

Intonation meaning in question(s) the case of some French rising-falling tunes

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NON-CANONICAL QUESTIONS AT THE SYNTAX-PROSODY INTERFACE

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Preliminary issues

What is a question?

What does it mean for a question to be non canonical?

Preliminary issues

What is a question?

A puzzling issue!

- A type of speech act?
- A type of utterance with a specific meaning?
- A type of utterance with a specific morpho-syntactic form? prosodic form?
- The association of a form and a meaning (a type of construction)?

Preliminary issues

What is a question?

(Beyssade & Marandin, 2006)

- The Literal Force Hypothesis (LFH, Levinson 1983)

A speech act = F(p)	Alan ate a poisoned apple	F = asserting
	Did Alan ate a poisoned apple?	F = questioning
	Eat a poisoned apple, Alan!	F = requesting
	What a poisoned apple did Alan eat!	F = exclaiming

- Gazdar's (1981) objections

- not all speech acts convey propositions and different types of semantic content must be distinguished

- each clause type is not associated to a single illocutionary force

Preliminary issues

What is a question?

(Beyssade & Marandin, 2006)

- Construction of a syntactic type with a semantic content type
Ginzburg & Sag (2000)

Syntactic types	Semantic content types
Declarative	Proposition
Interrogative	Question (propositional abstract)
Imperative	Outcome
Exclamative	Fact

- Resolves Gazdar's 1st objection. What about the 2d?

Preliminary issues

What does it mean for a question to be non canonical?

- An indirect speech act?
- A non-canonical relation between a syntactic type and the semantic type it associates with?

- An **interrogative** conveying :

A **proposition** = rhetorical questions

Are we really that desperate?

An **outcome** = directive questions

Can you may be stop talking!

- A **declarative** conveying :

• A **question** = questioning declaratives

Alan ate a poisoned apple?

• A **fact** = exclaiming declaratives

This is beautiful!

The role of prosody in questioning declaratives in French and how to investigate it

On the substance/form side

- Importance of the contribution of phonological primitives (and of phonetic details)
- Importance of a precise language specific phonetic/phonological analysis
- A production study : Michelas et al. (2016)

On the meaning side

- Intonational meaning can be analysed in semantic/pragmatic features
- It has a central dialogical component (S/A commitments/disagreements)
- A perception study : Portes et al. (2014)

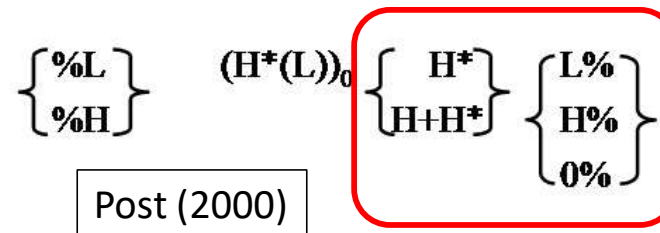
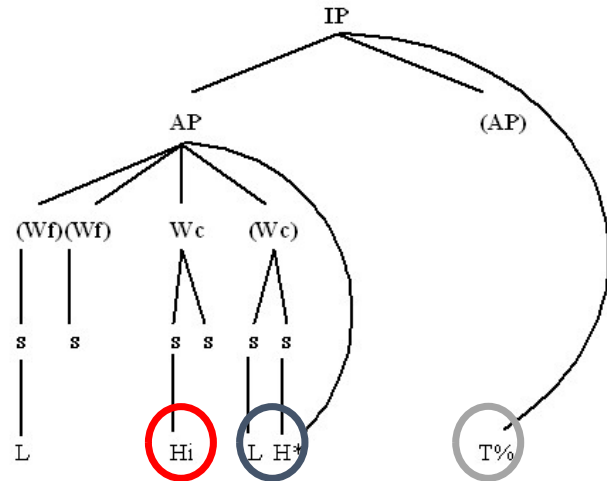
About compositionality of intonational meaning

- A theoretical review: Portes & Beyssade (2015)

Investigating the prosodic form of French declaratives conveying negatively biased questions

Michelas, A., Portes, C., & Champagne-Lavau, M. (2016). When pitch accents encode speaker commitment: Evidence from French intonation. *Language and speech*, 59(2), 266-293.

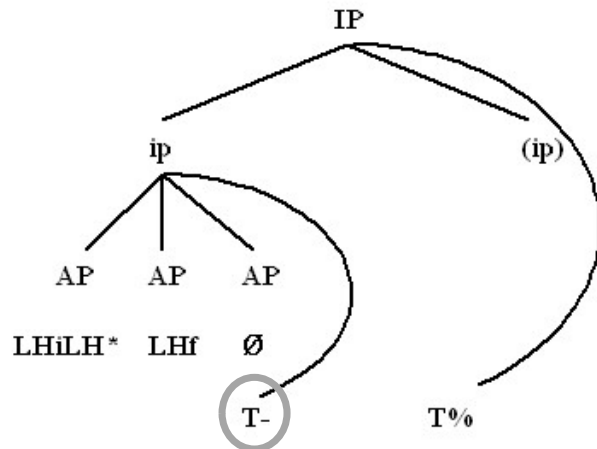
Basics of French Intonation



Post (2000)

Delais-Roussarie et al. (2015) **H+!H*, L***

Sichel-Bazin (2015), Portes & Beyssade (2015) **H+L***



Jun & Fougeron (2000, 2001)

