

Caroline Féry & Ingo Feldhausen

Intonation meaning in French

Abstract. French is sometimes analyzed as a phrase language, as a consequence of the observation that there is no pitch accent assigned to a designated prominent syllable. If this is true, high tones should be assigned to prosodic phrases and show some variations in their exact placement. In this article, this assumption is assessed by means of an acceptability judgment task. The aim of the experiment is twofold: first, to explore the pragmatic impact of intonational tunes in postverbal objects in French and, second, to test the acceptability of different placements of IP-final high tones in postverbal position. To this aim, we moved the high tone from the first to the last syllable in a five-syllable direct object, and we placed the different realizations in four different pragmatic contexts, each of which had a different kind of focus on the object or on a constituent containing the object. As for the first aim, the results do not show any clear pragmatic effect of the melodic tunes resulting from the different high tone placements. It is not the case that a particular location of the high tone was preferred in one of the pragmatic contexts. As for the second aim, the experiment confirms that variation in the placement of a high tone in the last and focused prosodic phrase of a French sentence is acceptable. Some realizations, however – like a high tone on the final syllable, and to a lesser extent the second syllable – are clearly preferred in all pragmatic contexts, and some are clearly less preferred, also in all contexts (the first, third and fourth syllables). In sum, the article provides experimental evidence for the standard assumption on French prosody and at the same time, it aims at initiating more research on the pragmatic aspects of intonation.

1. Introduction

This paper reports a perception experiment on the meaning of intonation contours and on the variation of high tone placement in the last prosodic phrase of declarative French sentences under different focus conditions. The most important result is the high acceptability of all high tone placements in all contexts.

1.1 Background on French prosody

Most studies on French agree that the prosodic phrase (henceforth Φ) is one of the most important prosodic constituents for intonation. This constituent consists minimally of a prosodic word. It has received different names in the literature: the Accentual Phrase (cf. Jun/Fougeron 2000; Meisenburg 2011; Delais-Roussarie et al. 2015; Sichel-Bazin et al. 2015, among others), the Rhythmic Unit (cf. Hirst/Di Cristo 1996, among others) and the Phonological Phrase (cf. Delais-Roussarie 1996; Post 2000, among others). Here, we assume a recursive model of prosodic structure. In such a model, the prosodic structure is organized into different levels of prosodic domains, which correspond to the syntactic structure in the following way: A syntactic word roughly corresponds to a Prosodic Word (ω word), a syntactic phrase corresponds to a Prosodic Phrase (Φ phrase) and a clause corresponds to an Intonation Phrase (ι phrase); cf. also Ito/Mester (2012) for this view of the mapping between syntax and prosody in different languages. This model implies recursivity of prosodic structure, accounting for the fact that a prosodic constituent can be embedded into a larger prosodic constituent of the same level, in the same way as a syntactic phrase can be embedded in a larger syntactic phrase of the same kind. It acknowledges, at the same time, the fact that prosodic structure is simpler than syntactic structure because prosody has less structure and less constituents altogether, and also because of strict layeredness: A constituent of level p cannot dominate a constituent of a higher level. We assume that Φ is primarily syntax-based, but following other authors on French prosody, we also acknowledge that information structure can change the prosodic constituency of sentences, and that phonological well-formedness constraints can change the prosodic phrasing resulting from a simple syntax-prosody mapping.

From a phonetic point of view, a non-final Φ is typically (but crucially not always) delimited by a rising tonal excursion usually accompanied by syllable lengthening. Opinions differ as to how to analyze this rise; some scholars argue that it should be analyzed as a pitch accent (cf. Delais-Roussarie 1995; Post 2000), while others argue that it is a demarcative tone, thus a boundary tone (cf. Fónagy 1979; Féry 2014). We follow the latter approach and do not exclude that it is also a mark of prominence. In all evidence, the rising contour is usually there, regardless of the information status of the constituent.

Several authors also assume an optional phrase-initial high tone in the prosodic phrase (cf. Hirst/Di Cristo 1996; Jun/Fougeron 2000, among others for this view). The initial prominence is claimed to have several pragmatic functions, the most famous one being that of marking emphasis (cf. Di Cristo 1998 and Rossi 1985 for a distinction between different types of

initial ‘accents’ according to their function). The location of this ‘phrase-initial’ high tone can be initial or on the second or third syllable, in which case it can be rhythmically influenced; cf. Rossi (1985); Padeloup (1990); Di Cristo (1998); Jun/Fougeron (2000); Welby (2003); Delais-Roussarie (1996); Delais-Roussarie et al. (2015) for different perspectives.

In the experiment reported below we investigate the position of the last high tone in the final prosodic phrase, before the final fall that characterizes the end of the intonation phrase in a declarative sentence.

1.2 Pragmatic aspects of intonation in French

Intonation meaning has been the topic of numerous studies, in French and in other languages (cf. Bartels 1997; Beyssade/Marandin 2006; Delattre 1966; Gunlogson 2003; Hirschberg/Ward 1992; Liberman/Sag 1974; Portes et al. 2014, among many others). Besides the vagueness underlying the concepts related to intonational meaning, there is also the problem of what melodic objects are investigated. Most authors target tunes or melodies, often nuclear melodies, thus the final part of an intonation phrase when it comes to assign meaning to intonation (cf. also Navarro Tomás 1944/1974 and Frota/Prieto 2015 for Spanish). In mainstream tone-sequence models of intonation, however, tunes arise from individual tones, each with their own ‘meaning’: The crucial final tunes often consist of a pitch accent and the following boundary tones. Such a model presupposes that pitch accents and boundary tones play different roles and that intonation meaning arises compositionally (cf. Pierrehumbert/Hirschberg 1990; cf. Prieto 2015 for an overview).

