

## **Evidence of weight sensitivity in Laurentian French prominence assignment**

Final syllables in French are traditionally characterised as being prominent, reflected through those syllables having longer durations and higher pitch peaks than non-prominent ones (e.g. Jun and Fougeron 1995). This prominence is not assigned at the level of the word, but instead at the phrase level, with the prominence serving to mark the right edges of phrasal domains. Previous work has found that the prominence is often realised on the penult, however, which is surprising if the purpose of prominence is to mark domain edges (e.g. Carton et al. 1983). The cross-linguistic relationship between prominence and weight (Hayes 1995) suggests a reason for this ‘shift’ in position: prominence could be attracted to heavy syllables and move to enhance weight.

Our goal is to test this weight hypothesis as a motivation for prominence shifts in French. To do this, we extracted 1376 words from read speech data in the *Phonologie du français contemporain* corpus (Durand et al. 2002, 2009; <http://www.projet-pfc.net/>) and analyse whether three acoustic cues used for prosody (pitch, duration, amplitude) are sensitive to both weight and edge marking. We examine data from Laurentian French (specifically 11 speakers from Saguenay, Quebec) because the dialect has conserved a large number of weight contrasts (Walker 1984) and therefore offers more opportunities to find weight effects. Using mixed-effects linear regression, we compare the effects of weight (vowel weight and codas) with the effects of phrase edges to determine whether weight influences the realisation of prominence based on the cues that are associated with two levels of phrasal domains – accentual phrases (APs), the smallest domain of prominence, and intonational phrases (IPs), which signal the broader sentential contours.

Beginning with the phrasal domains, our data show that both amplitude and pitch differentiate between APs and declarative IPs. In APs, both penult ( $p=0.003$ ) and final ( $p<0.0001$ ) syllables both have higher amplitude than in IPs. We additionally find that IPs are associated with significantly lower pitch ( $p=0.002$ ) and smaller pitch ranges in the final syllable ( $p=0.024$ ). The latter result is consistent with the literature’s description of APs being marked with a rising (LH) contour and declarative IPs replacing the AP’s high tone with a low tone (Jun and Fougeron 1995). No significant difference in duration is observed.

Turning to our main question of weight effects, we find that weight is significantly associated with the acoustic cues examined in this paper. For penults, both heavy vowels and closed syllables tend to be associated with longer rhyme durations (vowels  $p<0.0001$ ; codas  $p<0.0001$ ), higher amplitudes (vowels  $p=0.012$ ; codas  $p=0.027$ ) and higher pitch maxima (vowels  $p=0.031$ ; codas  $p=0.018$ ). Closed final syllables are associated with longer durations ( $p<0.0001$ ), higher amplitudes ( $p=0.008$ ) and higher pitch maxima ( $p=0.033$ ) than open ones. While final vowel weight isn’t significant, its interaction with codas significantly increases the coda effect.

We interpret these results as evidence that French exhibits weight effects. Crucially, these weight differences are associated with the same cues as those used to mark domain edges, meaning that the realisation of prosody is the result of both marking domain edges and signalling weight, without clear separation between the two. This accounts for why prominence shifts away from the phrase edges in a language well known for marking those edges. It also provides a possible justification for strengthening processes occurring in the penult when they are normally said to be restricted to the last syllable (ex. lengthening, diphthongisation; Walker 1984): we suggest that these processes are triggered by prominence, which has shifted inwards.

In summary, we find that weight does attract prominence, which affects the marking of phrasal domains and may interact with strengthening processes active in the language.

## References

- Carton, F. M., Rossi, D. Autesserre and P. Léon. 1983. *Les accents du Français*. Paris: Hachette.
- Durand, J., B. Laks and C. Lyche. 2002. "La phonologie du français contemporain: usages, variétés et structure". C. Pusch and W. Raible, ed. *Romanistische Korpuslinguistik - Korpora und gesprochene Sprache*. Tübingen: Gunter Narr Verlag, 93-106.
- Durand, J., B. Laks and C. Lyche. 2009. "Le projet PFC: une source de données primaires structures". In J. Durand, B. Laks and C. Lyche, ed. *Phonologie, variation et accents du français*. Paris : Hermès, 19-61.
- Hayes, Bruce. 1995. *Metrical stress theory: Principles and case studies*. Chicago: Chicago University Press.
- Jun, S-A and C. Fougeron. 1995. The Accentual Phrase and the Prosodic structure of French. *Proc. ICPHS* (Stockholm, Sweden), vol. 2: 722-725.
- Walker, Douglas. 1984. *The pronunciation of Canadian French*. Ottawa: University of Ottawa Press.