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# Identifying variants of multiword expressions

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## Verbal Multiword Expressions (VMWEs)

- MWEs = word combinations with unpredictable behavior  
 e.g. semantics: *to have egg on one's face* = 'to seem stupid' ≠ 
  - VMWE Challenges
    - Scale-wise variability (≠ regular phrases): (1)(2) vs. (3)  auto. identification
    - Ambiguity: (1) ≠ (4)
    - Discontinuity: (1) ≠ (2)  sequence labeling
- ✓(1) *I broke<sub>pret</sub> her heart<sub>sing</sub> when I left*
  - ✓(2) *Lives lost and hearts<sub>plur</sub> broken<sub>past</sub>*
  - ✗(3) *\*I break my heart*
  - ✗(4) *I broke her heart in chocolate when I stepped on it*

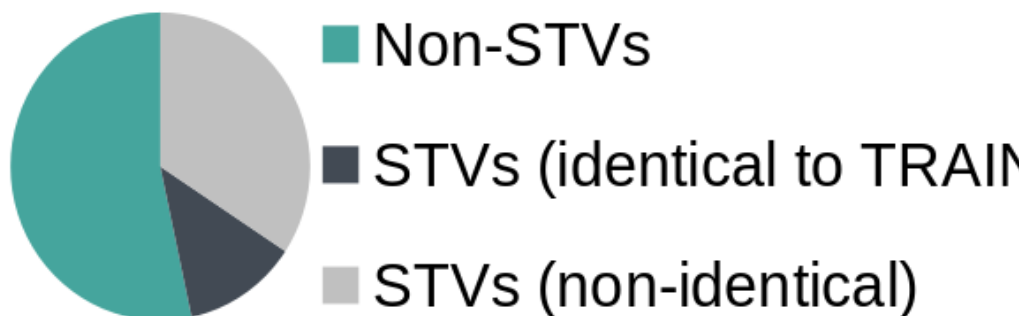
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Each VMWE has a Variability profile (literal reading)
- ⇒ VMWE identification required by NLP applications