In attempting to explain the role played by intonational tunes in what is being said, the literature often makes a distinction between the *speaker’s* epistemic attitude and the *interlocutor’s* commitment. The speaker’s attitude refers to what the speaker conveys about his or her own attitude relative to the proposition. Some examples of speaker’s attitudes that have been proposed include ‘disapproval’, ‘reassurance’, ‘contradiction’, ‘uncertainty’, ‘implication’, ‘obviousness’, ‘exasperation’, ‘politeness’ and ‘incredulity’ to cite just a few. The concept of ‘commitment’ is usually addressed in very general terms in the relevant literature. Portes et al. (2014: 16) describe it in the following terms: “[It] refers to how much the speaker presents himself/herself as supporting the truth of the content of his/her utterance despite possible contention on the part of the addressee (Bartels 1997; Gunlogson 2003). Commitment is therefore a dialogical attitude of the speaker who projects the addressee’s potential reaction to his/her move.”

Krifka (2017: 10) sums up the literature on commitment in the following terms: “I assume that assertion expresses not one, but two commitments. In asserting a proposition, the speaker first expresses a commitment to the proposition, and then the speaker calls on the addressee to be also committed to that proposition, with the result that the proposition becomes part of the common ground.” *Ce vin est délicieux, n’est-ce pas ?* ‘This wine is delicious, isn’t it?’ is an example, in which the speaker invites the hearer to formulate reinforcement of their verdict.

An important precursor study for our research is the experiment conducted by Portes et al. (2014). They investigated four final (nuclear) contours in French for their meaning (cf. Portes et al. 2014: 18 for figures of the corresponding pitch contours):

1. Falling contour, “intonation de finalité” (L*L%, ‘finality intonation’) or Rossi’s (1981) “intonème conclusif” (‘conclusive intonation’). This contour can be considered as a default contour. It is widely used in assertoric declaratives and *wh* interrogatives (cf. Delattre 1966: 3; Vaissière 1980; Di Cristo 1998; Post 2000; Mertens 2008).
2. The simple rising movement, which may correspond either to Delattre’s (1966: 3) “continuation majeure” (‘major continuation’) or to “question” (‘question intonation’, H*H%).
3. The rising-falling movement (H*L%), realized mostly on the last syllable of the utterance or its focused constituent. Portes et al. (2014: 18) describe the movement as follows: It corresponds to Delattre’s (1966: 3) “intonation d’implication” (‘implicative intonation’). As for its meaning, this contour has been said to convey obviousness, expressiveness, and to trigger inferences. More recently, Portes/Reyle (2014) showed that the various meanings taken by this contour in conversation can be subsumed under a presupposition of contrast, given by a contextually relevant set of alternatives to the proposition *p* conveyed by the utterance. Yet another role attributed to this contour is related to a high degree of expressivity or emphasis. For instance, Rossi (1981) called it “expressème”. Moreover, Di Cristo/Hirst (1996) spoke about “emphase contrastive” (‘contrastive emphasis’) when referring to this contour, thus adding a nuance of contrast.
4. The fourth contour included in Portes et al.’s study is the rise-fall-rise contour (H+!H* H%). They note that this contour belongs to a group of contours that present a leading H tone on the penultimate syllable of the utterance. They claim that Dell (1984: 66) uses Low High Mid for the same contour, that he describes in the following terms: “La mélodie rappelle celle des enfants qui font la nique [...] ce motif présente [la phrase] comme la reprise incrédule ou désapprobatrice de propos tenus par un autre.” However, to our ears, this LHM melody is not a rise-fall-rise, but at best a rise-fall. As a result, it is not clear what exact contour Portes et al. have in mind.

The task of Portes et al.'s (2014) experiment for investigating the meaning of these contours was a forced-choice interpretation task. Participants heard sentences carrying one of the contours and had to choose among four possible reactions chosen for their hypothetical link to the contour meanings: *I get it* was expected for the falling contour; *I've no idea* for the rising contour; *I guess you're right* for the rising-falling and *No, really, it's true* for the rising-falling-rising contour.

The results were encouraging, as French speakers favored the predicted context in three out of the four cases. In the rising-falling movement, however, the predictions were not met by the participants' choices. *Tu dois avoir raison* 'I guess you're right' was expected but the reactions very consistently pair H*L% with the reaction *J'en sais rien* 'I've no idea', which is the answer expected for the simple rising movement.

In the design of their experiment, Portes et al. (2014) did not assign meanings to individual tones, but rather to melodies or tunes, thus to contours consisting of different tones. They even varied the final boundary tone, expecting a question with a high boundary tone (answered with *I've no idea*) and an assertion with a low boundary tone (answered with a reaction to a declarative proposition in all other cases). They thus assumed that the contours are meaningful, rather than the individual tones by themselves. The tested contours should not be interchangeable in different contexts since they have a specific meaning.

2. Experiment

2.1 Theoretical background of the experiment

We conducted an acceptability judgment task experiment in order to test whether variation in the location of the high tone of a final prosodic phrase in a French declarative sentence is acceptable and whether the different positions of the pitch accents have a specific pragmatic import. The experiment reported in this section is inspired by Portes et al.'s (2014) experiment. It reproduces the idea of Portes et al. (2014) to use the same textual sentence in different contexts and to vary its intonational pattern. Like Portes et al. (2014), it is a perception experiment, although we designed an acceptability judgment test rather than a forced choice task.

There are also some differences with Portes et al. (2014) that relate to our different theoretical approach on intonation typology. As a result, we take into consideration several further insights concerning French intonation that we think differ from better studied languages, and more specifical-

ly from English. First, French is a language without lexical stress and, in our opinion, this implies that pitch accents do not play the same role as in English or German. Féry (2014) proposed to analyze French as a phrase language, a proposal that we take for granted here. Even though tunes can be decomposed in individual tones for the phonological analysis in a similar way as in Germanic languages, some of the tones entering the tunes do not necessarily associate with designated syllables, as is the case for pitch accents. Rather they are phrasal tones that associate with a prosodic constituent of the size of a prosodic phrase and can be associated to different syllables in a sentence without changing the contextual meaning or the position of a narrow focus.

The experiment reported on in the next section is also informed by the results of Destruel/Féry (2019; 2020). It was found in Destruel/Féry (2020) that French speakers systematically realize a high tone in a prosodic phrase, but that the exact location of the high tone is subject to a lot of variation. It is this variation that is directly addressed here, in letting informants judge the grammaticality, acceptability or well-formedness of different locations of a ‘final’ high tone. We expect that, due to the nature of phrase tones, there is a lot of overlapping between the acceptability of intonational contours. For this reason, we decided to investigate tonal alignment of a phrasal high tone with the text rather than different tunes.

