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## The Prosody of French Rhetorical Questions

**Abstract:** Besides information-seeking questions, there are all kinds of non-standard questions, whose function is not to request information from the addressee, but rather to convey information about the speaker's epistemic or emotional state. These include rhetorical questions, surprise questions, incredulity questions, etc. This paper focuses on rhetorical questions (RQs), a sub-type of non-canonical questions, and presents the first production experiment which has investigated them in French to date. We compared string-identical rhetorical and information seeking questions (ISQs) in French. Experimental design and preliminary results are presented and discussed. In the final part of the paper, we discuss possible correlations between these findings and the semantic and pragmatic properties that distinguish RQs from ISQs.

**Keywords:** intonational meaning, rhetorical questions, phonetic cues, interface prosody-discourse.

### 1. Introduction

Rhetorical questions (RQs) are non-standard questions which are not used by speakers to express a request, unlike information seeking questions (ISQs). There is a huge literature on the semantics and pragmatics of RQs, and a broad distinction between three main theoretical approaches can be made. The first approach claims that RQs are interrogative sentences which have the illocutionary force of assertions, and, as assertions, do not have to be answered (cf. Han 2002). The second argues that RQs are true questions whose answer is known to the Speaker and the Addressee, who also both know that the other knows the answer as well. Hence, an answer is not required, even if it is still possible (cf. Caponigro and Sprouse 2007). The third approach, elaborated by Rohde (2006) and developed by Biezma and Rawlins (2017), assumes that RQs are interrogatives triggering the presupposition that the context entails the answer; they thus serve to synchronize Speaker's and Addressee's beliefs.

Scattered observations about the prosody of RQs can also be found in the literature. Based on introspective judgements, Bartels (1999) and Han (2002) argue that in English, polar RQs are generally falling (L- L%). Banuazizi and Cresswell's (1999) investigations, based on a corpus study, led them to quite different conclusions: they found only 44% of polar RQs to be falling, while the remaining 56% ended with a final rise (H- H%). It is only recently that systematic studies have been undertaken to characterize what distinguishes the prosody of RQs from ISQs in different languages. Wochner et al. (2015) and Braun et al. (2019) developed an experimental protocol to compare the prosody of RQs and ISQs in German, both for polar and *wh*-questions. The experiment consists of an elicitation task: string-identical ISQs and RQs have to be produced in a context which disambiguates their interpretation. This protocol has since been replicated in other languages, including English

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(Dehé and Braun 2019), Icelandic (Dehé and Braun 2020), Cantonese (Lo et al. 2019), and Mandarin Chinese (Zahner et al. 2020). These experiments showed that the final contour was not sufficient to distinguish ISQs from RQs and that other phonetic and phonological cues had to be taken into account. More recently, work in psycholinguistics and neurolinguistics has tried to measure the respective importance of each parameter in the identification of the type of questions (Kharaman et al. 2019; Neitsch et al. 2018).

The results obtained in these different experiments show interesting similarities (cf. Dehé et al. (2020) for details):

- the form of the final contour is not a sufficient cue to distinguish ISQs from RQs in almost all of the languages mentioned in the paper. Note however that some contours are preferred in RQs. In German *wh*-questions, for instance, the  $L^*+H\ L\%$  was most frequent for RQs (68 times, 54.0%), and almost never occurs in other questions or illocution types (< 3%) (cf. Braun et al. 2019);
- the distribution and phonetic implementation of prenuclear and nuclear pitch accents differ between RQs and ISQs. In English, for instance, nuclear accents may be realized on the subject in polar RQs, whereas it is always on the object in ISQs, and in German, the late rise  $L^*+H$  is preferred in polar RQs, whereas the monotonal  $L^*$  occurs in ISQs;
- durational information indicated by localized variation in, for instance, speech rate and lengthening of specific elements also allows distinguishing ISQs from RQs. Duration appears to be very robust cross-linguistically in both intonation and tone languages.