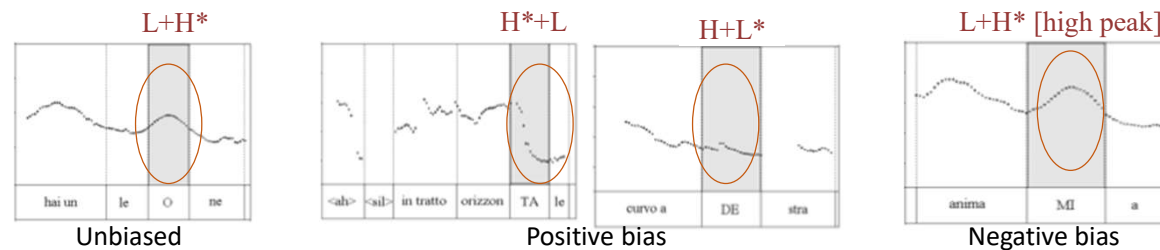
D'Imperio & Michelas (2014)

Intonational encoding of epistemic biases

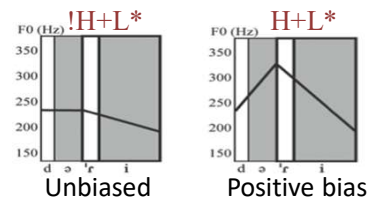
Speakers could use pitch accent types to distinguish between:

- Questions for which the speaker has no particular belief about the proposition : *unbiased questions*
- Questions for which the speaker believes the information to be true/false : *positively or negatively biased questions*

Bari Italian (Grice & Savino 1997, Savino & Grice 2011)

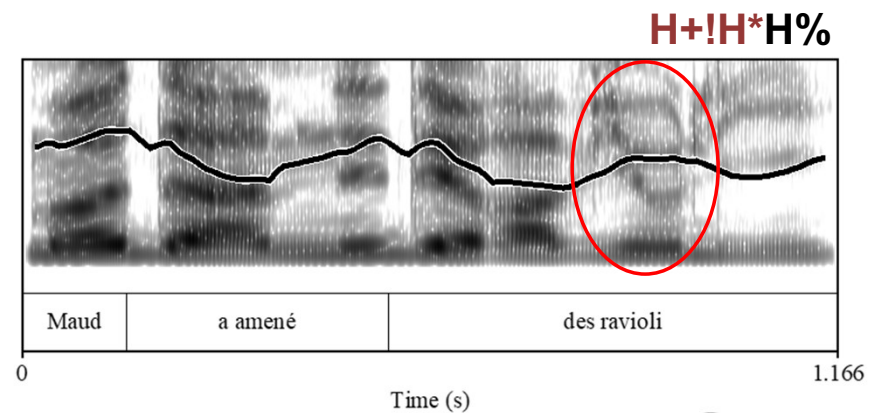
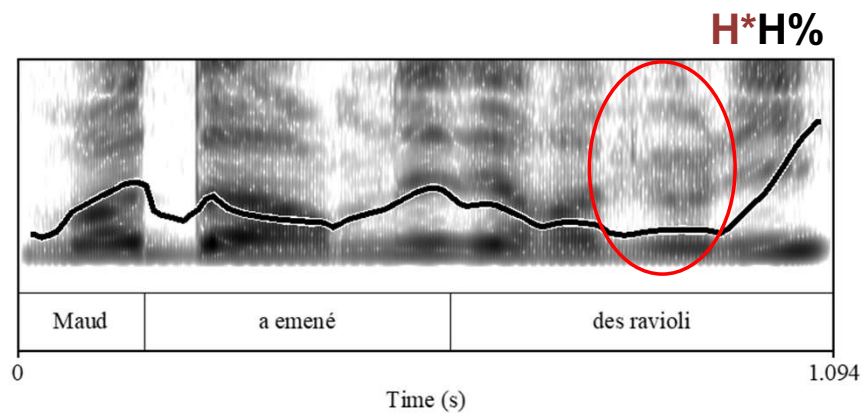


Catalan (Van Rell et al. 2013)



Impressionistic differences that an f0 peak on the penultimate syllable conveys greater uncertainty

Fonagy & Bréard, 1973; Post (2000); Beyssade & Marandin (2007)



Are French speakers able to use the H*/H+!H* distinction to signal the contrast between unbiased and negatively biased questions?

Method : the discourse completion task (DCT)

Stimuli	Context	Sentence to be produced	Expected pitch accent
Unbiased context	You invited your sister, Maud, for dinner this evening. Your husband comes in the kitchen to let you know that she has just arrived. You ask him about the meal she has brought.	Maud has brought ravioli Should I boil some water?	H*H%
Negatively biased context	You invited your sister, Maud, for dinner this evening. She promised that she would bring a poulet basquaise, her speciality. Your husband comes in the kitchen pretending that Maud has just arrived and has brought ravioli. You seriously doubt that Maud has changed her mind and put into question what your husband has just said.	Maud has brought ravioli I thought she was going to cook poulet basquaise	H+!H*H%

Measures

- Types of final boundary tone (L% vs. H%)
- Type of pitch accent (H* vs. H+!H*)
- Duration of the penultimate syllables
- Scaling of the penultimate syllable relative to the preceding H target

Participants and Procedure

- 14 native speakers of French (2 males and 12 females)
- A production experiment