Correlating with the variability of the position of the high tone, and returning to the similarities with Portes et al. (2014), an important aspect of our experiment is the investigation of the pragmatic effect of a change in the location of a high tone. Does it correlate with a change in meaning? We are aware that our list of pragmatic meanings – as is the case for Portes et al. (2014) – is very limited in scope. But we think of our experiment as a pilot experiment that can open the door to more research on the role of intonation in pragmatic meaning.

2.2 Methodology

In an online acceptability judgment task, the test persons – native speakers of French – listened to simple SVO sentences and judged whether a given sentence fits into a specific pragmatic context. We created four test sentences of the same syntactic structure (cf. 1). Each sentence consists of a pronominal subject, a verb and a direct object. All direct objects are complex and consist of an indefinite article, a head noun and a modifier (adjective or prepositional phrase).

- (1) a. Elle s'est acheté *un manteau d'hiver*.
 'She bought a winter coat.'
 b. Il a rencontré *un ami d'enfance*.
 'He met a childhood friend.'
 c. Elle a loué *un bateau à voile*.
 'She rented a sail boat.'
 d. Il a restauré *une statue romane*.
 'He restored a Roman statue.'

Each object, italicized in (1), comprises five syllables and each sentence was realized with a final high tone on one of these syllables. Thus, for (1b), for example, the high tone was located on *un* (= 1), *a* (= 2), *-mi* (= 3), *d'en* (= 4) and *-fance* (= 5). In total, there were 20 different sentences (4 test sentences x 5 high tone positions). The test sentences were spoken by a male native speaker of Standard French.

Fig. 1 and Fig. 2 illustrate the kind of high tones that we elicited from the male speaker. In Fig. 1, the high tone is on the third syllable of the object that corresponds to the last syllable of the head noun of the object (*-mi* of *ami*). In Fig. 2, the high tone is realized on the last syllable of the object, and thus on the last syllable of the sentence. Perceptively, this high tone is quite prominent, even if the high tone is realized not much higher than the preceding high tones.

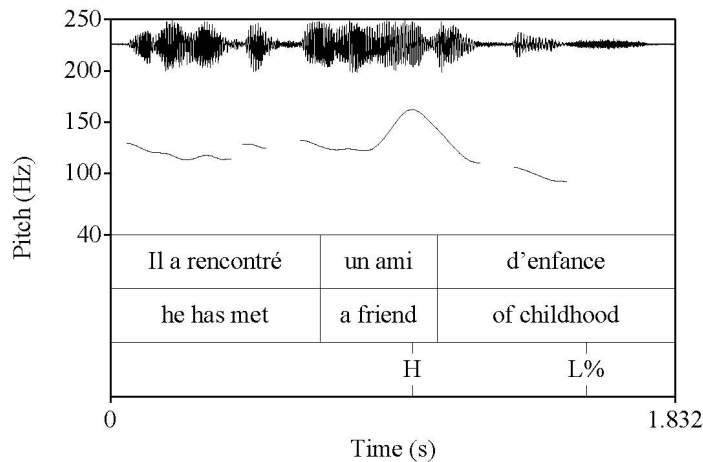


Fig. 1. Pitch track of the sentence *Il a rencontré un ami d'enfance* 'He met a childhood friend' with a high tone on the third syllable of the object.

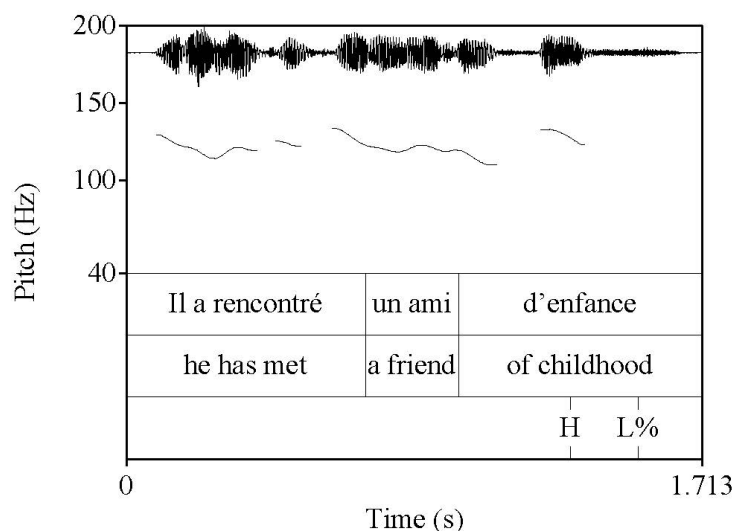


Fig. 2. Pitch track of the sentence *Il a rencontré un ami d'enfance* 'He met a childhood friend' with a high tone on the last syllable of the object.

2.2.1 The pragmatic contexts

In this paper, we are interested in the pragmatic role of the high tone when it is displaced from the final syllable. For this reason, we embedded the same sentences in four contexts, as listed in (2). One test sentence (1a) serves as illustration. The other three test sentences are listed in Appendix 1 with their contexts.

(2) Test sentence (1a) combined with the four pragmatic contexts

a. Narrow focus / Information

A: Jeanine adore faire les boutiques. Elle s'est acheté quelque chose cet après-midi ?

B: Oui, elle s'est acheté un manteau d'hiver.

b. Wide focus / Denial

A: Jean croit que Jeanine ne s'achète jamais rien.

B: Non, c'est pas vrai : Elle s'est acheté un manteau d'hiver.

c. Cancelling a presupposition / Surprise

A: Jeanine n'a plus un rond.

B: Ah oui ? Pourtant elle s'est acheté un manteau d'hiver !

d. Narrow focus / Correction

A: Tu sais ce que Pierre m'a raconté ? Jeanine s'est acheté une combinaison de ski !

B: Mais non, elle s'est acheté un manteau d'hiver.

In all four contexts, the direct object is new and focused. But the additional pragmatic circumstances of object are different in each case. The first con-

text (Narrow focus/Information) introduces the object as the answer of a *wh* question and is thus a typical information narrow focus.