In this paper, we focus on French as very few studies have been dedicated to the prosody of RQs in this language. Based on introspection and analysis of different questions extracted from large data sets, Di Cristo (2016) mentioned two prosodic features as characteristics of RQs: the occurrence of a low plateau at the end of RQs, which contrasts with the rising pattern often observed in ISQs; and a clear durational lengthening of the syllables in the plateau. However, when mentioning RQs in his study, Di Cristo mainly refers to self-addressed questions in the first person, such as “*Comment n’y ai-je pas songé plus tôt ?*”<sup>3</sup> ‘How did I not think of this before?’. These questions are not similar to the ones elicited in Braun et al.’s protocol. Furthermore, there is no systematic study concerning the prosody of RQs in French. Therefore, we decided to replicate Braun et al.’s protocol for French, in order to evaluate whether French RQs receive a specific prosody, whether in terms of their intonational pattern, their phrasing or their phonetic implementation (speech rate and register). Moreover, it is of interest to evaluate how durational cues operate in a syllable-timed language. The aim was to add the results gathered from this production experiment to the cross-linguistic panorama presented in Dehé et al. (2020); they could also allow verification of the validity of the features mentioned by Di Cristo (2016). Our findings lead us to argue in section 4 that the prosodic marking of RQs and ISQs in French is not categorical, but is the result of the superposition of multiple prosodic cues, which may be considered as reflecting semantic and pragmatic features.

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<sup>3</sup> Example (148) in Di Cristo (2016).

## 2. Design and method

### 2.1 Materials and participants

The data collection protocol consisted of an adaptation for French of the one designed by Braun and colleagues for English (Dehé and Braun 2019), German (Wochner et al. 2015; Braun et al. 2019) and Icelandic (Dehé and Braun 2020). It allows eliciting string-identical ISQs and RQs in order to compare the data along several dimensions concerning the prosody of both question classes (ISQ vs. RQ).

String-identical interrogative sentences, i.e. polar questions (1) and *wh*- questions (2), were presented to participants in two distinct contexts, as exemplified in Table 1. Context A triggers an ISQ reading for both utterances (a polar and a *wh*- question), whereas context B triggers an RQ reading.

- (1) *Est-ce que quelqu'un mange des épinards ?*  
'Does anyone eat spinach?'
- (2) *Qui mange des épinards ?*  
'Who eats spinach?'

Table 1: Contexts of question elicitation: (A) ISQ reading, (B) RQ reading

Context A	Context B
You want to cook a dish with spinach for dinner. But your son has invited friends, and you don't know whether they like this vegetable and will eat it or not. You say to the guests:	In the canteen, for lunch, an oven-baked spinach dish is proposed. However, you know that nobody likes this disgusting vegetable. You say to your friends:

The protocol elicited 88 target sentences, of which 44 were polar questions and 44 *wh*-questions, 22 of each having an ISQ interpretation and 22 an RQ one. The 88 target sentences were divided into two distinct lists so that participants would produce string identical sentences interpreted as an ISQ and an RQ. Altogether, each speaker read 11 polar questions with an ISQ interpretation, 11 string identical polar questions with an RQ interpretation, 11 *wh*- questions with an ISQ interpretation, and 11 string identical questions which were to be interpreted as an RQ. The 44 experimental items were always interspersed with 32 fillers and presented in a pseudo-randomized order.

Twelve monolingual native French speakers (5 male, 7 female) participated in the experiment. They were recorded in a sound-proofed room. For the recording session, each speaker was first presented a context on a laptop screen, and was then asked to read aloud the sentence occurring on the screen according to the context previously shown. In case of hesitations, the participant was asked to produce the sentence again.

### 2.2 Data analysis

The recorded sentences were segmented and analyzed within Praat (Boersma and Weenink 2018). They were first orthographically transcribed, and then automatically segmented into

phones, syllables, and orthographic words with the script EASYALIGN (Goldman 2011). All alignments were manually inspected for errors, and corrected when necessary. In parallel, all targeted sentences were segmented into prosodic phrases according to their morpho-syntactic structure, and to a lesser extent, their information structure. In French, a phrase boundary is often realized at the end of each lexical head of maximal projection, i.e. adverb, noun, verb, etc. (cf. Post 2000; Delais-Roussarie et al. 2015). In a declarative sentence like the one shown in (3), the segmentation in accentual phrases (APs) at the phonological level is given in (4). Note, however, that phrase structure is often less clearly marked in questions, the various APs being restructured in such a way as to utter the sentence in a single AP. The phrasing of the declarative question in (5) illustrates this point. Such a prosodic segmentation often occurs at a faster speech rate.

