Modeling Global and Local Tone-Intonation Interactions in Ede Chaabe: A Production and Perception Study

In studies on African lexical tone languages, intonation is often approached either as emergent from the cumulative effects of local interactions between sub-tonal features like the register feature (Welmers, 1959; Inkelas & al, 1986; Connell & Ladd, 1990; Clements, 1979) or as limited to prosodic *domain boundary* manifestations (Rialland 2007, 2009). When global effects are mentioned, they are often treated as phonetical in nature (Inkelas & al, 1986; *a.o*), supposedly because they match the predictions of the Frequency Code (Ohala, 1984; Gussenhoven, 2002; Cahill, 2013), which holds that questions are realized with a rising or high overall pitch, unlike statements.

However, based on the results (in *Figure 1*) of two experimental studies (production and perception) of the intonation of yes/no questions in Ede Chaabe, we show that questions have the L% known to characterize the so called 'lax' prosody languages (Rialland 2007, 2009), contrary to the Frequency Code. Additionally, questions were significantly globally lower than statements (unlike the findings in Cahill, 2013). Both studies involved 24 native speakers of Ede Chaabe. In the production study, participants were instructed to produce twelve (12) different utterances in pairs of question/statement, long/short utterances grouped by the three lexical tones in the language (i.e all H, all M and all L tones), which they repeated three times in three blocks of subject-randomized orders. In the perception study, participants were instructed to perform a two-alternative forced choice labelling task on a resynthesized stimuli made from two all-H utterance bases (*bíjɔ́ nɛ́wɔ́./?* 'Biyo spent money.'/'Did Biyo spend money?'), with five global steps and four final L% steps.

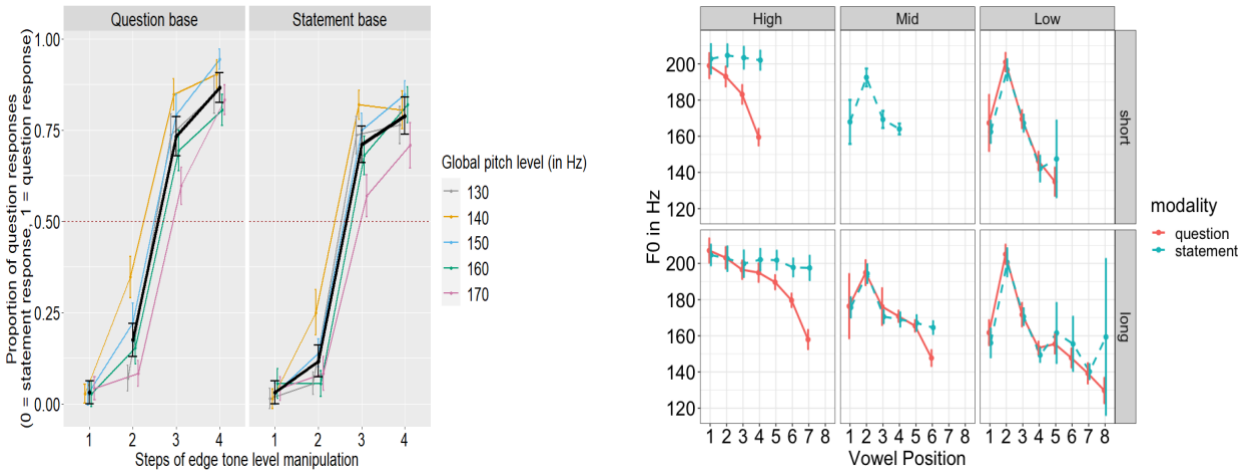

Figure 1: Perception (left) and Production (right) studies results.

Considering these findings, we argue that the observed global effects are represented in the grammar in the form of a Register feature, which is treated in the present account as an intonational feature. To model these findings, we propose that in Ede Chaabe, each Intonational Phrase comes with a global Register specification and a local, domain-final specification (for questions). In questions, this global Register is specified as low *l* (as opposed to *h* for statements) and their domain boundary is the L%. We adopt Pike (1945)'s view of Register as a plane on

which lexical tones are projected and establish Register as an intonational feature where it can have global effects. Furthermore, we propose a new sub-tonal feature system that approaches lexical tones as pitch change instructions (Clark, 1976; Hyman, 1986,1993), using the binary valued feature Polarity (+/-) indicating the direction of the change and the single-valued feature Step (1), which conveys the extent or discrete amount of the change. This new feature system improves on previous sub-tonal features systems (Yip, 1980; Pulleyblank, 1986; Hyman, 1986,1993; Snider, 1990,2020; Lionnet, 2021; *a.o*).

References

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