

# The relationship between consonant cluster reduction and schwa insertion in French: A corpus investigation using an analysis of covariance

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This research is concerned with predicting rates of schwa insertion following consonant clusters at word boundaries in French. We are interested in knowing whether there are differences in rates of schwa insertion following a word-final consonant cluster predicted to simplify as compared with clusters predicted to remain stable in two dialects of French.

Milne and Côté (2009) investigated the relationship between consonant cluster simplification and schwa insertion at word boundaries in two dialects of French, one spoken in Québec and one spoken in France. The data they presented confirmed the expectation that these two phonological operations pattern differently in each dialect. Crucially, they determined that the distribution of occurrences of schwa insertion were not the same in each dialect. They hypothesized a possible relationship between consonant cluster simplification and schwa insertion, at least in Québec. The fact that there might exist a relationship between these two processes, at least in the Québec dialect, has been observed previously (Kemp et al., 1980; Eychenne, 2003). This research seeks to validate this hypothesis using an analysis of covariance. Of concern is whether the different rates and contexts of schwa insertion reflect a difference between the dialects, *per se*, or simply whether rates of schwa insertion are higher in dialects with lower rates of reduction and, in this sample, the France dialect has lower rates of reduction than Québec.

Our data is drawn from a corpus of political debates from the national assemblies of Québec and France. It contains approximately 126 hours of speech data from more than 200 speakers. We use an analysis of covariance to investigate the effects of dialect and cluster on rates of schwa insertion after taking into account differences in rates of reduction. Since differences in rates of schwa insertion due to rates of reduction can be predicted, then the differences in rates of schwa insertion between dialects that would be expected due to differences in rates of reduction can also be predicted. Any differences beyond these predictions cannot be put down to differences in rates of reduction and can therefore be attributed to differences between the groups.

The data contain rates of both reduction and schwa insertion for word final consonant clusters in each dialect. The data is further grouped according to whether the cluster is predicted to simplify or remain stable. We consider four variables: a response variable of rates of Schwa insertion, two categorical explanatory variables of Dialect and Cluster, and one covariate variable of rates of Reduction.

Initial examination of a portion of the data suggest that the best model to fit the data contains three intercepts (a common intercept for all clusters in the France dialect, and one for each level of the explanatory variable Cluster for Québec) and the regression line of Schwa against Reduction will be the same for all four.

This suggests that, after controlling for differences in rates of reduction, there is a significant difference in rates of schwa insertion in the Québec dialect between clusters predicted to simplify and clusters predicted to remain stable. There is no significant difference in rates of schwa insertion in the France dialect between these two groups of clusters. However, the relationship between cluster reduction and schwa insertion is the same in both dialects.

## References

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