistic and acoustic studies have largely revealed a surprising amount of homogeneity in this feature across Canada. However, two recent large-scale studies, Labov, Ash, and Boberg's (2006) *Atlas of North American English (ANAE)* and Boberg's (2008) *Phonetics of Canadian English (PCE)* project, suggest some regional differences in both the raising and fronting of /aj/ and /aw/, particularly between Inland Canada and Western Canada. This study investigates the production of the Canadian Raising diphthongs using two methods of acoustic analysis and a larger sample of young speakers from two of Canada's largest cities, Toronto and Vancouver, with the aim of clarifying the current patterns of regional and social variation in this feature so commonly associated with the Canadian identity.

We collected data from 60 speakers ages 18-31, half (15 males, 15 females) from the Greater Toronto area, and the other half (15 males, 15 females) from Greater Vancouver. Each participant read a word list adapted from Boberg's (2008) list for the *PCE* project, including 12 words containing /aj/ and /aw/ in the relevant voiced and voiceless obstruent environments. While most Canadian Raising studies extract only a single point measurement of the first formant (F1) and second formant (F2), we aimed to provide a more complete picture of the diphthong trajectories using a multiple-point technique: F1 and F2 values were measured at 10 evenly-spaced points throughout the length of each diphthong. These were analyzed using a statistical technique for comparing curves called Smoothing Spline Analysis of Variance (SS-ANOVA; e.g. Davidson 2006; Fruehwald 2010), focusing on the effects of following context, region, and gender. In order to make comparisons with previous studies, static F1 and F2 measurements of the diphthong nuclei were also analyzed using linear mixed effects models with the same independent variables.

The results of both the static and dynamic analyses reveal consistent raising and fronting of /aj/ and /aw/ in the voiceless context in Toronto and Vancouver. However, the /aw/-fronting results also show regional and social differentiation, corroborating some of Boberg's (2008) findings: although females from both cities have similar fronting patterns, Toronto males show stronger /aw/-fronting than males from Vancouver, particularly in the voiceless context. As earlier studies of Canadian Raising suggested /aw/-fronting to be a change in progress in both cities (Chambers & Hardwick 1986; Hung, Davison & Chambers 1993), these results may indicate that the change is still nearing completion in Vancouver, with males in this smaller city lagging behind the young female innovators. The SS-ANOVA results also suggest that information about diphthong transitions from multiple point measurements can be more revealing of dialectal differences than the steady states typically measured, raising questions about the relevant cues for the perception of Canadian Raising.

## References

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