Statistics

Linear/Logit mixed regression

Effect of the pragmatic context on the tonal patterns

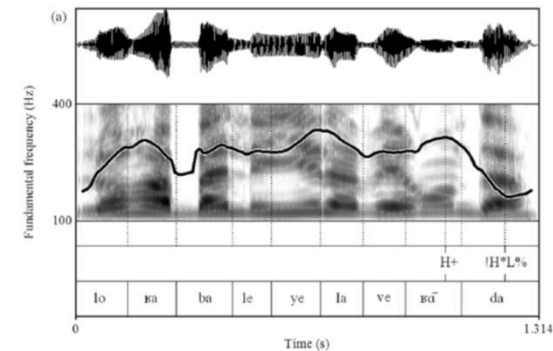
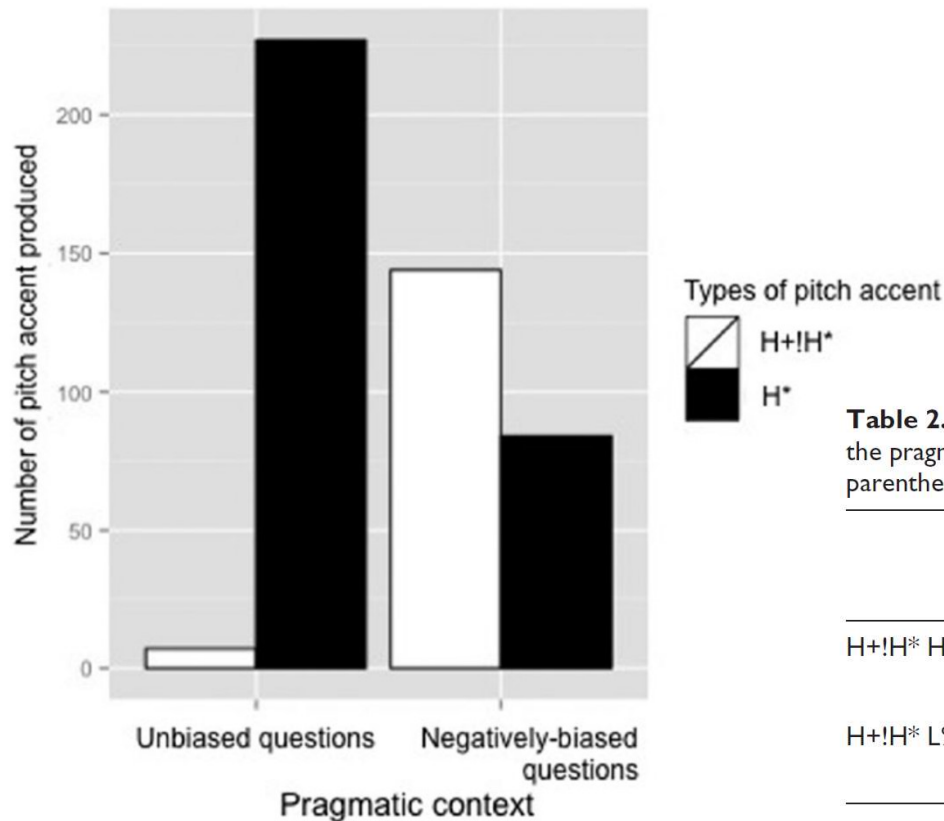
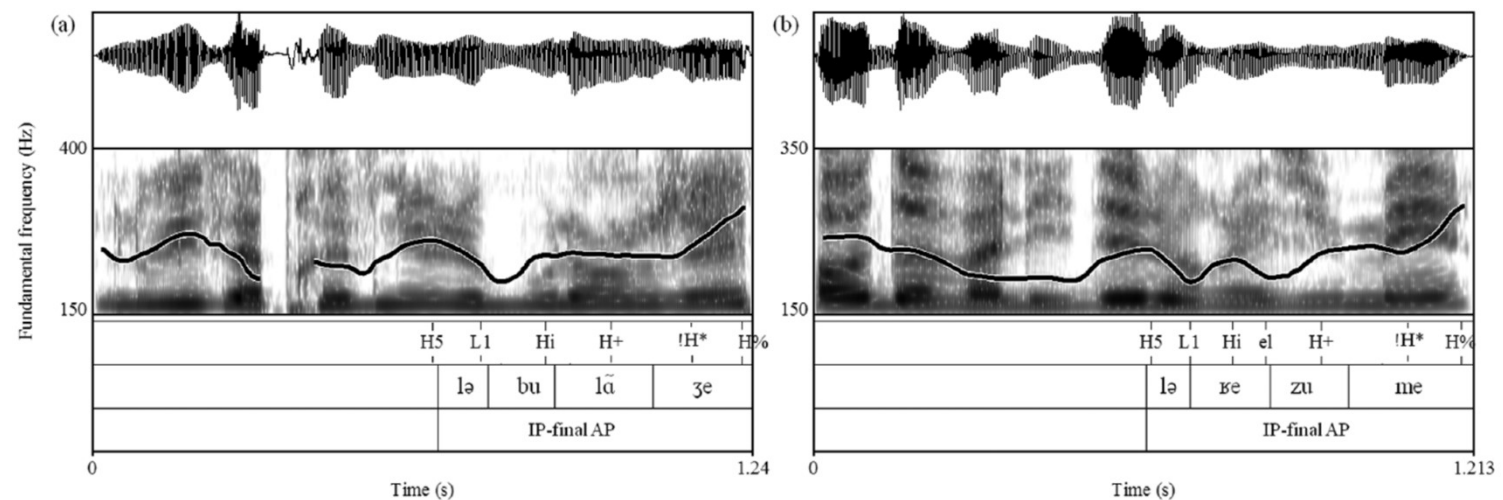


Table 2. Number of tonal patterns including a penultimate peak produced by participants depending on the pragmatic contexts. Percentages relative to the total number of tonal patterns produced are given in parentheses.

		Pragmatic context	
		Unbiased questions	Negatively biased questions
H+!H* H%		1 (0.7%)	100 (66.2%)
H+!H* L%		6 (4.0%)	44 (29.1%)

A precisely planned phonetic and phonological analysis

- A phonological analysis which takes into account the specific prosodic organisation of the studied language
- How to be sure that the H tone aligned with the penultimate syllable is the leading tone of an H+!H* pitch accent?
- **Design** : 3 syllables nuclear target words
- **Measures** : duration and scaling of the penultimate syllable



The penultimate peak contour and the initial H tone (Hi)

Table 3. Number of pitch accents produced by participants depending on the type of pitch accent (H* vs. H+!H*), the presence of the initial H tone (Hi) and the type of the intonational phrase (IP)-final boundary tone (H% vs. L%). Percentages of pitch accents relative to the total number of pitch accents produced by participants are given in parentheses.

