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[2] 100 words for Letters to the Editor. Please no personal pronouns, also please do not

[3] use the words `new'' and/or`novel" in the abstract. An article usually includes an

[4] abstract, a concise summary of the work covered at length in the main body of the

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I. METHOD

A. Speakers

B. Equipment

The acquisition of the audio signal was achieved with the software Articulate Assistant Advanced™ (AAA, v2.17.2) running on a Hawlett-Packard ProBook 6750b laptop with Microsoft Windows 7, with a sample rate of 22050 MHz (16-bit) in a proprietary format. A FocusRight Scarlett Solo pre-amplifier and a Movo LV4-O2 Lavalier microphone were used for audio recording.

C. Materials

The target stimuli were disyllabic words with $C_1V_1C_2V_2$ structure, where C_1 = /p/, V_1 = /a, o, u/, C_2 = /t, d, k, g/, and $V_2 = V_1$ (e.g. /pata/, /pada/, /poto/, etc.). The lexical stress of the target words was placed by speakers of both Italian and Polish on V_1, as intended. The make-up of the target words was constrained by the design of the experiment, which included ultrasound tongue imaging (UTI). Front vowels are difficult to image with UTI, since their articulation involves tongue positions which are particularly far from the ultrasonic probe, hence reducing the visibility of the tongue contour. For this reason, only central and back vowels were included. Since one of the variables of interest in the exploratory study was the closing gesture of C_2, only lingual consonants were used. A labial stop was chosen as the first consonant to reduce possible coarticulation with the

²⁵ following vowel (although see Vazquez-Alvarez and Hewlett 2007). The target words were

²⁶ embedded in a frame sentence, *Dico X lentamente* 'I say X slowly' in Italian, and *Mówię X*

²⁷ *teraz* 'I say X now' in Polish. These sentences were chosen in order to keep the placement

²⁸ of stress and emphasis similar across languages, so to ensure comparability of results.

²⁹ **D. Procedure**

³⁰ The participant was asked to read the sentences with the target words which were sequen-

³¹ tially presented on the computer screen. The order of the sentence stimuli was randomised

³² for each participant. Each participant read the list of randomised sentence stimuli six times.

³³ Due to software constraints, the order of the list was kept the same across the six repetitions

³⁴ within each participant. Each speaker read a total of 72 sentences, with a grand total of

³⁵ 576 tokens (288 per language). The reading task lasted between 15 and 20 minutes, with

³⁶ optional short breaks between one repetition and the other.

³⁷ **E. Data processing, measurements, and statistical analysis**

³⁸ The audio recordings were exported from AAA in `.wav` format for further processing. A

³⁹ forced aligned transcription was accomplished through the SPeech Phonetisation Alignment

⁴⁰ and Syllabification software (SPPAS) (Bigi, 2015). The outcome of the automatic annotation

⁴¹ was manually corrected when necessary, according to the criteria in Table I. The releases of

⁴² C1 and C2 were detected automatically by means of a Praat scripting implementation of the

⁴³ algorithm described in Ananthapadmanabha *et al.* (2014). The durations in milliseconds of

⁴⁴ the following intervals were extracted from the annotated acoustic landmarks with Praat

TABLE I. List of measurements as extracted from acoustics.

landmark		criteria
vowel onset	(V1 onset)	appearance of higher formants in the spectrogram following the burst of /p/ (C1)
vowel offset	(V1 offset)	disappearance of the higher formants in the spectrogram preceding the target consonant (C2)
consonant onset	(C2 onset)	corresponds to V1 offset
closure onset	(C2 closure onset)	corresponds to V1 offset
consonant offset	(C2 offset)	appearance of higher formants of the vowel following C2 (V2); corresponds to V2 onset
consonant burst onset	(C2 burst)	automatic detection (Ananthapadmanabha *et al.*, 2014)

45 scripting: vowel duration (V1 onset to V1 offset), consonant closure duration (V1 offset to

46 C2 burst), and C1 release to C2 release duration (Rel-Rel duration).

47   The durational measurements were analysed with linear mixed-effects models using `lme4`

48 in R (Bates *et al.*, 2015; R Core Team, 2017). *P*-values were obtained with likelihood ratio

49 tests comparing the full model with a nested model without the relevant predictor.

ACKNOWLEDGMENTS

Thanks to...

APPENDIX A: OPTIONAL APPENDIX

Ananthapadmanabha, T. V., Prathosh, A. P., and Ramakrishnan, A. G. (**2014**). "Detection of the closure-burst transitions of stops and affricates in continuous speech using the plosion index," The Journal of the Acoustical Society of America **135**(1), 460–471.

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