C-to-V COARTICULATION IN SPONTANEOUS FRENCH: ACOUSTIC ANALYSIS & CLASSIFICATION

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INTRODUCTION
- Background
Asymmetry between high front and high back vowels in:
Synchrony: back vowels are more likely to front in front context.
Diachrony: high back vowel fronting in many languages.
- Research questions
Goal: test this asymmetry in French by looking at global and contextual acoustic variability of oral vowels.
Are some vowels more stable (less variable | more distinct) than others? Does C-to-V coarticulation depend on vowel frontness?

- Corpus
NCCFr: large speech corpus of casual French (Torreira & al., 2010).
- Linguistic material
  - 17.628 V /i,y,e,c,x,a,u,o,/?
  - /x/ = /a, ò, ò/ 50-150 ms duration
  - CVC structure
  - 15 male speakers
  - Consonantal contexts:

RESULTS
- Vowel (token to token) variability

- Vowel discrimination
  - Correct classification: 53% (chance 11.11%)
  - Sensitivity: 83% 60% 39% 52% 56% 66% 30% 31% 36%
  - Precision: 71% 56% 47% 22% 90% 34% 46% 22% 35%
  - /i/ not the least variable!
  - /u/ all (except /y/)
- F1 | F2 contextual shifts
  - Contextual shifts in the same direction for all Vs:
    - F1 mainly affected by UV context (av
    - F2 affected by all contexts:
      - COR | VEL
      - UV
      - context effect on vowel discrimination:
        - COR
        - VEL
        - UV

CONCLUSION
- V-dependent global- and contextual- variability? Yes
  - More global acoustic variability for /u/; larger coarticulatory effects on F2 for back vowels; discrimination for back vowels is weaker and more affected by C-context.
  - Confirm an asymmetry between high back & high front vowels, which extend also to non-high vowels.
  - Surprisingly, /i/ is found to be quite variable and to undergo comparable contextual effects as other Vs.