- (3) *Les enfants sont arrivés vendredi.*  
'the children arrive on Friday'
- (4) (les enfants)<sub>AP</sub> (sont arrivés)<sub>AP</sub> (vendredi)<sub>AP</sub>
- (5) (les enfants sont arrivés vendredi)<sub>AP</sub> ?

For the prosodic analysis, four different cues were studied, among which two are phonological in nature, and two phonetic. At the phonological level, the forms of the final contour and phrasing were studied, and a comparison was made between ISQs and RQs. As to the analysis of their prosodic forms, four distinct contours were distinguished: falling (!H\*L%), rising (LH\*H%), rising-falling (LH\*L%) and plateau (!H\* 0%), following the ToBI-like annotation system developed for French (Delais-Roussarie et al. 2015).

Regarding phrasing, information structure in addition to morpho-syntactic structure was taken into account to compare ISQs to RQs. As mentioned before, the segmentation in APs is usually not as clearly encoded in questions as in assertions. There are, however, various reasons to assume that segmentation could be more clearly realized in RQs than in ISQs to allow the listener to distinguish between the two question types.

As a prosodic phrase boundary is often realized at the right edge of the focus element in French (cf. Beyssade et al. 2004), we decided to evaluate whether a phrase boundary occurs after the *wh*-word *qui* in *wh*-questions or after the indefinite subject *quelqu'un* 'anybody', *des amateurs* 'fans' or *des gens* 'people' in polar questions, assuming that a boundary between these elements and what follows is more likely to occur in RQs than in ISQs. Such a phrase boundary could be the reflex of the information structure of questions, and could signal a distinction between questions with or without focus. From a semantic point of view, focus in questions indicates the part of utterance which is specifically questioned (cf. Beyssade 2007) and it presupposes a restriction constraining the set of possible answers (cf. Krifka 2001), while other questions are totally open. Since RQs, contrary to ISQs, are questions whose answer is already known, they are expected to have – more frequently than ISQs – the information structure of narrow focus questions with a phrase boundary after the *wh*-word or the indefinite NP, which is specifically questioned (*quelqu'un* 'someone', *des gens* 'some people' ...).

Two phonetic cues were also analyzed: pitch range and speech rate. As for pitch range, the analysis was made automatically by means of a Praat script developed by De Looze

(2010): *Get\_Phrases\_register*. It calculated the key (median pitch value) and the range (max and min pitch value) for each sentence, and we compared the values obtained for both interpretations (RQ vs. ISQ) for the same sentence produced by a given speaker. Previous work on French questions often assumed key and range to be higher in questions than in assertions. Because of the specific status of rhetorical questions, we assumed that key and range should be higher in ISQs than in RQs.

Speech rate was also automatically calculated for each sentence by means of the Praat script developed by De Looze (2010). It was calculated in syllables by second, only taking into account the speaking part of the utterance, and leaving aside pauses. As previous work (among others, Niebuhr and Ward 2018) on question intonation in French and in other languages showed that speech rate is usually faster in questions than in assertions, we expected RQs to be produced at a slower rate than ISQs.

### 3. Results obtained for the production experiment

#### 3.1 Phonological cues

At the phonological level, both the form of the final intonation contour as well as cues to phrasing were investigated. Four types of contours were taken into consideration in order to carry out the intonational analysis, based on previous studies of French intonation (among others, Delattre 1966; Post 2000; Delais-Roussarie et al. 2015): the rising contour (transcribed as LH\*H%), plateau (!H\* 0%), rising-falling contour (LH\*L%) and falling contour (!H\* L%). The distribution observed is given in Table 2 and Table 3.

