

## Acoustic correlates of L2 prosodic boundaries by German learners of French

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Deviations in L2 intonation affect a number of prosodic characteristics including pitch range, declination line (Mennen, 2007), or the rises of non-final IPs (Santiago *et al.* 2015), and might lead to misunderstandings or contribute to the perception of foreign-accent (Jilka, 2007). This study investigates the characteristics of non-native speech at the boundary between prosodic constituents.

We analyzed a French sentence, extracted from the IFCASL corpus ([www.ifcasl.org](http://www.ifcasl.org)), made up of four constituents: a subject, a verb phrase, a direct object and an adverbial phrase. Each constituent has three syllables and the sentence is realized typically by French speakers with four accentual –prosodic-groups, corresponding to the four constituents. Fourty German learners of French (beginners, and advanced speakers) and fifty four French speakers read the sentence once. We used the software ProsodyPro from Yi Xu for the prosodic analysis.

We determined the presence of pauses and evaluated for each prosodic group: the (normalized) F0 maximum on the last syllable; the F0 excursion (max-min) of the final contour, and its maximum of velocity. In order to analyze the temporal course of F0 on the final contour, we also compared the values of the F0 excursion on the vowel and before it.

As expected, German speakers realized more pauses than French speakers (four times more). These pauses occurred in general after the first and the third groups (the subject and the object). Despite large individual variations, results, submitted to the Kruskal-Wallis non-parametric statistical analysis, showed highly significant differences between French and German realizations, especially for the first group. These differences were observed in presence and in absence of a following pause. For the first group, the F0 max, the F0 excursion as well as the velocity were more important for non-native speakers, especially beginners. Moreover, whatever the amplitude of the overall excursion, the F0 rise was more important before the vowel than on it for most French speakers, contrary to what happens for most German speakers, especially beginners. Similar differences were found for the third group, except for F0 max and velocity. On the basis of acoustic cues, non-native speakers, especially beginners, appear to realize higher prosodic boundaries (e.g. higher F0 maxima, more pauses) than French does, whereas French speakers appears to show more anticipation (see F0 course). Data will be submitted to models (in particular INTSINT and PENTA) for further interpretation.

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M. Jilka, “Different manifestations and perceptions of foreign accent in intonation,” in *Non-native prosody: phonetic descripton and teaching practice*, Mouton de Gruyter., Berlin, New York: Trouvain, J. and Gut, U., pp. 77–98