

# Allophones of Voiceless Fricatives in Catalan

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## Introduction

Main hypothesis: /s/ at the end of a word becomes voiced in Catalan when followed by a word beginning with a vowel.

Additional hypotheses:

- /s/ at the end of a word remains voiceless when followed by a word beginning with a voiced consonant
- Other voiceless fricatives in Catalan, /f/ and /ʃ/, will remain voiceless when followed by a vowel.

## Methodology

5 speakers:

- Native Catalan speakers from Barcelona, Spain

Each speaker recorded a short paragraph with 5 instances of each environment of interest.

- Included variations within the environments of interest
- Environments of interest were interspersed throughout the paragraph

Results were analyzed using Praat<sup>1</sup> to identify the presence or lack of a voicing bar.

## Results

Percentage of instances voiced and examples of most/least voiced instances in each environment:

Environment 1: /s/#V

- Overall: **60%**, V/s/#V only: **70%**
- "unes entrades" [unəzəntɾaðəs], "llençols i" [lənsɔlsi]

Environment 2: /s/#C<sub>[+voice]</sub>

- Overall: **70%**, V/s/#C<sub>[+voice]</sub> only: **73%**
- "seus gats" [seu:zgats], "amics volen" [əmiksvolən]

Environment 3: /f/#V or /ʃ/#V

- Overall: **12%**, V/f/#V or V/ʃ/#V only: **15%**
- "abaix a" [aβaʃa], "golf aquesta" [gɔlfəkɛsta]

## Discussion

Voicing of /s/ to [z] occurred most of the time in environment 1, but not as often as expected. In every instance of environments 1 and 2, at least one speaker challenged the hypotheses. In all environments, fricatives following vowels were voiced more often. The results were not conclusive enough to establish allophonic rules based on the hypotheses, but there were definite patterns shown.

Spectrograms showing the phrase "seus amics"