The second context (Wide focus/Denial) contains a narrow focus on the object, but also a wider focus, as it contradicts a sentence positing a fact that is denied by the answer provided by speaker B. In other words, not only the object is focused but also the positive part of the sentence.

The third context (Cancelling a presupposition/Surprise) is a still wider focus since the verb is also contained in it, and at the same time, the sentence cancels a presupposition by providing an argument against A's claim.

The fourth context (Narrow focus/Correction) is a narrow corrective focus on the object.

2.2.2 Procedure

The sentences were presented as dialogues. The context (A) was spoken by a female speaker and the answer (B) by a male speaker; both were native speakers of standard Francilian French. Each answer (B) was realized with five different pitch accent positions (produced by the male speaker; $4 \times 5 = 20$ items). In addition, each sentence (B in (2)) was combined with each of the four contexts (A in (2)). Thus, in total, there were 80 items to judge.

The participants, who had no written version of the dialogues at their disposal, listened to the dialogues. They were asked to judge the felicity of the intonation of the sentences and to grade the melodic contour with respect to the context on a scale from 1 (does not fit) to 7 (fits perfectly), cf. the instructions in Appendix 2. The 80 sentences were distributed into 2 lists of 40 sentences each. Thus, each participant had to judge only 40 sentences. In each list, all four pragmatic contexts occurred, but instead of presenting all four sentences (1) per context we chose just two sentences per context (thus resulting in the division of the 80 sentences). We pseudo-randomized the order of the test sentences: No condition was followed by the same condition and at least one different condition occurred between two similar conditions.

The experiment was distributed online by providing the participants with a link to a questionnaire web page created via SoSciSurvey (cf. www.soscisurvey.de). After the participants started the test, each sentence was presented individually on the screen, as shown in Fig. 3. The sound started automatically and by pressing the play button the participants were able to relisten to the sentence. After having judged the sentence on the scale below the sound window, participants had to press *suivant* 'next' in order to get to the next sentence.

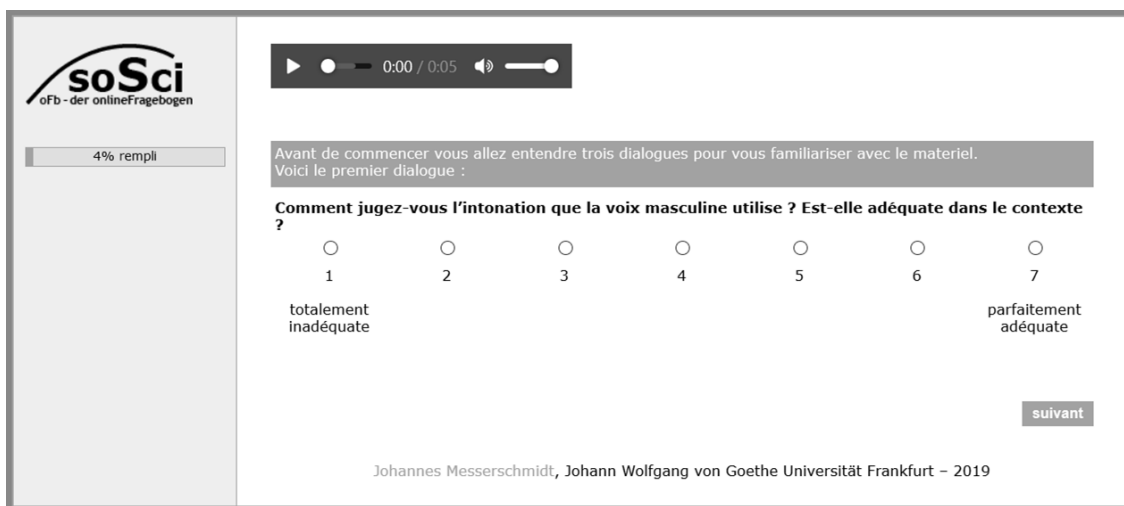


Fig. 3. Screenshot of a test item.

2.2.3 The participants

In total, 83 native speakers of Standard French participated in the experiment and the frequency between the two lists was well balanced (41 vs. 42). The participants were between 18 and 79 years of age (mean = 33.4; median = 28) and they all grew up in France (except for two speakers). 11 out of the 83 speakers were bilingual with different languages. We did not ask for gender since we did not intend to look at all possible variables.

2.3 Results

In the presentation of the results, we decided to group grades 5 to 7 together and call them 'good'. Grade 4 is called 'neutral' and grades 3 to 1 are called 'bad', cf. Figs. 4 and 5 for graphic presentations of the results.

Fig. 4 displays the distribution of grades averaged over all participants according to high tone placement in each context. As can be gathered from a visual examination of the graphs, some realizations are better than others in particular contexts. In the first context (Narrow focus/Information), for instance, the best realization is the one with a high tone on the final syllable (87% of 'good' grades) and the less preferred one is the one with a high tone on the first syllable, although there still were 55% of 'good' grades for this realization.

In general and in all contexts, grades were quite high, although some variation in the acceptability of high tone placement according to context and high tone placement can also be observed. Considering only the good grades in the different contexts, all high tones together, Context 1 is better

Intonation meaning in French

rated than the other ones, cf. (3). Context 2 is graded worst with a difference of 23% between Context 1 and Context 2.

(3) ‘Good’ grades according to context (in percent)

Context 1 (Narrow focus/Information): 67

Context 2 (Wide focus/Denial): 44.8

Context 3 (Cancelling a presupposition/Surprise): 54.8

Context 4 (Narrow focus/Correction): 56.6

The final position of high tone is the best one in all contexts. It is especially good in Contexts 1 and 4. In these two contexts, the good grades are above 80%. In Contexts 2 and 3, though, the final position is also the best one, but the grades are only slightly above 60%. Interestingly, in Context 3, it is ex-aequo with high tone on the second syllable.

