

# Mapping syntax onto prosodic structure: the intermediate phrase in French

## INTRODUCTION

- The existence of an intermediate level of phrasing, the intermediate phrase (ip, Beckman & Pierrehumbert, 1986), or Major Phonological Phrase (MAP, Selkirk 2000) has been shown for several languages, such as English, Italian (D'Imperio, 2002), Catalan (Prieto to appear), Cairene Arabic (Helmuth, 2007).

- Within stress-timed languages, the ip is the domain of downstep and it is bounded at its right edge by a phrase accent.

- An ip boundary blocks downstep of subsequent H peaks (Beckman & Pierrehumbert, 1986) and induces pitch reset after it.

-But *partial reset* after an ip boundary has also been observed for English (Ladd, 1988) and German (Truckenbrodt, 2002).

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## METHOD

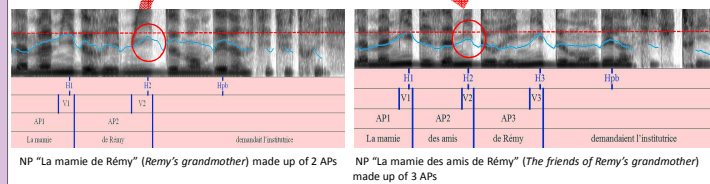
### Stimuli

- 4 pairs of SVO utterances in which the structure of the subject NP was varied in order to obtain either a sequence of 2 APs or of 3 APs. In addition, NP structure was crossed with vowel height (high/low).

	2APs	3APs
[i]	(La mamie) <sub>AP</sub> (de Rémy) <sub>AP</sub> /ip...	((La mamie) <sub>AP</sub> (des am) <sub>AP</sub> (de Rémy) <sub>AP</sub> /ip...
[a]	((Le sauna) <sub>AP</sub> (d'Hélién) <sub>AP</sub> /ip...	((La nana) <sub>AP</sub> (du sauna) <sub>AP</sub> (d'Hélién) <sub>AP</sub> /ip...

- We compared the final syllable of the second AP in either 2 AP (left) or 3 AP (right) NP structures

- Note that the second AP is NOT also ip final in the 3 AP condition (right)



NP "La mamie de Rémy" (Remy's grandmother) made up of 2 APs  
 NP "La mamie des amis de Rémy" (The friends of Remy's grandmother) made up of 3 APs

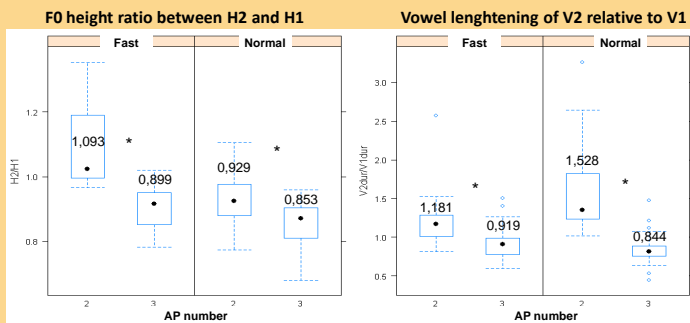
### Participants and Procedure

- 2 native speakers of French
- 2 speech rates
- Measures: F0 ratio of each H relative to H1; Duration ratio of V2 (target vowel) relative to V1

## HYPOTHESIS

1. The target syllable height is relatively higher and longer when also ip-final
2. Block of iterative downstep at ip boundary (return to the register level set by H1)
3. Partial reset after ip boundary (on postboundary H, Hpb)

## RESULTS I

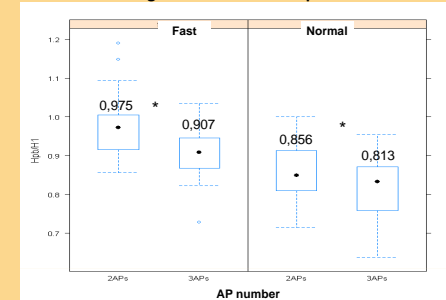


F0 height ratio between H2 and H1 in 2 APs and 3 APs utterances in fast and normal renditions for both speakers  
 Vowel lengthening of V2 relative to V1 in 2 APs and 3 APs utterances in fast and normal renditions for both speakers