Final boundary tone	Hi tone	H*	H+ !H*
H%	No	258 (55.9%)	69 (14.9%)
	Yes	20 (4.3%)	32 (6.9%)
L%	No	23 (5.0%)	32 (6.9%)
	Yes	17 (3.7%)	11 (2.3%)

- The presence of a penultimate H peak did not block the realization of an Hi tone
- No stress clash
- Explanation : **the penultimate syllable is not stressed => H is a leading tone**

Acoustic properties of the penultimate peak contour

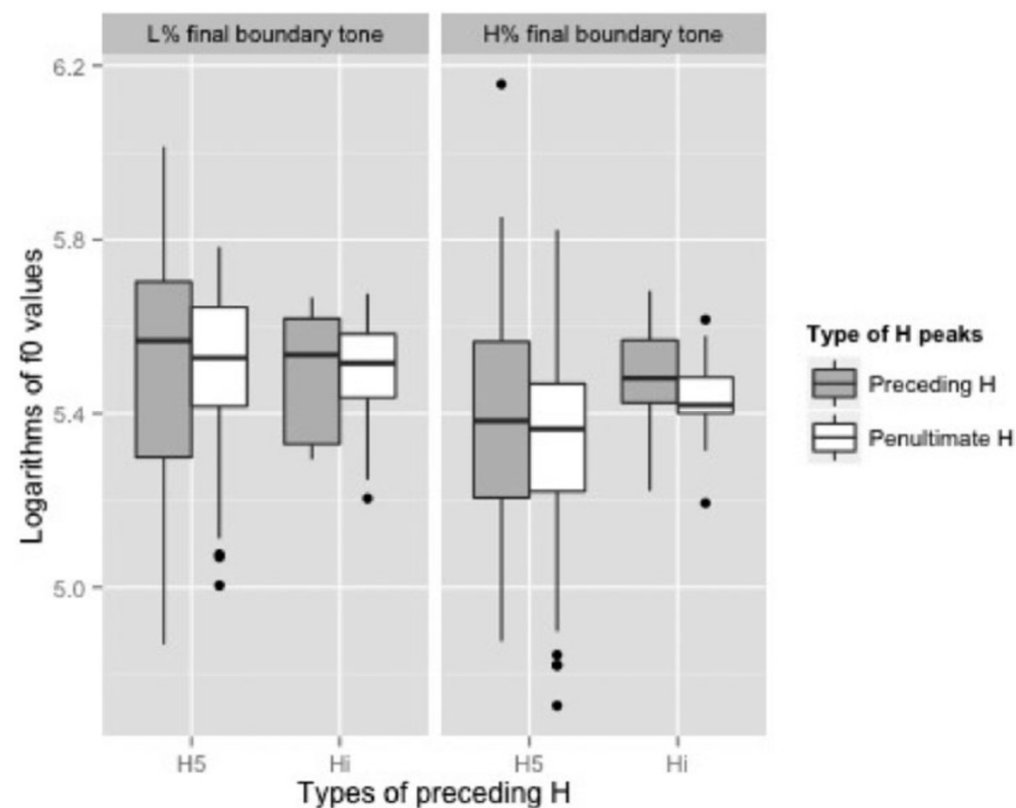
- **Duration** : the penultimate syllable is not lengthened when it bears a penultimate peak

In French, accented syllables are lengthened

- **Scaling** : the penultimate peak is not lower than the preceding H

Following Post (2000), if the penultimate H is H, its f0 should be lower than that of the preceding H*

=> The penultimate peak is H+ rather than H*



Discussion

- A *pitch accent contrast* conveys a difference in meaning (speaker's bias)
- In French
 - *negatively biased* questioning declaratives = H+!H*H%
 - *unbiased* questioning declaratives = H*H%
- In line with cross-linguistic observations => *compositionality of the nuclear contour?*
- Variability in signaling a negative bias
 - Some speakers use a H*H% => homophony? (look at scaling of H*) surprise?
 - Some speakers use H+!H*L% => allophony or boundary tone truncation?
- An informed and detailed phonological and phonetic analysis is mandatory
- Also *gradient acoustic cues* such as pitch range variation convey the same kind of contrast in some languages/Language varieties
 - Bari Italian (Savino & Grice, 2011) => different levels of grammatical encoding (grammaticalization)?

Investigating intonation meaning in French declaratives

Portes, C., Beyssade, C., Michelas, A., Marandin, J. M., & Champagne-Lavau, M. (2014). The dialogical dimension of intonational meaning: Evidence from French. *Journal of Pragmatics*, 74, 15-29.

Issue : how to characterize intonational meaning?

