HAL
open science

Can accentual phrase boundaries remove temporary lexical ambiguity in French?

Mariapaola d'Imperio, Amandine Michelas, Pynte Joël

To cite this version:

Mariapaola d'Imperio, Amandine Michelas, Pynte Joël. Can accentual phrase boundaries remove temporary lexical ambiguity in French?. Conference on Prosody and Language Processing, Apr 2008, Ithaca, France. hal-00463214

HAL Id: hal-00463214

https://hal.science/hal-00463214v1

Submitted on 31 Mar 2010

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Can accentual phrase boundaries remove temporary lexical ambiguity in French?

Mariapaola D'Imperio*, Amandine Michelas* and Joël Pynte**
**Aix-Marseille I and Laboratoire Parole et Langage, CNRS, Aix-en-Provence, FRANCE*
***Laboratoire de Psychologie Cognitive, CNRS, Paris, FRANCE*

In French, the initial phoneme sequence of noun phrases such as *cerf volant* /sɛʁvɔlɑ̃/ "kite" and *cerf vorace* /sɛʁvɔʁas/ "voracious deer" is temporarily ambiguous between *cerveau* /sɛʁvɔ/ "brain" and *cerf* /sɛʁv/ "deer". It has recently been proposed that the prosodic organization of speech into constituents smaller than the utterance and larger than the morphological word, such as the prosodic word and the phonological phrase, might be crucial for lexical access strategies in French (Christophe *et al.* 2004). Specifically, Christophe and colleagues found that a phonological phrase (PP) boundary (as in [*le cerf*]$_{PP}$ [*volait*]$_{PP}$ "the deer was flying") can remove temporary ambiguity in otherwise ambiguous word sequences, while this ambiguity would remain within the PP, even across prosodic word (PW) boundaries.

Note that Christophe et al. base their predictions on the syntax-based approach of classic Prosodic Phonology (Selkirk, 1984; Nespor & Vogel, 1986), while according to the autosegmental-metrical theory of intonation (Pierrehumbert, 1980; Ladd, 1996) there exists an Accentual Phrase (AP), which is the domain of primary stress *"accent primaire"* (Jun and Fougeron 2000, 2002)ad which is hierarchically higher than the prosodic waord. Specifically, this unit is characterized by an obligatory final rise (LH*), an optional initial rise (LHi). AP and PP boundaries do not need to overlap (as in Fig. 1, right panel) since AP boundaries strictly depend on the number of final rises (LH*) actually produced by the speaker.

Tonal cues and other phonetic/phonological properties of the auditory stimuli do appear to have an impact on lexical access in French (cf. Spinelli *et al.*, 2007), though this is still an understudied area. We specifically predicted that:1. the target sequence would yield ambiguity only within (see Fig. 1, left) and not across (see Fig. 1, right) an AP domain; 2. lexical access of the target word (e. g., *pins*) would be faster if immediately adjacent to an AP boundary.

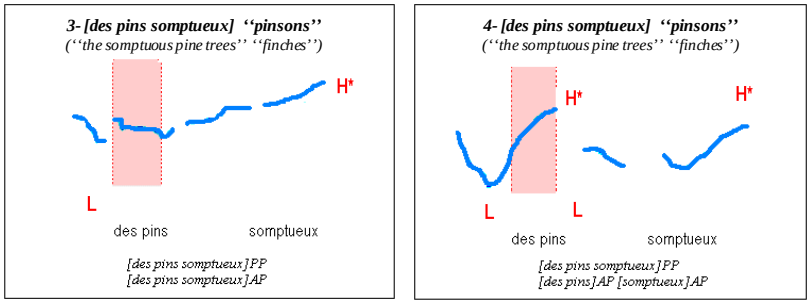

Fig. 1 Pitch curves of the NP *pins somptueux* "sumptuous pine trees" excised from two versions of the utterance *Je crois que Marie t'a parlé* ***des pins somptueux*** *de cette forêt* "I think that Mary told you about the sumptuous pine trees of this forest" (potential competitors: *pins* /pE®/ "pine trees" vs. *pinsons* /pE®so®/ "finches").

24 pairs of sentences were presented to 40 French listeners in two cross modal word-monitoring tasks. While Experiment I was simply meant to replicate the findings of Christophe *et al.*'s temporary ambiguity and PP boundary effect, I Experiment II we manipulated the presence or absence of an AP boundary, within a PP.

Different from Cristophe *et al.*'s study, when looking at absolute reaction time data from target word onset, neither local ambiguity nor the presence of a prosodic boundary significantly affected the results in both experiments. However, given the target accoustic duration differences,

subjects responses were relatively faster in the boundary conditions, irrelevant of ambiguity, since a conspicuous number of responses was obtained before or right at target word offset. This is in line with Christophe *et al's* main findings suggesting that prosodic structure might influence lexical activation online. Crucially, AP boundaries appear to behave similary to PP boundaries in speeding up lexical activation, inedependent of the presence of a syntactic constituent boundary. This suggested that acoustic and tonal cues to prosody need to be controlled separately from syntactic structure to asses the role of phrasing in lexical access strategies and support the hypothesis of an active fine phonetic detail in candidate activation mediated by rich lexical representations.

References

Christophe, A., Peperkamp, S., Pallier, C., Block, E., Mehler, J. (2004). « Phonological phrase boundaries constrain lexical access I. Adult data », *Journal of Memory Language*, 51, 523-547.

Jun S.-A. & Fougeron C. (2000). A Phonological model of French intonation. In A. Botinis (ed.) Intonation: Analysis, Modeling and Technology. Dordrecht : Kluwer Academic Publishers. 209-242.

Jun S.A. & Fougeron C. (2002). The Realizations of the Accentual Phrase in French Intonatoin, *Pobus* 14: 147-172, a special issue on *Intonation in the Romance Languages*. Ed. by J. Hualde.

Ladd, D. R. (1996). Intonational Phonology. Cambridge University Press.

Nespor, M. & Voguel, I. (1986). *Prosodic phonology*. Dordrecht : Foris.

Pierrehumbert, J. (1980). The phonetics and phonology of English intonation. Unpublished Ph.D. thesis, MIT.

Selkirk, E. O. (1984). *Phonology and Syntax: The relation between sound and structure*. Cambridge, MA:MIT Press.

Spinelli, E., Welby, P. & Schaegis, A.L. (2007). Fine-grained access to targets and competitors in phonemical