## PARSEME corpus

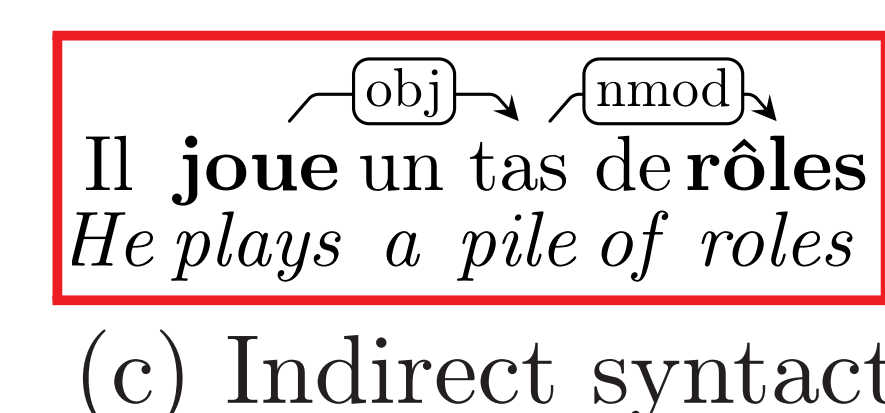
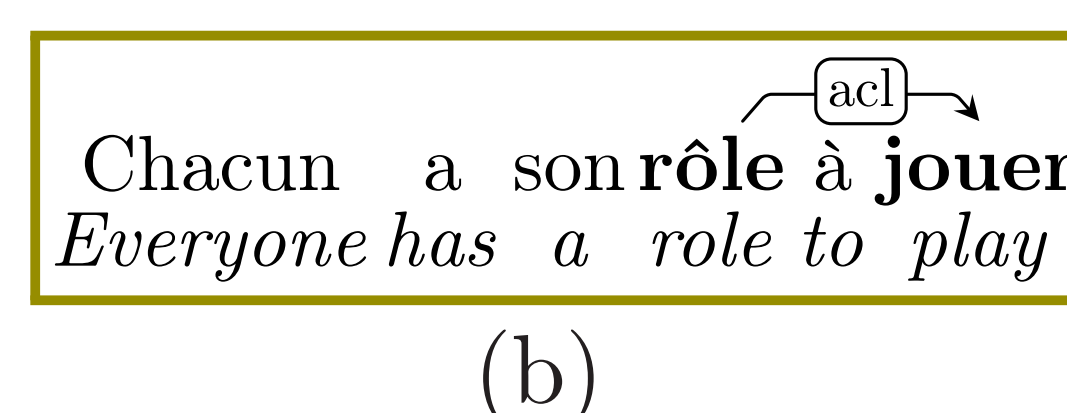
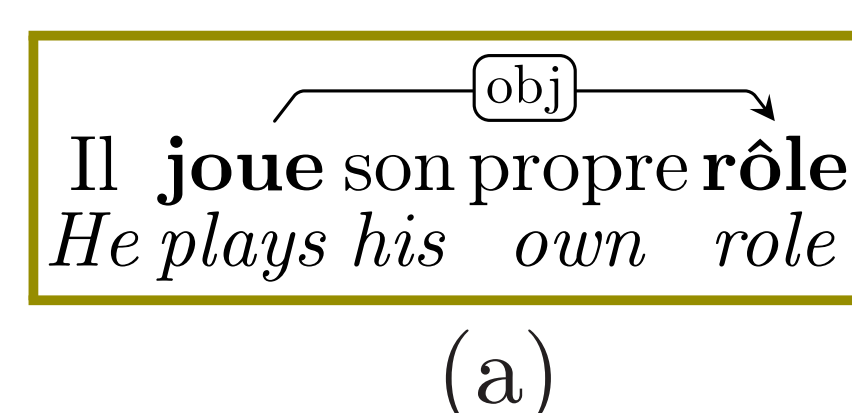
-  Rich verbal inflection in French
-  manually annotated VMWEs
-  syntactic dependencies
-  lemmas, POS, morph. features
-  UD v2 tagsets
- VERB-(DET)-NOUN VMWEs
  - Light Verb Constructions  
*jouer r le* 'play role'
  - Idioms  
*fermer la porte* 'close the door'
- TRAIN: 854 VMWEs (2098 occ.)
- TEST: 177 VMWEs (283 occ.)

## Focus on variant identification in corpus

- Goal = identification of known VMWEs whatever their form  
 Why? Variants are pervasive e.g. *Seen-in-train variants* (STVs) 
- STV definition = same meaning but possibly different surface form e.g. *break heart* in (1)(2)
- Hypothesis** = any VMWE<sub>x</sub> shares similarities with VMWE<sub>y</sub> already seen in corpus
  - VMWE<sub>x</sub> = VMWE<sub>y</sub> ⇒ VMWE-specific properties
  - VMWE<sub>x</sub> ≠ VMWE<sub>y</sub> ⇒ VMWE-generic properties, e.g. same restricted inflection in *I dance on my/your grave* as in (3)

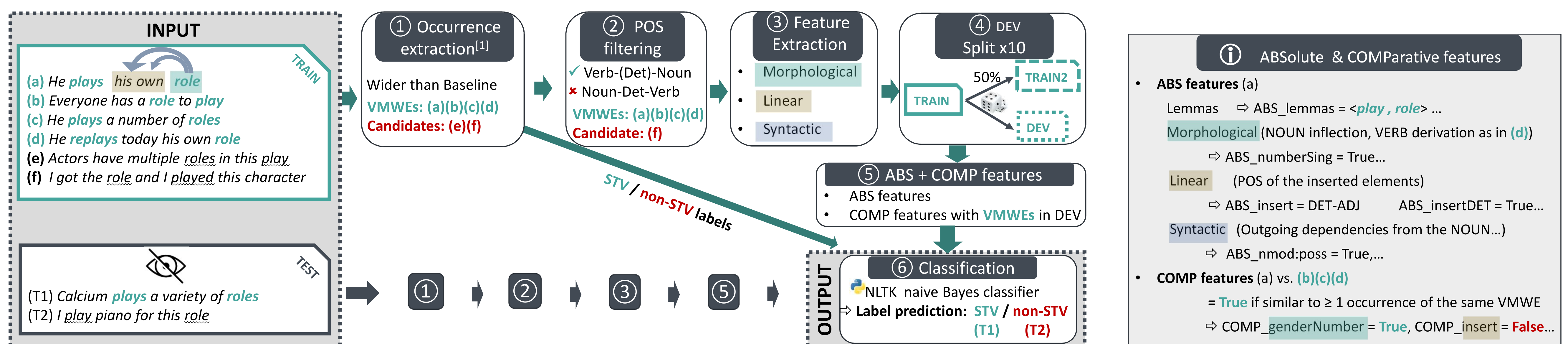
## Baseline ⇒ same lemmas + syntactic connection

