

## Prosodic realization of dual focus in French, German and Mandarin

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The present paper investigates the prosodic encoding of sentences with dual focus—i.e. sentences that answer interrogative sentences with two *wh*-phrases—in French (20 speakers, 2400 sentences), German (6 speakers, 960 sentences) and Mandarin (5 speakers, 400 sentences), that is a phrase language, an intonation language and a tone language. Following Krifka (2008), we take *focus* to be the part of a sentence that introduces alternatives, which are relevant for the interpretation of linguistic expressions. We conducted three laboratory production experiments for which native speakers read similar sentences in four contexts: all-new/broad focus, first focus, second focus and dual focus. We also varied the prosodic length of the target constituents; i.e. short and long. In French, both foci were post-verbal (see examples in (1) and (2)), and in German and Mandarin, the first focus was initial (on the subject) while the second was final (on an object or on an adjunct). In each of the three languages investigated, F0 and duration were measured on all relevant regions in all sentences, i.e. on the pre- and post-focus material and of course on the focus itself. Statistical analyses were performed to examine the role of information structure and length on prosodic realization. Although the experiments were not originally conceived for direct comparison, and the region of interest for French is the post-verbal region (the place where post-focal compression may or may not apply). Sentences containing dual focus are interesting from the perspective of expectations about prosodic structure. Indeed, they elicit a conflict between the need to include the entire sentence in a single intonation phrase—with one nuclear stress—and the need to realize two foci—each with their own nuclear accent—and thus to divide the sentences in two intonation phrases (see Kabagema-Bilan, López-Jiménez & Truckenbrodt, 2011 for an explicit formulation of the conflict). The three languages investigated resolve the conflict in different ways.

In French, there was not much difference in prosodic realization when comparing long all-new and dual focus sentences, see (2) for an example. But there was a difference in short sentences, see (1). The explanation for this result is that French uses phrasing to a larger extent for the expression of focus. In a long sentence, the objects and arguments are phrased individually in all-new contexts, and narrow focus does not change the phrasing. In short sentences, the prosodic phrasing was not always corresponding to the syntactic structures in all-new sentences. But in dual focus sentences, a clear phrase boundary was added between the two foci.

In German, two strategies could be identified: the first focus was realized with either a falling or with a rising contour. The second focus was always realized with a falling pitch accent. In the short sentences, only 14.5% of the first focus was realized as a falling contour, whereas in the long sentences, 67% of the first focus accents had a falling contour. A realization with a rising tone corresponds to the one with a single final focus, and one intonation phrase. This pattern was also predominant in the all-new context. A realization with two falling accents was found only in dual -focus sentences and correspond to a division of the sentence into two intonation phrases, i.e. with a phrase boundary after the first focus. In the latter case, post-focal compression was clearly present after the first focus. In short, there was an effect of length in German, the long sentences being mostly realized in two separate intonation phrases, and the short ones included in a single intonation phrase.

In Mandarin, there was an increase in F0 and word duration in both foci, and this to almost the same degree as their initial and final focus counterparts respectively. This happened both in the long and in the short sentences. The word following the first focus did not differ from its neutral and final focus counterparts in F0 and duration. The prosodic encoding of dual focus sentences in Standard Chinese is very similar to that in English (see Eady et al. 1986). Thus no prosodic boundary was inserted after the first focus and the two foci were realized in one intonational phrase. From a theoretical perspective, this result implies that culminativity is violable in Chinese and focus assignment and phrasing are largely independent of each other (see Wang & Féry 2015 for a detailed analysis).

The conclusion is that different types of languages differ as how they use prosody for expressing information structure, even though some phonetic results resemble each other. The tonal typology presented at the conference is able to explain the differences between these languages.

## Examples of sentences for French

(1) Short object/short adjunct:

Jean-Marie a envoyé un colis par la poste.

*'Jean-Marie send a parcel via mail.'*

Questions:

a. All-new: Qu'est-ce qui s'est passé?

*'What happened?'*

b. First focus: Qu'est-ce que Jean-Marie a envoyé par la poste?

*'What did Jean-Marie send via mail?'*

c. Second focus: Comment est-ce que Jean-Marie a envoyé un colis?

*'How did Jean-Marie send a parcel?'*

d. Dual focus: Qu'est-ce que Jean-Marie a envoyé et comment?

*'What did Jean-Marie send and how?'*

(2) Long object/long object:

Jean-Marie a envoyé un colis important à sa voisine anglaise.

*'Jean-Marie send an important parcel to his English neighbor.'*

Questions:

a. All-new: Qu'est-ce qui s'est passé?

*'What happened?'*

b. First focus: Qu'est-ce que Jean-Marie a envoyé à sa voisine anglaise?

*'What did Jean-Marie send to his English neighbor?'*

c. Second focus: Qu'est-ce que Jean-Marie a envoyé et à qui?

*'What did Jean-Marie send and to whom?'*

d. Dual focus: Qu'est-ce que Jean-Marie a envoyé et à qui?

*'What did Jean-Marie send and to whom?'*

## References

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