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## “Are your eyebrows questioning or focusing?” Revisiting the role of eyebrows in conveying focus.

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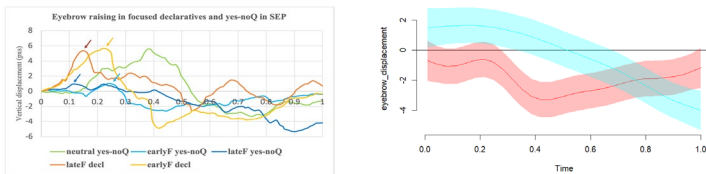
Marisa Cruz & Sónia Frota

University of Lisbon

marisac@edu.ulisboa.pt, sfrota@edu.ulisboa.pt

A recent kinematic analysis of the eyebrow raising movement, used in Standard European Portuguese (SEP) to convey information-seeking yes-no questions and narrow focused statements, has shown that eyebrow peaks occur earlier (i) in narrow focused statements than in information-seeking yes-no questions, and (ii) in late compared to early focus, thus showing the relevant role of this visual cue in signalling focus [1]. However, this visual cue was not inspected in focused yes-no questions, which is crucial to understand its role in conveying meaning. We are thus revisiting the topic by adding a similar kinematic analysis of the eyebrow raising movement in early and late focused (F) yes-no questions.

Using the same audiovisual database, we analyzed F yes-no questions of 5 female SEP native speakers from an intonational point of view. Only those with the most frequent nuclear contours (L\*+H LH% - earlyF; L\*+H HL% - lateF, [2]) were selected for visual analysis (N=40). The eyebrow raising was not the dominant visual cue (37.5% contra 45% of eyebrow lowering and 17.5% of head falling alone), but it was the one kinematically analyzed for the sake of comparison with previous results. Our analysis showed that, as observed for narrow F statements (Fig.1, yellowish), the eyebrow peak in lateF yes-no questions (dark blue) precedes the one in earlyF (light blue). A GAMM (Fig. 2) showed that the eyebrow raising movement is significantly different between late (blue) and early (pink) F yes-no questions ( $\beta=1.65$ ,  $SE=0.25$ ,  $t=6.67$ ,  $p<.001$ ).



However, the findings that (i) the eyebrow amplitude in F yes-no questions is much lower than in narrow F statements, (ii) the eyebrow raising is not the dominant visual cue to convey focus in yes-no questions, and (iii) the head alone is also present suggest that the interplay between the visual cues in the signal might be the key to convey focus. This dynamic approach will be discussed in the workshop.

**References:** • Cruz, M., & S. Frota (2025). Are your eyebrows questioning or focusing? Evidence from spoken European Portuguese. Talk given at *Multimodality and IS*, satellite event of *PaPe 2025*, Palma, June 25. • Frota, S., et al. (2015). Intonational variation in Portuguese: European and Brazilian varieties. In S. Frota & P. Prieto (eds.), *Intonation in Romance*, 235-283. Oxford University Press.