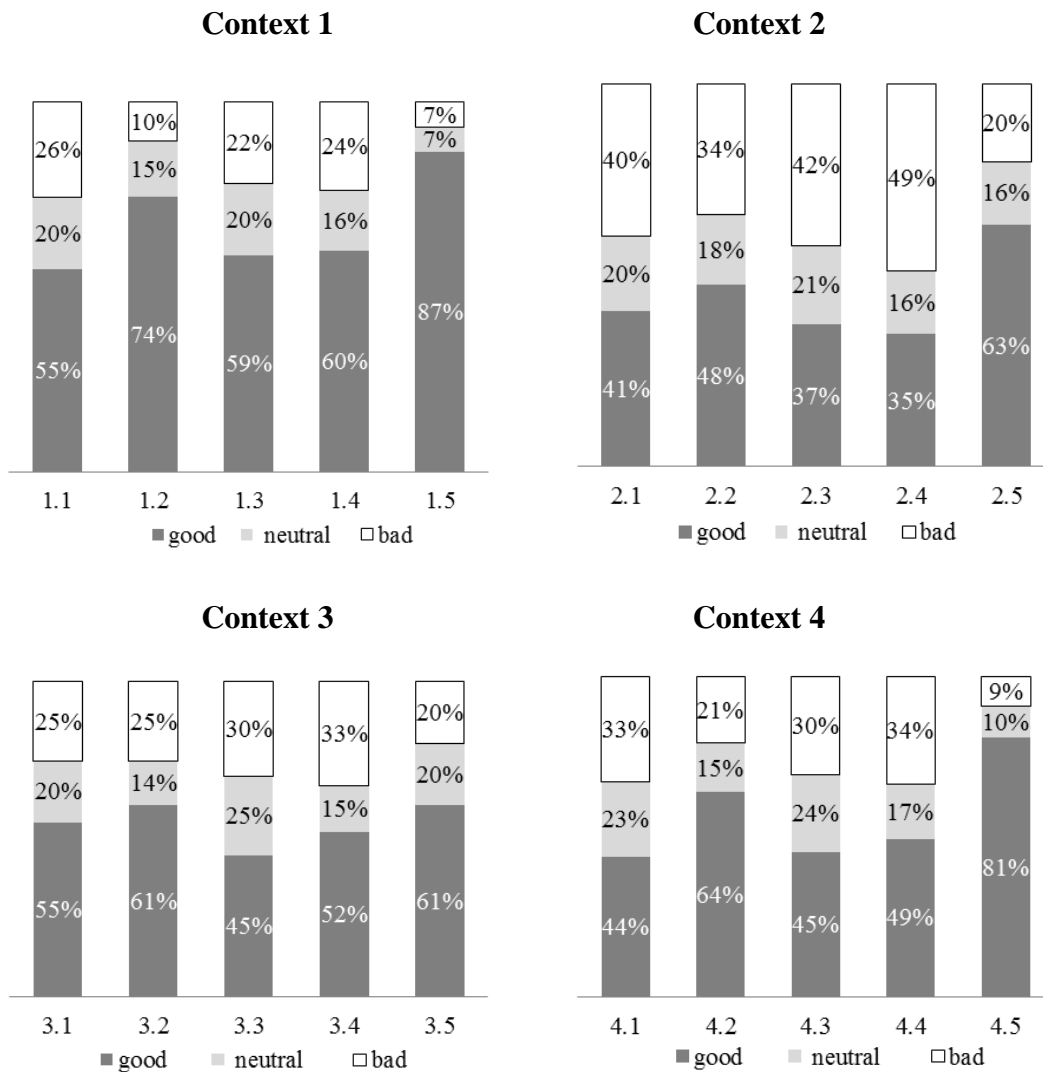


Fig. 4. Results by contexts. Below each column, the first digit stands for context and the second one for the position of the high tone.

The second best result is always the second syllable, thus the first syllable of the first noun of the object. Again, the best results are obtained in Contexts 1 and 4. In Context 1, the grade is 74% and thus very high. In Context 4, the grade is 64% – and contrasts clearly with the grades of the positions/syllables 1, 3, and 4.

The other three high tone placements (namely on syllables 1, 3, and 4) were assigned lower grades than the placements in positions 2 and 5. However, it appears that even the lowest graded high tone placement still reaches quite high scores – namely 35% for position/syllable 4 in Context 2. In Context 1, interestingly, all placements are well above the average.

As for the ‘bad’ results, they show some variation as well. Context 2 is the context in which most ‘bad’ grades are assigned, and this for all high tone positions except for the final one where Context 3 is even worse. As a result, all positions in Context 2, except for the final one (where we have nevertheless 20% of ‘bad’ grades), get the most ‘bad’ values of all contexts: Positions/syllables 1, 3 and 4 have 40, 42 and 49% of ‘bad’ grades respectively. Context 3 has lower ‘bad’ grades than Context 2, but it is noteworthy that the grades range between 20% and 33% across all five high tone placements. This clearly contrasts with Contexts 1 and 4, where the ‘bad’ grades of the best evaluated positions correspond to 7% to 9%.

Let us now turn to the results by high tone position, cf. Fig. 5. As already noted, there is a clear preference for the last syllable; participants assigned a ‘good’ grade to this position in 73% of the cases. The second position was evaluated as ‘good’ in 62% of the cases. All other positions yielded lower scores, cf. (4) for a comparison of all positions.

(4) ‘Good’ grades according to high tone position (in percent)

High tone on first syllable: 49

High tone on second syllable: 62

High tone on third syllable: 46.5

High tone on fourth syllable: 49

High tone on last syllable: 73

As for the ‘bad’ grades, we saw above that, except for the last syllable, Context 2 yielded lower grades than the other contexts.

