Variability in French Prominence: Evidence for Weight Sensitivity
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Introduction. Prominence in French is generally described as being assigned to the final syllable of phrases, making the right edge of this domain more easily recovered from the acoustic signal (e.g. Jun and Fougeron 1995). This phrasal domain – called the accentual phrase (AP) – is reported to be the smallest domain of prominence, meaning that there is no lexical stress. Speech data from across the French-speaking world show that prominence can fall on non-final syllables and that this can occur fairly frequently (e.g. Carton et al. 1983). This variability in the position of prominence is surprising if the role of prominence in French is strictly to mark the right edge of prosodic domains to facilitate parsing. This leads us to ask why a language that is described as consistently marking domain edges (e.g. Özçelik 2016) so often deviates from this pattern.

The goal of this study is to determine what motivates prominence to move inwards in French and to relate those motivations to their theoretical implications for French and for languages more generally. The cross-linguistic relationship between prominence and weight (Hayes 1995) suggests a possible motivation: heavy syllables commonly attract prominence, which can serve to enhance or license their weight. As French is commonly described as having a system with vowel weight predominantly distinguished through vowel quality contrasts (e.g. Walker 1984) and as it additionally has both open and closed syllables (another possible source of weight), we examine the possibility that non-final prominence occurs in order to signal lexical properties – notably phonological weight.

We focus on Laurentian French in this study because it has retained more vowel contrasts than many other varieties and because it has phonological processes like diphthongization that reinforce those weight contrasts for listeners (Walker 1984). This makes the dialect an effective first case study – this dialect is particularly likely to show weight effects frequently and robustly. We can also be confident that none of the speakers included have vowel mergers that neutralize vowel weight contrasts, thereby hiding a result that would otherwise be found.

Methods. In this study, we test the hypothesis that prominence is shifted inwards in AP-final words as a result of weight. We extracted the maximum amplitude, the duration and the pitch range from AP-final words pronounced in a read passage in the Phonologie du français contemporain corpus (Durand et al. 2002, 2009; http://www.projet-pfc.net/), selecting data from 11 native, literate French speakers from Saguenay, Québec (Canada). In total, 1368 words were extracted based on our manual coding of AP boundaries (mainly defined syntactically) and were analysed using mixed-effects linear regression with random intercepts for speakers and words and with random slopes for speakers. In order to get the relative prominence of a syllable for a given cue, our model’s dependent variable was the result of dividing the penult’s value for the cue by the final syllable’s value for that same cue (we then subtracted one to use 0 as our threshold, using log-transformed values as appropriate).

We assume that a higher amplitude, a longer duration and a larger pitch range are reflective of prominence in French based on previous research (e.g. Jun and Fougeron 1995), so values above 0 indicate that the penult is more prominent based on a cue, while a value below 0 indicates that the final syllable is more prominent for that cue. We included the penultimate and final syllables’ weights for both vowels (nasal vowels and non-high tense vowels coded as heavy) and for codas (closed syllables coded as heavy) in the model in addition to the largest domain of prominence that the word was at the end of (in case the word was also sentence-final).
**Results.** We find that heavy penult vowels are associated with significantly longer penult duration (p<0.0001), higher penult amplitude (p<0.0001) and larger penult pitch ranges (p=0.032). Penult codas are similarly associated with longer penult duration (p<0.0001), higher penult amplitude (p<0.0001) and larger penult pitch ranges (p=0.006). Final codas significantly increase the final syllable’s relative duration (p<0.0001), amplitude (p=0.002) and pitch range (p=0.033), while the final vowels’ weight only has a significant effect on the relative measures when the final syllable is also closed (p<0.0001 for duration, p=0.004 for amplitude and p=0.041 for pitch ranges).

**Discussion.** Our results suggest that Laurentian French does exhibit weight sensitivity, and we propose that this factor may be responsible for the presence of variable prominence positions in other dialects. We additionally propose that these findings confirm that weight is involved in the vowel contrasts in French and that, consistent with previous proposals that final open syllables pattern as short in French (e.g. Walker 1984), vowel weight is neutralized on some level in word-final position even though the vowel contrast itself may not be neutralized. We discuss these implications with respect to French, as they, in conjunction with the high prominence of the penult, suggest that the default position of prominence may be the penult in Laurentian French and that final syllables variably attract prominence, particularly when the final syllable is closed. Further analysis is required for this possibility, but the data are suggestive. Previous work by Paradis and Deshaies (1990) suggests that closed syllables are also more likely to be perceived as prominent, but the perceived location of prominence has not be tested experimentally for these data. Finally, we discuss the possible dissociation of prominence cues; amplitude and duration patterning distinctly from pitch at times, which suggests that the traditional analysis of prominence – which often only focuses on pitch in French – may be too simplistic. Based on the size of the effects and the correlations between the cues, it appears that weight may have the greatest effect on duration and amplitude, and that, when this weight is not neutralized, it variably attracts prominence, implying that weight truly does attract prominence.

**References:**