**F0 values as well as vowel lengthening were significantly greater when the target vowel was in ip-final position (in a subject NP made of 2 APs) for both fast and normal speech rate**

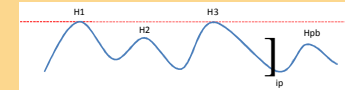
## RESULTS II

### F0 height ration between Hpb and H1



Degree of reset of post boundary high (Hpb) relative to H1 for both rates

### Partial reset hypothesis confirmed



## THEORETICAL FRAMEWORK

Two complementary approaches to prosodic constituency in French:

### 1- The syntax-based approach of Prosodic Phonology

Nespor & Vogel, 1986; Selkirk, 1984

*Marie donne le biberon à son bébé*  
 "Marie gives the feeding-bottle to her baby"

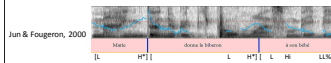
[Marie] PP [donne] PP [le biberon] PP [à son bébé] PP  
 [Marie] PP [donne le biberon] PP [à son bébé] PP

Prosodic units: Phonological Phrase (PP)  
 Defined by: syntactic algorithms

### 2- The prosodic approach

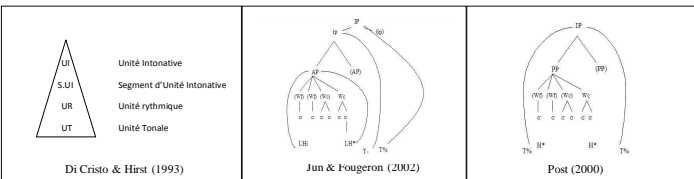
Pierrehumbert, 1980; Ladd, 1986; Hirst & Di Cristo, 1996; Jun & Fougeron, 2000

*Marie donne le biberon à son bébé*  
 "Marie gives the feeding-bottle to her baby"



Prosodic units: Accentual Phrase (AP)  
 Defined by: LH\* + vowel's lengthening

Within the autosegmental-metrical theory of intonation, three models of French intonation:

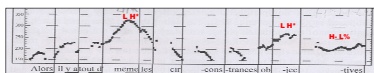


Further evidences for an 'ip' level of phrasing can be found for French in specific intonation patterns:

1- Di Cristo & Hirst (1996) observed an intermediate juncture (called Intonation Phrase Segment, S.UI) which seems stronger than an AP boundary but smaller than an IP boundary in specific prosodic structures such as tag-questions.

Tag-question: **[(Une bonne bouteille de champagne)<sub>S,UI</sub> (ça lui plairait?)<sub>S,UI</sub>]**  
 « A good bottle of champagne, would he like it? »

2- Jun & Fougeron (2002) proposed the ip level to explain specific intonation structures that they observed: a mid plateau at the end of a phrase.



F0 track of the utterance « Alors il y a tout de même les circonstances objectives » (So there are still the objective circumstances) with implicature meaning. Data from Faguy, S. mentioned by Jun & Fougeron (2000).

The ip is marked by a L- or a H-edge tone. (depending on the illocutory value of the utterance) though restricted distribution.

## DISCUSSION

- In French, the ip would not be restricted to marked constructions as was proposed by Jun & Fougeron (2002) and Di Cristo & Hirst (1996): an ip-boundary might appear within all focus utterances.

- An alignment constraint conspires to place an ip boundary to the right edge of a major syntactic break "align the right edge of a syntactic XP with the right edge of an intermediate phrase". But prosodic weight and length constraints might interact with syntactic constraint.

- We propose the ip to be the domain of downstep in French, like in English, and that its right boundary is marked by a return to the register level set by the first peak of the phrase.

- Partial reset across the ip boundary is evidence for an internal structuring of the IP, supporting the hypothesis of a size difference between internal vs. external downstep (Truckenbrodt and Fery 2005).

- Fast speech rate did not induce boundary erasure, in contrast with previous results (Fougeron & Jun 1998), but only smaller preboundary lengthening and globally higher register than at normal rate.

## CONCLUSIONS

**PHONETIC RESULTS:** Pitch reset and lengthening when target vowel is in ip-final position. Partial reset after ip boundary.

**PHONOLOGY:** Pitch reset before ip boundary is due to H-. Syntax-prosody interface = right edge alignment constraint between XP, R and ip, R.

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