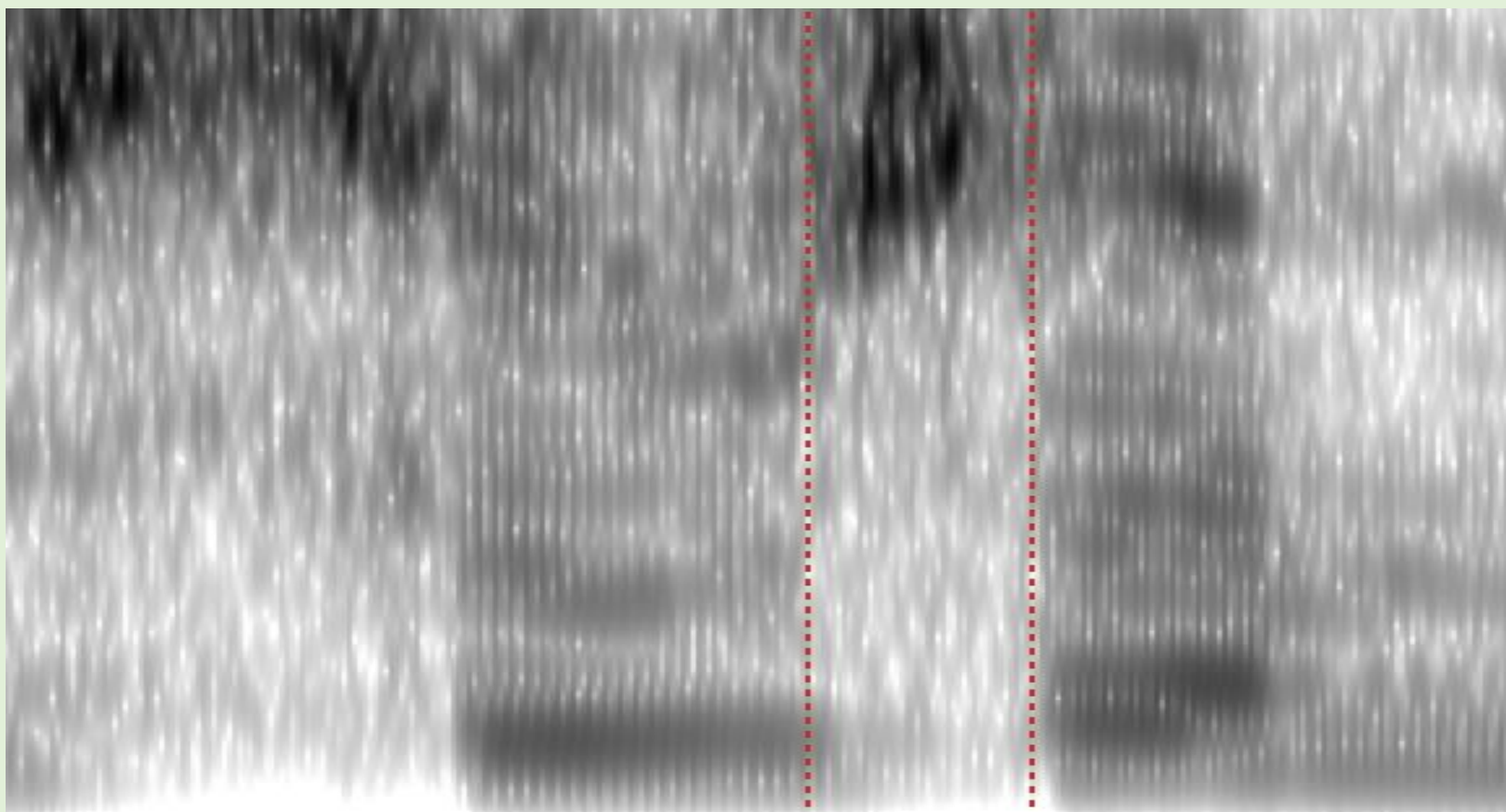


Fig 1: voiceless [s]  
[seu:sam]

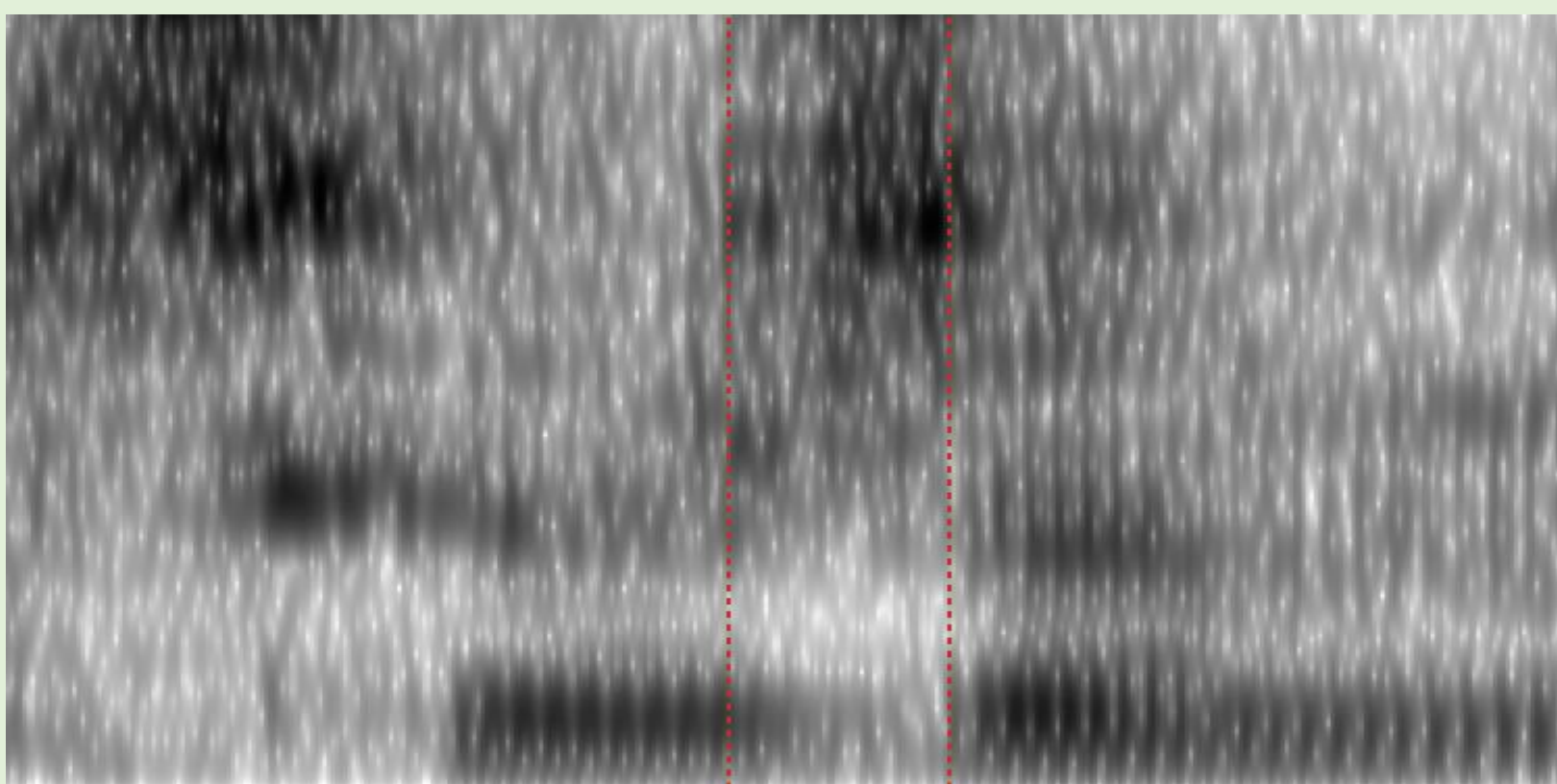


Fig 2: voiced [z]  
[seu:zam]

## Citations

<sup>1</sup>Boersma, Paul & Weenink, David (2024). Praat: doing phonetics by computer [Computer program]. Version 6.4.06, retrieved 25 February 2024 from <http://www.praat.org/>

Hypothesis devised independently. Data obtained from volunteer speakers.