Intonation meaning in French

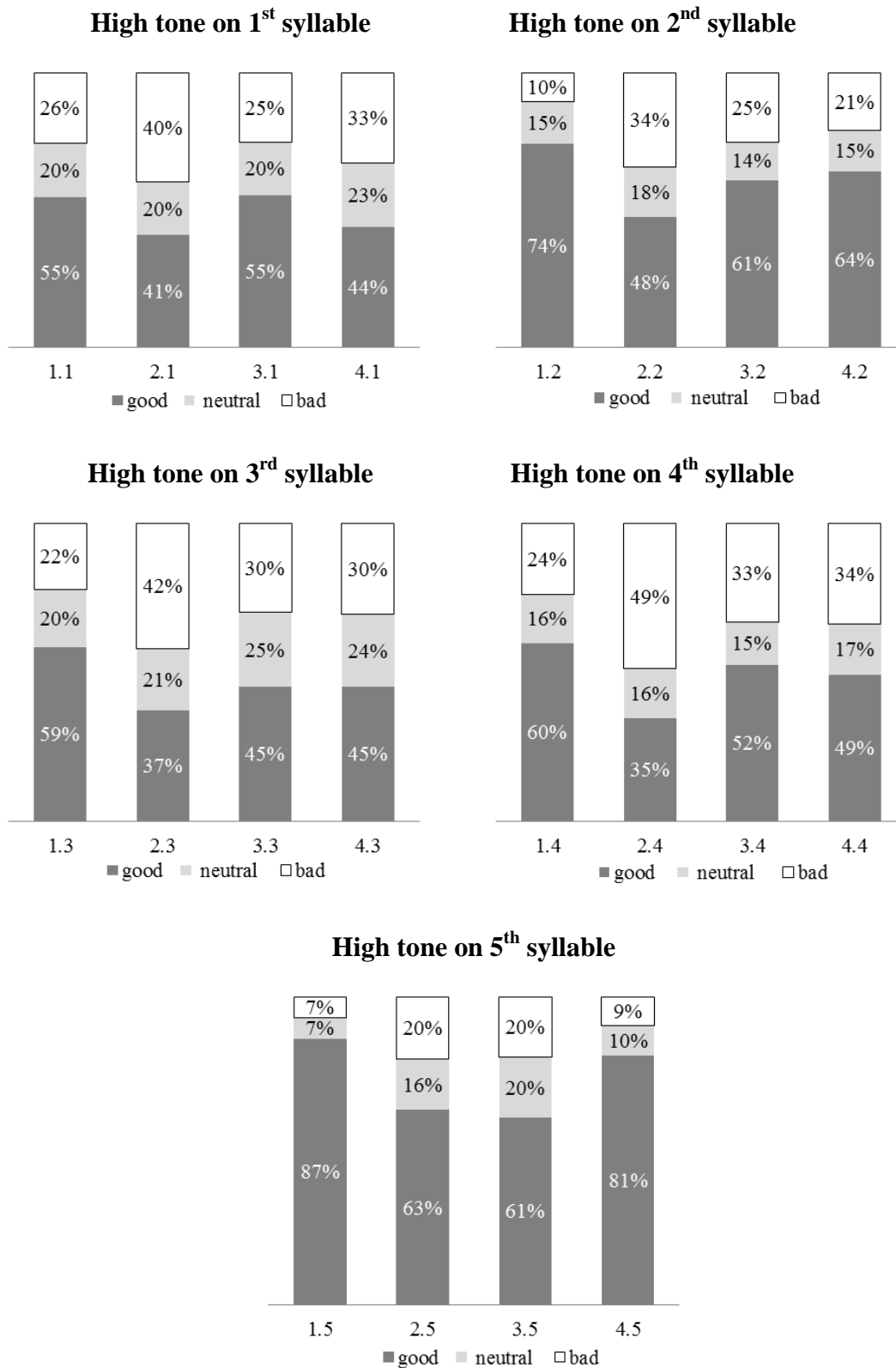


Fig. 5. Results by position of the high tone.

3. Discussion and conclusions

The aim of our study was twofold: first, to explore the pragmatic impact of intonational tunes in postverbal objects in French and, second, to test the acceptability of different placements of high tones on the postverbal object. The first aim is similar to Portes et al.'s (2014) perception experiment, even though the kind of melodies and the experimental method were different. Portes et al. (2014) used a forced choice task where participants had to choose one of four reactions to different melodies, for which the authors assumed a specific interpretation. In our experiment, we constructed dialogues and asked the participants to evaluate the melody used as an answer to a specific context. In other words, in Portes et al. (2014), the participants had to *provide* a reaction to a context (out of four at their disposal), and in our experiment, the participants had to *evaluate* the reaction of a context (that was provided in form of a dialogue). The second aim leaned on Destruel/Féry (2020) who conducted a production experiment in which participants answered *wh* questions, some of which elicited a dual focus. Their results showed variation in the placement of a high tone in the last prosodic phrase. In the present perception experiment, we decided to investigate the acceptability of different high tone placements in a controlled way. We thus moved the high tone from the first to the last syllable in a five-syllable direct object, placed the different realizations in four different contexts, each of which had a different kind of focus on the object or on a constituent containing the object.

As for the first aim, we could not detect a clear pragmatic effect of the different tunes. It was not the case that a particular location of the high tone was preferred in one of our contexts. Rather the results showed that all high tone placements were acceptable to at least some speakers. Moreover, some realizations – like the final one, and to a lesser extent the second position – were clearly preferred in all pragmatic contexts, and some were clearly less preferred, also in all contexts (the first, third and fourth syllables).

As we have shown in (3), grades were quite high in all pragmatic contexts – independently of the high tone placement. However, Context 2 is graded worst ('only' 44.8% of good grades in total and the best grade is slightly above 60%, cf. Fig. 4). In addition, Context 3 can also be considered worse than Contexts 1 and 4 – since the best grades never exceed 61% (cf. Fig. 4). Thus, there seems to be a noteworthy difference between Contexts 2 and 3 on the one hand and Contexts 1 and 4 on the other. A possible explanation for this might be the following one. It could have been the case that the dialogues 1 and 4 sound altogether more natural than 2 and 3. It could also be that in such contexts, participants expected a different melody altogether, such as one with a different contour, as for instance, a rising

contour on the last syllable, or multiple high tones. Thus, in future research it might be worth testing the contexts at hand but with different melodic tunes – especially Contexts 2 and 3. In contrast to Portes et al. (2014), we considered only one tune, namely H* L%. But it might be appropriate to use tunes such as H* H% (which is known, for example, to express the nuance of surprise, cf. Delais-Roussarie et al. 2015, or to express contradiction, cf. Portes et al. 2014).

As for the second aim, the experiments confirmed that variation in the placement of a high tone in the last and focused prosodic phrase of a French sentence is acceptable. No position was rejected, and no position got ‘good’ grades less often than in 35% of all evaluations, though again some positions were preferred, but none was categorically rejected.

