Influence of lexical tones on calling melodies: a comparison between Metropolitan and Bàsàa-Cameroonian French

In Metropolitan French, the simple vocative or chanting contour (e.g. Marina! A table! "Marina! Dinner!") consists of a F0 peak on the penultimate syllable and a sustained, mid-plateau on the final syllable of the utterance (Di Cristo 1999, Ladd 1996). This is consistent with what Fagyal (1997) observes in her study of 1 to 5-syllable proper names produced by 4 French speakers asked to "call sweetly or sweetly remind [someone of something]". Phonologically, this contour has been represented as a LHM sequence (Dell 1984), H*H-L% (Jun & Fougeron 2000) or more recently as H+!H*!H% (Delais-Roussarie et al. 2015).

In the present study, our aim is to establish whether context (here routine *vs.* urgent) affects contour choice in Metropolitan French (FR), as recently shown for Catalan by Borràs-Comes et al. (2015). Second, we are interested in whether a variety of French in contact with a tone language, Bàsàa-Cameroonian French (CM), makes use of the chanting contour too, as in this variety proper names are lexically specified for tone. Just like in Bàsàa (Bantu), CM names in isolation form present a L/H-HL contour (where HL either aligns with the last or the last two syllables, e.g. [àlîs], [màgdàlénà]). As Bàsàa is a tone language in which post-lexical information has little impact on F0 (Makasso et al. 2016), a strong effect of our speakers' L1 on their L2 predicts that lexical tones should be preserved in both contexts.

14 speakers (4 male) of FR and 12 bilingual speakers (8 male) of CM with Bàsàa as their L1, aged 20–41, took part in a Discourse Completion Task replicating the design from Arvaniti et al. (2016). They were asked to produce 12 proper names (1–4 syllables) to call a child (i) for dinner or (ii) to reprimand him/her for breaking a vase. 1008 (FR) and 864 (CM) utterances were collected and then analyzed acoustically. Utterances were manually annotated for contour shapes by two experts. In addition, the following parameters were examined: (i) tonal scaling and proportional alignment of H1 with the accented vowel and alignment of L and H2 with the last vowel for FR, (ii) F0 at the center of each vowel (TBU), as well as the initial and final F0 for one-syllable names in CM and (iii) F0 range for both varieties. We also analyzed the duration and amplitude (RMS and integral) of the stressed vowel, stressed syllable and word for both varieties.

Results (Fig.1 left) show that the choice of contour is strongly context dependent in FR, where speakers use three main intonational calling contours: the vocative chant (dinner: 71%, vase: 8.7%), a rising (interrogative-like) contour (dinner: 20.2%, vase: 1.9%) and a falling parabolic contour (dinner: 8.9%, vase: 76.2%). The preference for the vocative chant in the dinner context confirms Fagyal's (1997) findings and the falling parabolic contour is reminiscent of what Delais-Roussarie et al. (2015) describe is used to express insistence. CM speakers, in contrast, show little effect of context on choice of contour and predominantly preserve lexical tones (dinner: 60.7%, vase: 87%) with a final rise being the next most frequent pattern (dinner: 16.7%, vase: 3%) and no clear presence of the typical chanting contour (see Fig. 1 right). The two varieties thus differ in that context greatly affects contour choice in FR, while it has little effect on contour choice in CM, where lexical tones strongly determine the melody of the names.