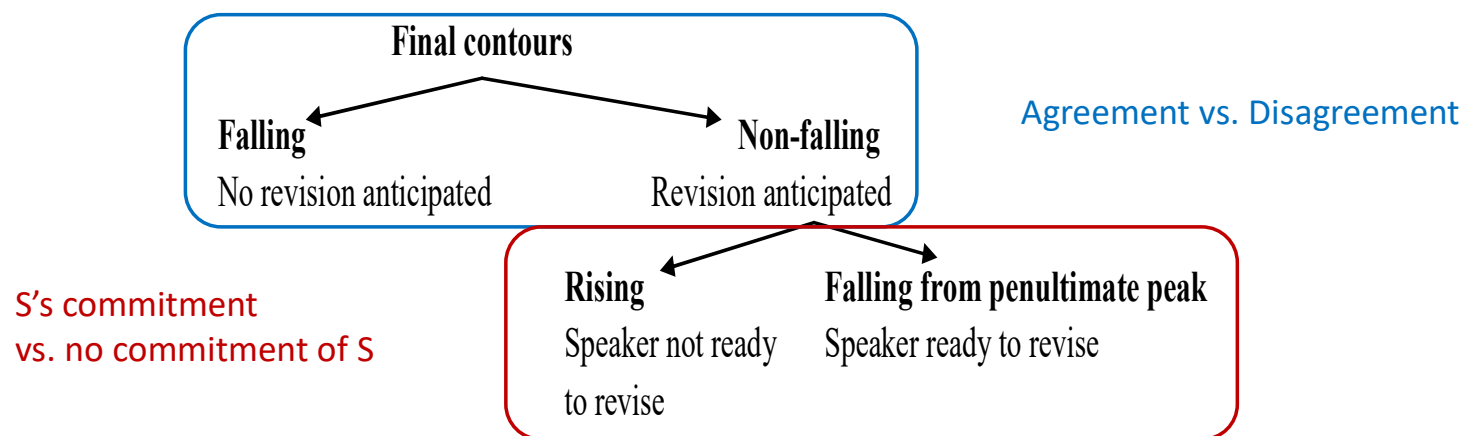
- Intonation as the phonologically structured aspects of prosody (Ladd, 1996-2008)
 - Metrical organization
 - Tonal organization
- Two major classical aspects of meaning
 - Information structure
 - Speech acts' specification
- The traditional typology of speech acts must be reactualized
 - **Commitment approaches to meaning** (Beyssade & Marandin, 2006; Farcas & Bruce, 2010; Malamud & Stephenson, 2015)
 - describing finer differences
 - modeling the dialogical aspects of meaning

Tune Meaning, Commitment & Attitude Attribution

- Gussenhoven (1984)
 - British English: a rise = S is NOT engaged towards the truth of his utterance's content
- Pierrehumbert & Hirschberg (1990)
 - “We propose that a speaker (S) chooses a particular tune to convey a particular relationship between an utterance, currently perceived beliefs of a hearer or hearers (H), and [anticipated contribution of subsequent utterances.](#)”
- Gunlogson (2004)
 - In American English
 - Falling contours signal S's commitment to the truth of the proposition p
 - Rising contours signal A's commitment to the truth of the proposition p
- Steedman (2007)
 - In British English: a rise signal the **ATTRIBUTION** of commitment to A on behalf of S
- Vanrell et al. (2013), Michelas et al. (2016)
 - In Majorcan Catalan and in French, the choice of a specific *pitch accent* reflects how much S believes A to *share* information with him

Beyssade & Marandin (2007)

« French Intonation & Attitude Attribution »



Tunes make public the speaker beliefs *about the addressee's beliefs* and convey *call on addressee* (Truckenbrodt, 2004)

WORKING HYPOTHESIS

A's reaction to the utterance should dialectically reflect S's announcements about A's potential disagreements and commitments:

A's reaction should reflect *tune meaning*

Aim of the Study

Research questions

- Is intonational meaning *dialogical* involving *recipient design*?
- Does intonational meaning convey not only S's commitment but also attribution of intentions to A by S and call on A?
- Assuming that each tune has a prototypical meaning, what are the *semantic distinctive features* of four different contours of French intonational system?

Method

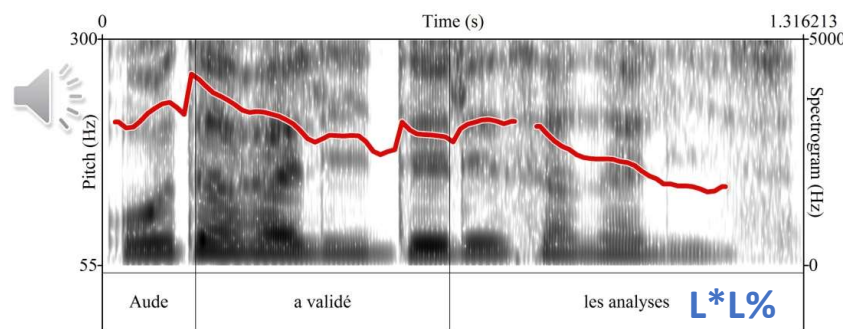
- An original forced-choice interpretation task
- Participants had to choose among 4 possible reactions to identical sentences carrying 4 different tunes

We assume that participants' choice of a *reaction* should reflect

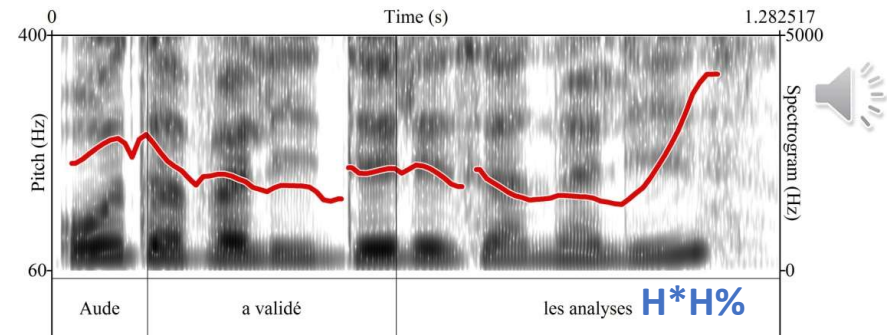
1) how they interpret the tune

2) how they react as an addressee to the speaker's attribution of intention to them