- Strong baseline: F1 = 0.88

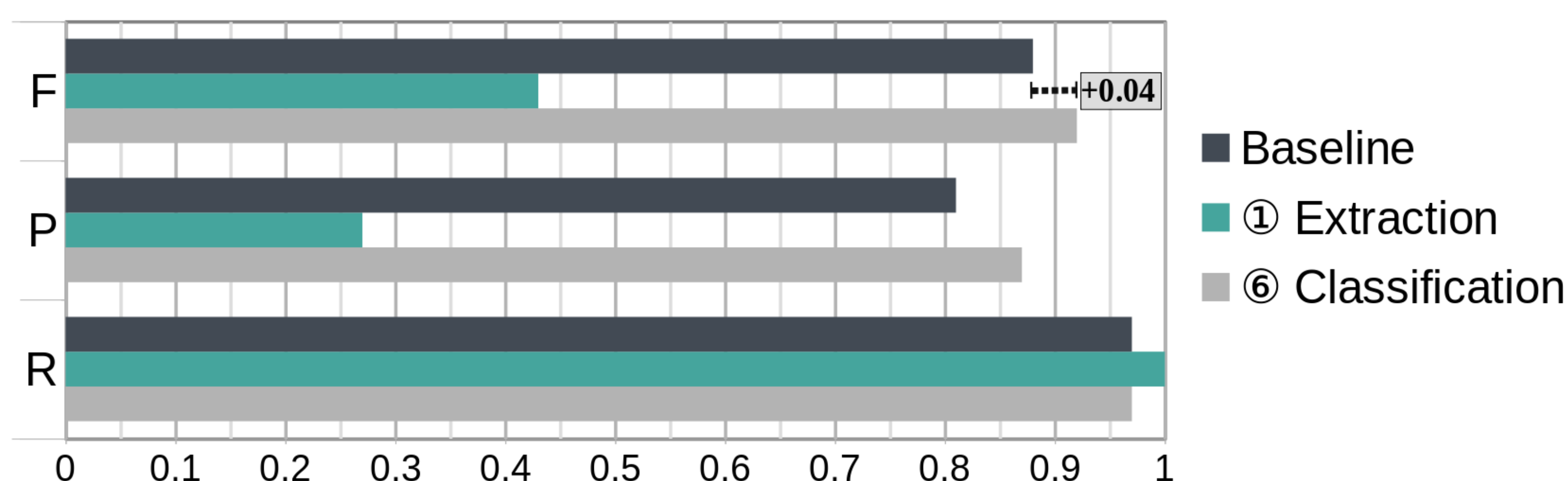


## Our method ⇒ classification based on the Morpho-syntactic variability profiles


- Same lemmas (↑R but P↓) + ABSolute/COMParative VMWE features ⇒ (1)(2) gathered + (3)(4) discarded








## Extraction & Classification results vs. Baseline




## Discriminative features

-  Linear features more discriminative than morphological features
- COMP features for **STV** prediction  
e.g. same insertions
- ABS feat. for **non-STV** prediction  
e.g. insertion of VERB, PUNCT...

## Conclusions & Perspectives

-  F1 = 0.92 > Baseline
-  Good reproducibility  $\sigma_{F1} = 0.01$  (10 samples)
-  Larger corpora & not only  Verb-(Det)-Noun ⇒ Workshop Poster, Aug 25<sup>[2]</sup>
-  Other features: orthographic similarity, lexical similarity

## References, acknowledgements

- [1] SAVARY and CORDEIRO, TLT 2018
- [2] PASQUER *et al.*, COLING Workshop 2018
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