The experiment also aimed at assessing the assumption that French is a phrase language, and that, as a consequence of this property, there is no pitch accent assigned to a designated prominent syllable. If this is true, high tones should be assigned to prosodic phrases and show some variations in their exact placement. That this is the case in French has been documented a number of times in the literature (cf. Section 1 for an overview); our experiment provides an original explanation for this fact.

We also expected that melodic tunes resulting from the different high tone placements would be used in different pragmatic environments. This was not corroborated by our experiment. However, we suspect that the contexts we offered to our participants were not conclusive or well chosen, and that other melodic tunes would give better results.

References

- Bartels, C. 1997. *Towards a compositional interpretation of English statement and question intonation*. PhD dissertation. Amherst: University of Massachusetts Amherst.
- Beyssade, C. / Marandin, J.-M. 2006. French intonation and attitude attribution. In Denis, P. / McCready, E. / Palmer, A. / Reese, B. Eds. *Proceedings of the 2004 Texas Linguistics Society Conference. Issues at the semantics-pragmatics interface*. Somerville, MA: Cascadilla Proceedings Project, 1–12.
- Delais-Roussarie, É. 1995. *Pour une approche parallèle de la structure prosodique. Étude de l'organisation prosodique et rythmique de la phrase française*. PhD dissertation. Toulouse: Université de Toulouse Le Mirail.
- Delais-Roussarie, É. 1996. Phonological phrasing and accentuation in French. In Nespors, M. / Smith, N. Eds. *Dam Phonology. HIL Phonology Papers II*. The Hague: Holland Academic Graphics, 1–38.

- Delais-Roussarie, É. / Post, B. / Avanzi, M. / Buthke, C. / Di Cristo, A. / Feldhausen, I. / Jun, S.-A. / Martin, P. / Meisenburg, T. / Rialland, A. / Sichel-Bazin, R. / Yoo, H.-Y. 2015. Intonational phonology of French. Developing a ToBI system for French. In Frota, S. / Pilar P. Eds. *Intonation in Romance*. Oxford: Oxford University Press, 63–100.
- Delattre, P. 1966. Les dix intonations de base du français. *French Review* 40, 1–14.
- Dell, F. 1984. L'accentuation dans les phrases en français. In Dell, F. / Hirst, D. / Vergnaud, J.-R. Eds. *La forme sonore du langage*. Paris: Hermann, 65–122.
- Destruel, E. / Féry, C. 2019. Compression in French. Effect of length and information status on the prosody of post-verbal sequences. In Feldhausen, I. / Elsig, M. / Kuchenbrandt, I. / Neuhaus, M. Eds. *Romance languages and linguistic theory 15. Selected papers from 'Going Romance' 30*, Frankfurt. Amsterdam: Benjamins, 157–176.
- Destruel, E. / Féry, C. 2020. Dual focus and compression in post-verbal sequences in French. In Grice M. / Kügler F. Eds. *Prosodic prominence. A cross-linguistic perspective* (special issue of *Language and Speech*).
- Di Cristo, A. 1998. Intonation in French. In Hirst, D. / Di Cristo, A. Eds. *Intonation systems. A survey of twenty languages*. Cambridge: Cambridge University Press, 195–218.
- Di Cristo, A. / Hirst, D. 1996. Vers une typologie des unités intonatives du français. In *Société française d'acoustique, 16^{èmes} Journées d'études sur la parole*. Avignon, 219–222.
- Féry, C. 2014. Final compression in French as a phrasal phenomenon. In Katz Bourns, S. / Myer L. L. Eds. *Perspectives on linguistic structure and context. Studies in honor of Knud Lambrecht*. Amsterdam: Benjamins, 133–156.
- Frota, S. / Prieto, P. Eds. 2015. *Intonation in Romance*. Oxford: Oxford University Press.
- Fónagy, I. 1979. L'accent français. Accent probabilitaire. *Studia Phonetica* 15, 123–133.
- Gunlogson, C. 2003. *True to form. Rising and falling declaratives as questions in English*. London: Routledge.
- Hirschberg, J. / Ward, G. 1992. The influence of pitch range, duration, amplitude and spectral features on the interpretation of the rise-fall-rise intonation contour in English. *Journal of Phonetics* 20, 241–251.
- Hirst, D. / Di Cristo, A. 1996. Y a-t-il des unités tonales en français ? In *Actes des XX^{èmes} journées d'études sur la parole*, 223–226.
- Ito, J. / Mester, A. 2012. Recursive prosodic phrasing in Japanese. In Borowsky, T. / Kawahara, S. / Shinya, T. / Sugahara, M. Eds. *Prosody matters. Essays in honor of Elisabeth Selkirk*. London: Equinox, 280–303.
- Jun, S.-A. / Fougeron, C. 2000. A phonological model of French intonation. In Botinis, A. Ed. *Intonation. Analysis, modeling and technology*. Dordrecht: Kluwer, 209–242.