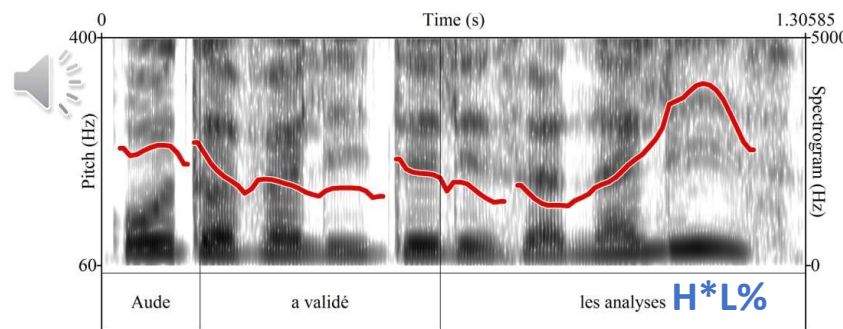
Material: Tunes and Sentence Structure



SUBJ VERB OBJ

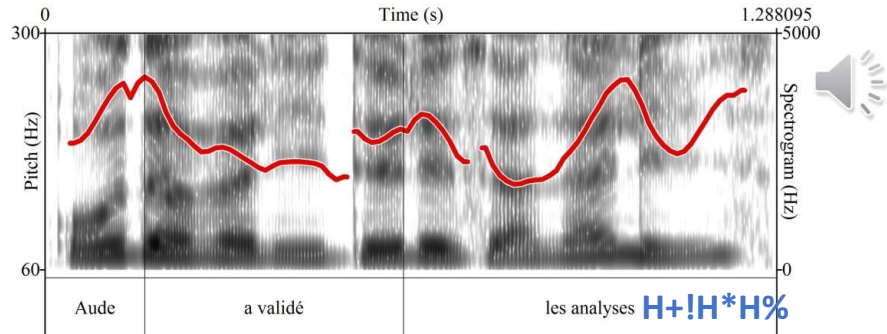


1 SYL 1+3 SYL 1 + 3 SYL



AP1 AP2 **AP3**

IP



Tune Meaning and Related Reactions

L*L%

- S commits himself to p
- S signals that he anticipates no disagreement from A (about p)
- S proposes to A to update CG with p

J'en prends note

I've got it

A acknowledges that S has no disagreement about p and that p can be added to the CG

H*H%

- S signals that he does not commit to p
- S signals that he attributes a belief about p to A (that p or not p)
- S proposes to A to commit to p or to commit to not p

J'en sais rien

I don't know

Contradicts S's attribution to A

H*L%

- S commits himself to p
- S signals that he anticipates a disagreement from A (the belief that not p)
- S proposes to A to update CG with p

Tu dois avoir raison

You may be right

Acknowledgment of S's commitment
Remaining doubt of A

H+!H*H%

- S signals that he does not commit to p
- S signals that he anticipates a disagreement from A (the belief that p)
- S proposes to A either to commit to p or to commit to not p

Si, si, je t'assure!

Yes, it's no joke

Comments both on S's disagreement and on the confirmed commitment of A

Method

Sentence-reaction plausibility

- All sentence-reaction pairs were judged rather plausible
- The reaction related to L*L% (I've got it) were judged more plausible than the other three
- Reactions occurrence probabilities depending on utterances may favor the selection of the L*L%-reaction

Tune discrimination

- The four tunes were very clearly discriminated from one another

Procedure of the interpretation experiment

- 12 sentences x 4 contours = 48 experimental utterances
- 80 French native speakers (students, age=21.12 years, SD=2.28)
- **Sound of a sentence – 200 ms blank – written 4 reactions**
- Press a colour button to chose the appropriate reaction