Acoustic analysis shows that context significantly affects intensity: callings are louder in the vase than in the dinner context (linear mixed models: p<.001 for both varieties). Duration is not affected. F0 range is larger in the dinner condition for FR (p<.001) but no significant difference is found in CM. Finally, tonal scaling is only subject to a high inter-speaker variability in CM, with contexts being perceptibly distinguished for a subset of speakers.
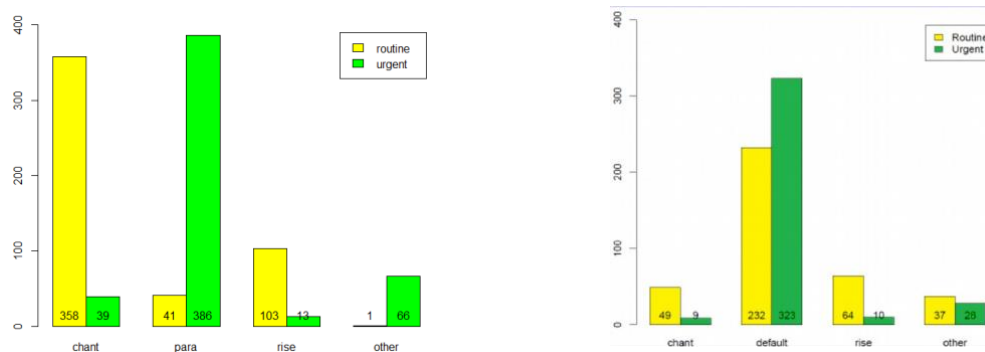
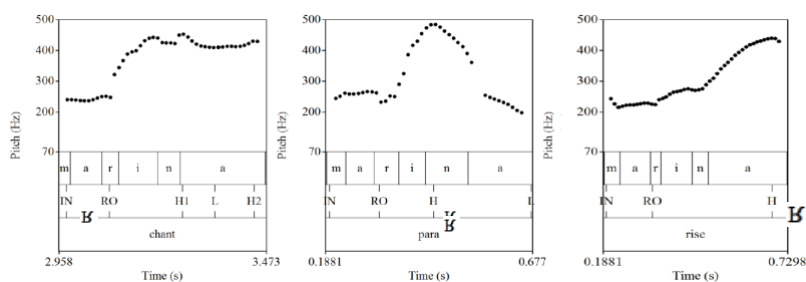Figure 1. *Distribution of contours across contexts (Left : FR ; Right : CM)*

Figure 2. *Calling contours in Metropolitan French*
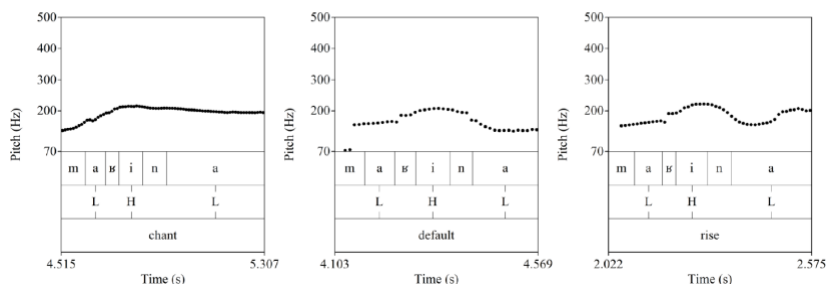*(respectively: Chant, Parabolic falling and Rising contour)*

Figure 3. *Calling contours in Cameroonian French*
(respectively: (pseudo-)Chant, Default (lexical), and Rising contour)

Arvaniti, A., M. Żygis. & M. Jaskuła. (2016). The Phonetics and Phonology of the Polish calling melodies. *Phonetica* 73, 155-162.

Borràs-Comes, J., R. Sichel-Bazin & P. Prieto (2015). Vocative intonation preferences are sensitive to politeness factors. *Language and Speech* 58: 68-83.

Delais-Roussarie, E. et al. 2015. Intonational phonology of French: Developing a ToBI system for French. In Frota S. & P. Prieto (Eds.), Intonation in Romance (pp. 63–100). Oxford, UK: Oxford University Press.

Dell, F. (1984). L'accentuation dans les phrases en français. In F. Dell, D. Hirst & J.-R. Vergnaud (eds.), La forme sonore du langage: structure des représentations en phonologie. Paris: Hermann.

Di Cristo, A. (1999). French. In Hirst, D. & A. Di Cristo (eds.), *Intonation Systems: a Survey of Twenty Languages.* Cambridge: CUP.

Fagyal, S. (1997). Chanting intonation in French. *U. Penn W.P. in Linguistics* 4.2: 77-90.

Jun, S.-A. & C. Fougeron. (2000). A Phonological model of French intonation. In A. Botinis (ed.), Intonation, modelling and technology, (pp. 209-242). Dordrecht: Kluwer.

Ladd, R. (1996/2008). *Intonational Phonology*. Cambridge University Press.

Makasso, E.-M., F. Hamlaoui & S. J. Lee. (2016). Aspects of the intonational phonology of Bàsàa. In A. Rialland & L. Downing (eds.), Intonation in African tone languages. Berlin: De Gruyter.