Table 2: Form of the final contours observed in *wh*-questions  
(Percentages over the data set / absolute numbers of items are given in brackets)

	LH*H%	!H* 0%	LH*L%	!H*L%
ISQ (88)	50% (44)	42% (37)	5.7% (5)	2.3% (2)
RQ (88)	19.5% (17)	34% (30)	14.5% (13)	32% (28)

Table 3: Form of the final contours observed in polar questions  
(Percentages over the data set / absolute numbers of items are given in brackets)

	LH*H%	!H* 0%	LH*L%	!H*L%
ISQ (88)	46.5% (41)	25% (22)	25% (22)	3.5% (3)
RQ (88)	26% (23)	26% (23)	28.5% (25)	19.5% (17)

As we can see, the various contours can occur in both question types (*wh* and polar), whether they are interpreted as rhetorical or not. It is thus not possible to assign a specific contour to RQs, even if some of them are preferred in some question types. Falling contours are, for instance, more frequent in RQs than in ISQs, especially in *wh*-questions. By contrast, rising patterns are more often observed in ISQs than in RQs. These results are comparable to the one observed for German, English and Icelandic in the sense that no single contour can allow to categorically distinguish ISQs from RQs (cf. Dehé 2018).

As to the question of phrasing, the occurrence but also the strength of the prosodic phrase boundary occurring after the *wh*-word in *wh*-questions and the indefinite (*quelqu'un*, *des gens*, *des amateurs*) in polar questions were investigated. To allow for some sort of

categorization, *yes* was assigned to sentences in which a clear boundary was realized in the targeted positions, and *no* in all other cases. The results obtained are given in Table 4.

Table 4: Prosodic phrase boundary after *wh*-words or subject NPs  
(Percentages over the data set / absolute numbers of items are given in brackets)

	Polar questions		Wh-questions	
	ISQs (88)	RQs (88)	ISQs (88)	RQs (88)
yes	41% (36)	61.5% (54)	24% (21)	65% (57)
no	59% (52)	38.5% (34)	76% (67)	35% (31)

A prosodic phrase boundary is more often realized after the *wh*-word or the indefinite in RQs than in ISQs, especially in *wh*-questions. Note however that this cue cannot be considered as categorical and hence, cannot categorically distinguish RQs from ISQs. A closer look at the realizations obtained shows that other factors come into play in explaining the realization of a boundary, in particular the size of the NP subject. In the case of polar questions, whether interpreted as RQs or as ISQs, a boundary is more often realized after *amateurs*, which contains three syllables, than after *gens*.

By and large, phonological cues do not allow us to categorically distinguish RQs from ISQs. Note however that some final contours and prosodic boundaries are preferred in some question types (e.g.: falling and flat contours in *wh*-RQs and rising one in ISQs; prosodic boundary after the subject NPs of the indefinite in RQs). The robustness of these findings needs to be validated on a larger data set, and also in a perception experiment. Moreover, phonetic cues may come into play to reinforce the validity of the results obtained. Indeed, previous work showed that phonetic details may allow us to distinguish question types and illocutionary forces (cf., among others, Grice et al. 2017).

### 3.2 Phonetic cues

Two distinct phonetic cues were examined: pitch range and articulation rate. Concerning pitch range, preliminary results show that pitch level (or key) is almost always higher in ISQs. As for pitch span over the whole utterance, it is not necessarily larger in ISQs than in RQs. Note, however, that differences occur in the way in which range variation is implemented over entire sentences depending on question types (ISQs vs. RQs).

A closer analysis of *wh*-questions shows a clear difference between ISQs and RQs: in many RQs, pitch compression usually occurs right after the *wh*-word, the rest of the sentence being realized almost as if it was a post-focus sequence, with a much narrowed and lower range in the speaker's average frequency range, similar to what has been observed in assertions (see (6) and Figure 1)

(6) Qui aime le foie? ‘*Who likes liver?*’

As for articulation rate, which is calculated sentence by sentence in order to compare the rate obtained for ISQs and RQs by sentence form and by speaker, results allow us to distinguish three groups of speakers: For one third of the recorded speakers, rate is faster in ISQs than in RQs in more than 85% of the cases for both *wh*-questions and polar questions. For another third, articulation rate is faster in ISQs than in RQs in more than 65% of their



productions. Interestingly, a last third of the speakers does not seem to use articulation rate in order to significantly distinguish RQs from ISQs. This cue is thus used differently from one speaker to another. Further research on this issue and a comparison of the changes in articulation rate over sentence parts is necessary, as the interrogative word *qui* in *wh*-questions often has a longer duration and is often accented in RQs.