Press the space-bar to start the experiment



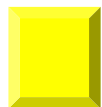
I've got it



I don't know



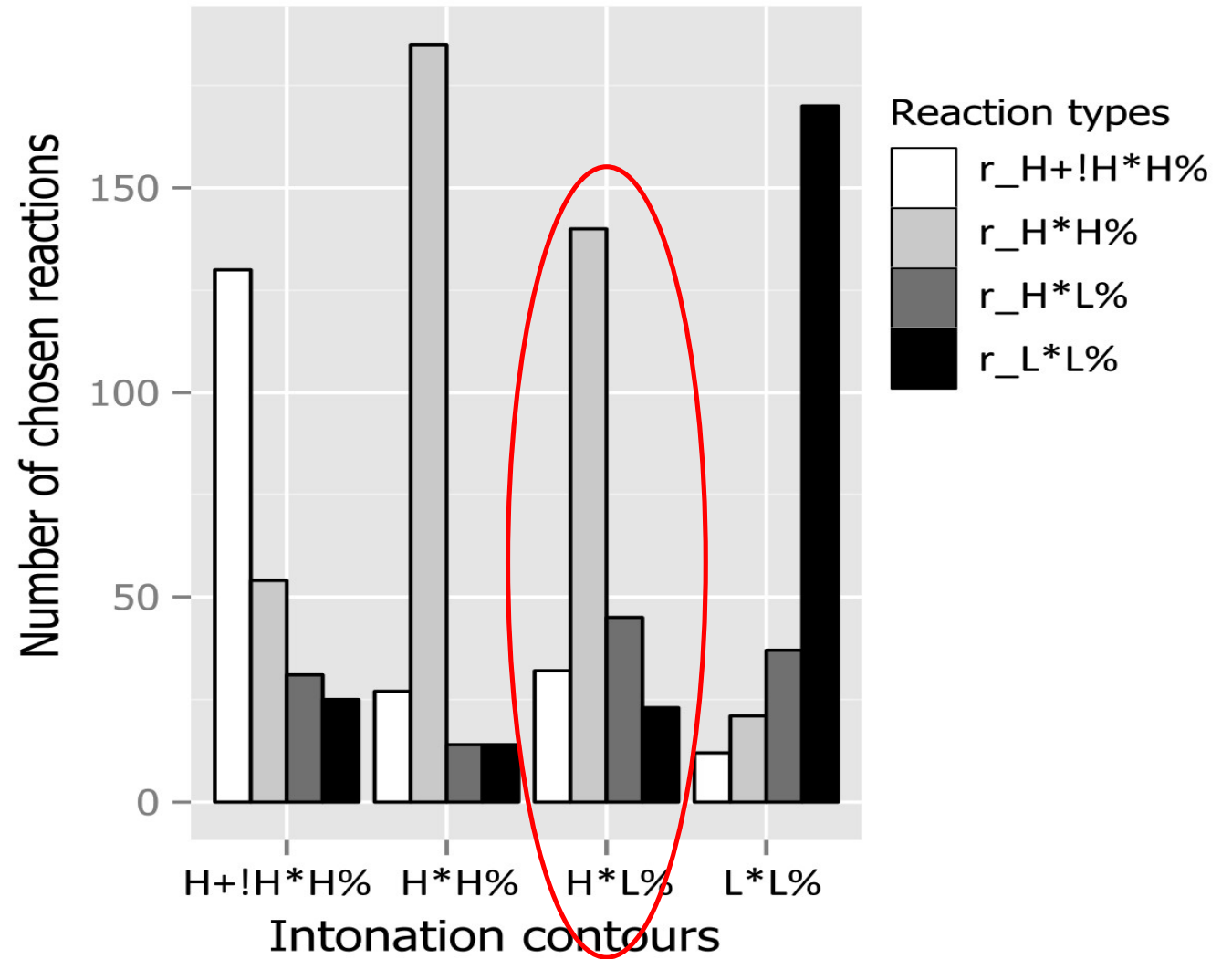
You may be right



Yes, it's no joke!

Results

Number of
each type of reactions
by intonational contour



Discussion

Relevant meaning components for these (French) intonational contrasts

- S's commitment
- Attribution of intentions to the addressee
- Call on addressee => KC use in Aitor Lizardi Utarte's proposal

Discrete phonological elements of intonational phonology have meaning *on their own*

- Gussenhoven's (1984) 'linguistic normalcy' view
- Ladd's (1996-2008) Linguist's Theory of Intonational meaning

Intonational meaning is dialogical and imply recipient design

- Beyssade & Marandin (2007) => related to Theory of Mind (ToM)?

A new experimental design for the study of intonational meaning

- Simple, fast, light (one computer, a pair of headphones , a quiet room)

Did not work for the rise-fall H*L%?

- H*L% could be less grammaticalized, more sensitive to context (Portes & Reyle 2014; Portes & Lancia, 2017))
- Its *expressive* dimension (Rossi, 1999) should be better perceived in presence of a real potentially opposing A

Other prosodic aspects may be relevant

- Prenuclear part of the tune => phonotactics?
- Continuous variations (pitch range, speech rate?) => less language specific, more universal? (yesterday's talks)

What conception of intonational meaning allows for compositional analysis

Portes, C., & Beyssade, C. (2015). Is intonational meaning compositional. *Verbum* (coord. M. Dargnat & F. Mouret).

What is compositionality?

- **Frege's initial proposal** : the meaning of a complex expression is a function of the meaning of its constituent expressions and of the rules used to combine them
- **Weak compositionality** : applies between a complex expression and its parts
- **Strong compositionality** : applies to all structural levels from immediate constituents to atomic constituents via all intermediate constituents
- **The contribution of prosody to utterance meaning depends on**
 - how the notion of prosodic form and the dimensions of meaning are conceptualized
 - how the interface between prosody and morphosyntax is conceived

Different ways to conceive intonational meaning

- Direct link between phonetic parameters and communicative functions = **compositionality is irrelevant**
 - the PENTA model (Xu, 2005)
 - Prosody as a set of *contextualization cues* in interactional approaches (Local, 2003, 2007; Wells, 2010)
- Constructional and tune theories = **weak compositionality**
 - Contours as *constructions'* theory (Marandin, 2006)
 - Tunes as *intonational morphemes* theories = the linguistic's normalcy view (Gussenhoven, 1984-2014; Ladd, 1996-2008)
- Internal analysis of the contour = **strong compositionality**
 - Pierrehumbert & Hirshberg (1990) : each tone is a morpheme (no duality of patterning)
 - Steedman (2007) : only pitch accents and boundary tones have meaning, tones have not (duality of patterning)

Prosody as a “contextualization cue”

- John Local (2003: 117) “phonetic parameters are best treated as falling into functional clusters, irrespective of their ‘prosodic’ or ‘segmental’ characteristics, on the basis of how speakers deploy them to achieve particular interactional goals”.
 - Local (2007) : 2 “so” expressions in English
 - “so” maintains the speech turn or the discourse topic
 - greater intensity
 - higher pitch range than the preceding speech material
 - end with a glottal occlusion sometimes preceded by creaky voice
 - “so” closes the speech turn
 - weaker intensity
 - lower pitch range than what precedes
 - no glottal occlusion and creaky voice is not localized
 - No autonomous prosodic units, likely to convey specific meanings that could be composed => **compositionality is irrelevant**
 - Perhaps interactional meanings (turn-taking management) are not good intonational meanings
- => but see Bertrand & Portes (2012) in favor of a phonological approach of prosody in interaction

no relevance of intonation contours

Weak compositionality of tune theories

Gussenhoven (1984-2014)