- Krifka, M. 2017. Negated polarity questions as denegations of assertions. In Lee, C. / Kiefer F. / Krifka M. / Eds. *Contrastiveness and scalar implicatures*. Berlin: Springer, 359–398.
- Liberman, M. / Sag, I. 1974. Prosodic form and discourse function. In LaGaly, M. W. / Fox, R. A. / Bruck, A. Eds. *Papers from the tenth regional meeting*. Chicago: Chicago Linguistic Society, 416–427.
- Meisenburg, T. 2011. Prosodic phrasing in the spontaneous speech of an Occitan/French bilingual. In Gabriel, C. / Lleó, C. Eds. *Intonational phrasing in Romance and Germanic*. Amsterdam: Benjamins, 127–151.
- Mertens, P. 2008. Syntaxe, prosodie et structure informationnelle. Une approche prédictive pour l'analyse de l'intonation dans le discours. *Travaux de Linguistique* 56, 87–124.
- Navarro Tomás, T. 1944/1974. *Manual de entonación española* (4th ed.). Madrid: Guadarrama.
- Pasdeloup, V. 1990. *Modèle de règles rythmiques du français appliqué à la synthèse de la parole*. PhD dissertation. Aix-en-Provence: Université de Provence.
- Pierrehumbert, J. / Hirschberg, J. 1990. The meaning of intonational contours in the interpretation of discourse. In Cohen, P. / Morgan, J. / Pollack, M. Eds. *Intentions in communication*. Cambridge, MA: MIT Press, 271–311.
- 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.
- Portes, C. / Reyle, U. 2014. The meaning of French 'implication' contour in conversation. In Campbell, N. / Gibbon, D. / Hirst, D. Eds. *Proceedings of Speech Prosody 2014*. Dublin: Trinity College, 413–417.
- Post, B. 2000. *Tonal and phrasal structures in French intonation*. Den Haag: LOT.
- Prieto, P. 2015. Intonational meaning. Wiley interdisciplinary reviews. *Cognitive Science* 6, 371–381.
- Rossi, M. 1981. Vers une théorie de l'intonation. In Rossi, M. / Di Cristo, A. / Hirst, D. / Martin, P. / Nishinuma, Y. Eds. *L'intonation. De l'acoustique à la sémantique*. Paris: Klincksieck, 179–183.
- Rossi, M. 1985. L'intonation et l'organisation de l'énoncé. *Phonetica* 42, 135–153.
- Sichel-Bazin, R. / Buthke, C. / Meisenburg, T. 2015. Prosody in language contact. Occitan and French. In Delais-Roussarie, É. / Avanzi, M. / Herment, S. Eds. *Prosody and language in contact. L2 acquisition, attrition and languages in multilingual situations*. Berlin: Springer, 71–99.
- Vaissière, J. 1980. La structuration acoustique de la phrase française. *Annali della Scuola Normale Superiore di Pisa* 10, 529–560.
- Welby, P. 2003. Effects of pitch accent position, type and status on focus projection. *Language and Speech* 46, 53–81.

Appendix 1: Test materials

Sentence 1

1.1 Narrow focus / Information

A: Jeanine adore faire les boutiques. Elle s'est acheté quelque chose cet après-midi ?

B: Oui, elle s'est acheté un manteau d'hiver.

1.2 Wide focus / Denial

A: Jean croit que Jeanine ne s'achète jamais rien.

B: Non, c'est pas vrai : Elle s'est acheté un manteau d'hiver.

1.3 Cancelling a presupposition / Surprise

A: Jeanine n'a plus un rond.

B: Ah oui ? Pourtant elle s'est acheté un manteau d'hiver !

1.4 Narrow focus / Correction

A: Tu sais ce que Pierre m'a raconté ? Jeanine s'est acheté une combinaison de ski !

B: Mais non, elle s'est acheté un manteau d'hiver !

Sentence 2

2.1 Narrow focus / Information

A: Benoit avait l'air tout content ce matin. Il a rencontré quelqu'un ?

B: Oui, il a rencontré un ami d'enfance.

2.2 Wide focus / Denial

A: Marianne m'a dit que Benoit s'isole.

B: Non, c'est pas vrai : Il a rencontré un ami d'enfance.

2.3 Cancelling a presupposition / Surprise

A: Benoit ne parle à plus personne.

B: Ah oui ? Pourtant il a rencontré un ami d'enfance !

2.4 Narrow focus / Correction

A: J'ai vu Martine qui m'a fait part de la nouvelle. Benoit a rencontré la femme de sa vie !

B: Mais non, il a rencontré un ami d'enfance.

Sentence 3

3.1 Narrow focus / Information

A: Céline a fait une grosse dépense. Elle a enfin loué quelque chose pour les vacances ?

B: Oui, elle a loué un bateau à voile.

3.2 Wide focus / Denial

A: Je trouve ça incroyable que Céline n'aime pas les dépenses.

B: Non, c'est pas vrai : Elle a loué un bateau à voile.

3.3 Cancelling a presupposition / Surprise

A: Céline n'a aucun plan pour ses vacances.

B: Ah oui ? Pourtant elle a loué un bateau à voile !

3.4 Narrow focus / Correction

A: Tu connais la nouvelle ? Céline s'est loué un chalet à la montagne !

B: Mais non, elle a loué un bateau à voile.

Sentence 4

4.1 Narrow focus / Information

A: Louis a beaucoup travaillé ces derniers mois. Il a restauré quelque chose ?

B: Oui, il a restauré une statue romane.

4.2 Wide focus / Denial

A: Anne raconte à tout le monde que Louis n'a plus de travail.

B: Non, c'est pas vrai : Il a restauré une statue romane.

4.3 Cancelling a presupposition / Surprise

A: Louis est complètement fauché ces derniers temps.

B: Ah oui ? Pourtant il a restauré une statue romane !

4.4 Narrow focus / Correction

A: Tu connais la nouvelle ? Louis a restauré une église ancienne.

B: Mais non, il a restauré une statue romane.

Appendix 2: Instruction

Vous allez entendre des petits dialogues, un par diapo, et nous vous demandons de faire attention à l'intonation de la deuxième personne (la première ne nous intéresse pas). Comment jugez-vous l'intonation que la voix masculine utilise ? Est-elle adéquate dans le contexte ? Vous disposez d'une échelle entre 1 (inadéquate) et 7 (parfaitement adéquate) pour exprimer votre jugement.

Acknowledgments and dedication. We would like to thank our speakers, Cédric Patin and Fatima Hamlaoui. Both of them, as well as Emilie Destruel and Matthieu Ségui, were asked to test the experiment and found it well done and understandable. Johannes Messerschmidt helped us with the online experiment and with the presentation and per-

centages of the results. Last but not least, thanks to the editors, Christoph Gabriel, Andrea Pešková and Maria Selig, for their very helpful comments on the first draft of this short paper, and for the wonderful idea of presenting a Festschrift to Trudel Meisenburg, a good friend and dear colleague.

Trudel, we hope to see you more often now that more of us are retired! Trudel once told one of us (Caroline) that she thought she could detect the kind of focus realized by the participants who produced the dual focus sentences of Destruel/Féry (2020), although these are truly hard to tell apart. This article is dedicated to her, in the hope that at least some of the French high tone placements are not random.