The results obtained for both phonetic cues show that none of them are uniquely decisive to distinguish RQs from ISQs. In addition, there is much inter-speaker variability in the use of the various cues. Among the different cues investigated, whether phonetic or phonological, the most robust ones are phrasing and articulation rate, but they do not allow for a theoretically motivated categorical distinction between RQs and ISQs.

## 4. Discussion

The results of the production experiment show that no single prosodic pattern characterizes RQs, and that different prosodic cues come into play when distinguishing ISQs from RQs. In this section we will try to specify the semantic contribution that may be associated with these cues, the idea being that if there is no 1–1 relation associating prosodic patterns and speech acts, we can nevertheless argue that prosodic variation in the realizations of those speech acts is not random. In order to unpack these associations, we tried to analyze the semantic effect triggered by a specific activation of such or such cue.

First, we have observed that articulation rate is often significantly faster in ISQs than in RQs, both in polar and in *wh*-questions. Since it is a known fact (cf. Niebuhr and Ward 2018) that articulation rate is usually faster in questions than in assertions, this acceleration in ISQs fits with the idea that RQs are closer to assertions than ISQs.

We also observed variation in the distribution of the four final contours observed in ISQs and RQs, both in polar and in *wh*-questions: LH\*H% and !H\*0% (rises and plateaus) are more frequent in ISQs than in RQs, especially in *wh*-questions, and conversely !H\*L% (falls) and LH\*L% (rise-falls) are more frequent in RQs than in ISQs. Figure 2 shows an example of realization with a rise in an ISQ, which contrasts with a rise-fall in an RQ. It is well-known that in French, rises and high plateaus can be used to signal that the Speaker is waiting for a reply from the Addressee (cf. Beyssade et al. 2004; Portes et al. 2014; Portes and Beyssade 2015). The distribution obtained in the experiment fits with the idea that contrary to ISQs, RQs are not inquisitive utterances and do not require an answer from the Addressee. We can assume that final rises and plateaus, which are frequent in ISQs, are appropriate since the Speaker expects new information from the Addressee (the answer to the question). As for the rise-fall, which is frequent in RQs (especially in *wh*-questions), this realization could be analyzed as a ‘contour d’implication’ (cf. Delattre 1966; Portes and Reyle 2014), which signals an indirect or complex speech act, characterized by a mismatch between the syntactic type of the utterance and the performed speech act (Searle 1975), or – more commonly – by a discrepancy between the explicit content of the utterance and its implicit meaning (Beyssade and Marandin 2006). RQs would not lead the Addressee to commit herself to the question and to try to answer it, but rather to commit herself to an implicit content, which can be recovered in context. In the case of RQs, this implicit content would be the answer to the question. For example, the questions ‘*Who likes liver?*’ and ‘*Does anyone like liver?*’ with a rise-fall would convey the implicit meaning that nobody likes liver. It is to be expected that such a contour is more appropriate in RQs, if one assumes that



the dialogical role of RQs is not to ask a question but to reactivate a content which is already known by the Addressee, in other terms, which is presupposed in context. In our production experiment, this content has always been explicitly given in the context preceding the question elicitation: for example, in the context preceding the question (2) *Who eats spinach?*, it was assumed that *you know that nobody likes this disgusting vegetable*. So this implicit content is immediately accessible and easy to retrieve (cf. van der Sandt 1992).