	<i>Fall</i>	<i>Fall-rise</i>	<i>Rise</i>
<i>Delay</i>	Addition + non-routine	Selection + non-routine	Relevance test + non-routine
<i>Stylisation</i>	Addition + routine	Selection + routine	Relevance test + routine
<i>Half-completion</i>	Addition + not surprising	Selection + not surprising	Relevance test + not surprising
<i>Range</i>	Addition + insistence	Selection + insistence	Relevance test + insistence

- **ADDITION:** The speaker may add the Variable to the background
- **SELECTION:** The speaker may select a Variable from the background
- **RELEVANCE TEST:** The speaker may test whether a Variable belongs to the background
- *Non-routine* = very significant, marked
- *Routine* = This is a matter of everyday occurrence/routine => [Portes, Bertrand & Espesser \(2007\)](#)
- *Not-surprising* = « the speaker signals to his hearer that the latter should take the Variable as one that the hearer might somehow have expected”

Strong compositionality of AM theories

- Pierrehumbert & Hirschberg (1990)
 - Intonation contours are decomposable: (T*)T* T- T%
 - T*: *informational* and *dialogical* status of the lexical items that bear them (new/old: H*/L*, scale: L+H*, shared/or not: H*/L*)
 - T- (ip) and T% (IP): signal whether (H-/H%) or not (L-/L%) one should interpret the constituent content conjointly with that of the following ip/IP
- Steedman (2007)
 - 3 semantic dimensions of intonational meaning: *information structure*, *participant commitments* and the potential *disagreement* between them

	[+ AGREED]	[- AGREED]
θ : theme	L+H*	L*+H
ρ : rheme	H*, H*+L	L*, H+L*

BOUNDARY TONES	MEANING
L%, LL%, HL%	speaker commitment
H%, HH%, LH%	commitment is <i>attributed</i> to the hearer

Strong compositonality : a temptative proposal for French

	[- AGREED]		[+ AGREED]
	[>]	[<]	
[S]	H+L*L%	H*+LL%	L*L%
[H]	H+L*H%	H*+LH%	L+H*H%

=> An alignment difference may convey degrees in agreement between S and A

Discussion

Why is compositionality an issue?

- The more prosody is formally structured (phonology) the more compositionality is at issue
 - => detailed semantic components of intonation

Duality of patterning

- Pierrehumbert & Hirschberg (1990) : $L+H^* = H^*$ (new) in contrast with a given expression (L)
- => all tones are morphemes = no duality of patterning

What type of content do intonational meaning apply to?

- To a proposition or its parts (Pierrehumbert & Hirschberg, 1990; Steedman, 2007)
- Also to other types of contents
 - presuppositions and implicatures of the utterance (Truckenbrodt, 2012)
 - The other types of sentence meanings : question, outcome, fact (what we discuss in this workshop)

To conclude

General discussion and some perspectives

General Discussion

The contribution of prosody to meaning is a very complex issue!

=> joint work between phonology/phonetics, syntax, semantics/pragmatics is mandatory

On the form side

- Role of both discrete phonological units, gradient phonetic distinctions, fine phonetic details
 - => Gussenhoven's biological codes (2002, 2016)
- Role of the prenuclear region? (Delais-Roussarie & Herment, 2018)
 - => but phonotactics?

On the meaning side

- Need to define the relevant aspects (features?) of intonational meaning
 - Epistemicity : commitment
 - Dialogue negotiation : disagreement, call on addressee (for the next move)
 - Evidentiality : where does the information come from (speaker or addressee)?
 - Mirativity ? (Celle, Jugnet & Lansari, 2017)
 - Others? (Emotions? Sociolinguistic contents)

General Discussion

Variation

- *Sociolinguistic* and *cognitive* factors explain part of the variability in intonation interpretation choices
 - **Sociolinguistics**: Corsican listeners rely on *implicit contextual* information to choose between the questioning (Corsican) versus asserting (Continental) reading of the same declarative sentence bearing a rise-fall (Portes & German, 2019)
 - **Cognition** : More *empathic* listeners are more sensitive to intonation meaning than less empathic listeners (Esteve-Gibert et al., 2020)
=> Riccardo Orrico's PhD thesis (2020): *Individual variability in intonational meaning identification: The role of cognitive and sociolinguistic variables*

Role of gestures

- Gesture produced during speech also convey meaning that interfere with intonational meaning (redundancy)
 - *Audiovisual Prosody* research program, Pilar Prieto, U. Pompeu Fabra in Barcelona
=> Borràs-Comes, Kiagia & P. Prieto (2019)

On going projects

- With Riccardo Orrico (U. of Salerno, Italy) & Mariapaola D'Imperio (Rutgers, USA)

The role of intonation in defining the *source* of bias in Salerno Italian questions

- With Fâ Maraval (Master student, AMU) and Viviane Déprez (Rutgers, AMU)

Intonation in WH-in situ questions in French

THANK YOU FOR YOUR ATTENTION!



Roxane Bertrand



Claire Beyssade



Maud Champagne-Lavau



Viviane Déprez



Mariapaola D'Imperio



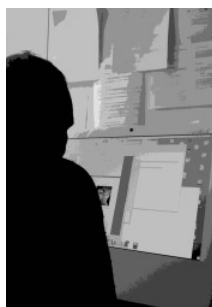
Núria Esteve-Gibert



James S. German



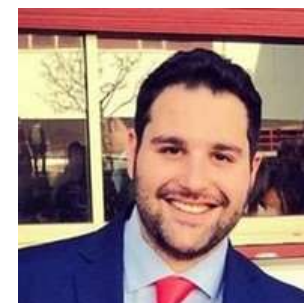
Leonardo Lancia



Jean-Marie Marandin



Amandine Michelas



Riccardo Orrico



Uwe Reyle

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