Finally, phrasing and register compression seem to be important cues for distinguishing RQs from ISQs. Taken together, these cues reflect information structure in French (Féry 2001; Beyssade et al. 2009). Phrasing allows identification of the focal domain in an utterance, marked by a right phrasal boundary, and register compression indicates the post-focal domain, which gathers background content and what has already been given (Wagner 2012). Information structure articulates focus and background in an utterance. In declarative sentences, which are prototypically associated with assertions, focus conveys new information and background conveys old or given information. In interrogative sentences, which are prototypically associated with questions, information structure articulates a background and a restriction, as suggested by Krifka (2001). The restriction gives information about the set of possible answers. Thus, in a question built with the *wh*-word *qui* ‘who’, the restriction indicates that the expected answer has to be a human being. So information structure (and thus phrasing) in questions gives information concerning what is presupposed by the question.

First, let us consider polar questions. When no clear boundary is realized inside a polar question, nothing is presupposed and the polar question involves ‘verum focus’ and calls for one of the two answers: ‘yes’ or ‘no’. In contrast, when one part of the utterance is phrased separately and marks a clear boundary, it conveys a presupposition. This is illustrated in (7) – (9), with a focus on *Jean*: (7) means (8), which presupposes (9).

- (7) *Est-ce que Marie a vu JEAN hier ?* ‘Did Marie see JEAN yesterday?’
- (8) *Est-ce que c’est Jean que Marie a vu hier ?* ‘Is it JEAN that Marie saw yesterday?’
- (9) *Marie a vu quelqu’un hier.* ‘Marie saw somebody yesterday.’

In our corpus, all polar questions involve an indefinite constituent (*quelqu’un, des gens...*). When it is phrased separately, this indicates that the question is not to be interpreted as a ‘verum focus’ question, but rather as a *wh*-question. The expected answer is no longer *yes* or *no*, but rather a noun phrase. In the case of *wh*-questions, the impact of phrasing on the interpretation is even more important. The *wh*-word always contributes to the restriction, but when it is phrased by itself and marks a clear boundary, this means that this restriction is stronger and associated with a presupposition. This could explain why in RQs, the *wh*-word is very often followed by a boundary, eventually even by a short pause, while it is generally phrased with the verb in ISQs (see Table 4). The phrasing of the *wh*-word seems particularly appropriate for RQs, which are not truly inquisitive. Let us recall that, in our production experiment, answers to RQs were always explicitly carried out in the context preceding the question elicitation.

To summarize, although the production experiment does not show unique prosodic or intonational patterns characterizing ISQs and RQs, we have isolated various cues which seem to play a role in the interpretation of questions, and we have explored to what extent and how these cues may contribute to the interpretation of questions, and how they can be

accounted for in the grammar. However, the validity of this explanation, as well as the results of the production experiment, need to be investigated more thoroughly.

## 5. Conclusion and perspectives

The main result of this study is that, in French as in many other languages, RQs are produced with different prosodic realizations than can be string-identical to ISQs, but their final contours are not always sufficient to distinguish them. However, the results presented in the current paper need to be refined for at least three reasons:

- 1) As voice quality plays a role in identification of RQs in some languages, we have to add this cue in our analysis.
- 2) We've only looked at and analyzed cues in isolation. However, it is known that there is no direct causal relationship between prosody and interpretation, and that, most often, the interpretation is driven by a superposition of cues. So more detailed analyses to test the co-presence of various cues in each type of questions should be investigated.
- 3) Results were presented in such a way as to distinguish phonological and phonetic cues. However, recent studies showed that phonetic details, even when occurring anywhere in the sentence, may provide clues on how to interpret them. It has, for instance, been shown that the way a rising movement is phonetically implemented may allow distinguishing alternative questions from assertions with a disjunction, higher pitch being observed in questions (cf. Michalsky 2014; Delais-Roussarie and Turco 2019).

In addition, the results of the production experiment should be complemented by perception experiments, in order to evaluate the role of context in the interpretation of RQs, and the respective weight of each cue in the interpretation of questions. In our view, it is crucial to complete this work on the prosody of RQs using a perceptual identification task, since we found, observationally, that it is very difficult to identify RQs when listening to utterances produced without context. Indeed, both authors listened to all of the questions in the production experiment, presented out of context and in random order, and they found a very low inter-rater agreement, with greater difficulty identifying RQs vs. ISQs. The findings were as follows:

- Out of 578 questions listened out of context, more than 90% of ISQs were recognized as ISQs by both authors, whereas only 56% of RQs have been labeled in the same way by both of them (but not always identified as RQs).
- Only 15.5% of questions produced as RQs have been recognized as RQs by both authors.
- 21.2% of questions produced as RQs have been perceived as ISQs by both authors.

The very low inter-annotator agreement for RQs strongly contrasts with a very high inter-annotator agreement for ISQs and suggests that RQ interpretation is highly context-dependent. In the very near future, we plan to run two perception experiments to test whether and when listeners can distinguish RQs from ISQs out of context.

To conclude, this study has the merit of providing the first systematic, empirical evidence on the prosodic realization of RQs in French. Moreover, by choosing an experimental protocol already used for describing several languages, this study facilitates cross-linguistic comparisons. Among the cues investigated, phrasing, which may be phonetically encoded in speech rate and pitch range, seems to play an important role in French, in particular in *wh*-questions. This point is of interest as this cue is not considered as playing an important role in the different languages investigated by Dehé et al. (2020), and it could signal a property

that is specific to French. In this language, phrasing is a major cue to indicate information structure, whereas in many other intonation languages information structure is cued by the realization of specific pitch accents (either their location in the utterance, their shape/choice, or both). Note however that phrasing is also constrained by rhythm in French. This ambivalent role of phrasing might explain why it would be more difficult in French than in other languages to recognize RQs when they are presented out of context. Further research investigating this issue in a cross-linguistic perspective thus needs to be done.

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Figures

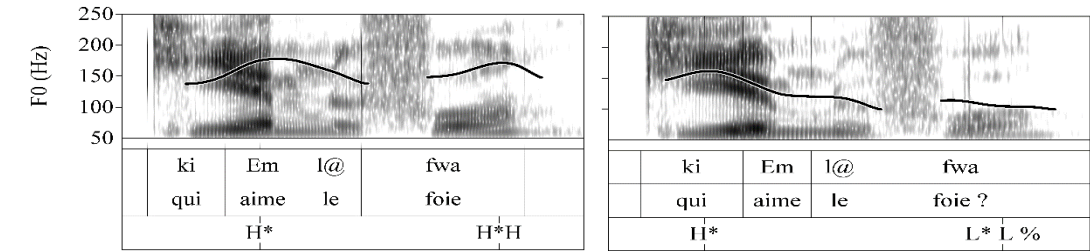


Figure 1: Pitch track and spectrogram for sentence (6), interpreted as an ISQ (left panel) and an RQ (right panel)

[Associated audio-1-Beyssade&Delais with Fig. 1 left panel and audio-2-Beyssade&Delais with Fig. 1 right panel]

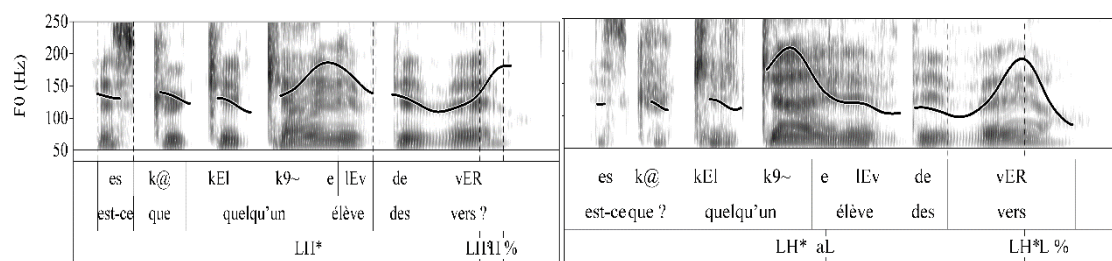


Figure 2: Pitch track and spectrogram for sentence '*est-ce que quelqu'un élève des vers*' interpreted as an ISQ (left panel) and an RQ (right panel). A rise is realized on the last syllable of *quelqu'un* and copied at the end of the sentence in the ISQ, whereas it is a rise-fall when the sentence is interpreted as an RQ.

[Associated audio-3-Beyssade&Delais with Fig. 2 left panel and audio-4 Delais&Beyssade with Fig.2 right panel]