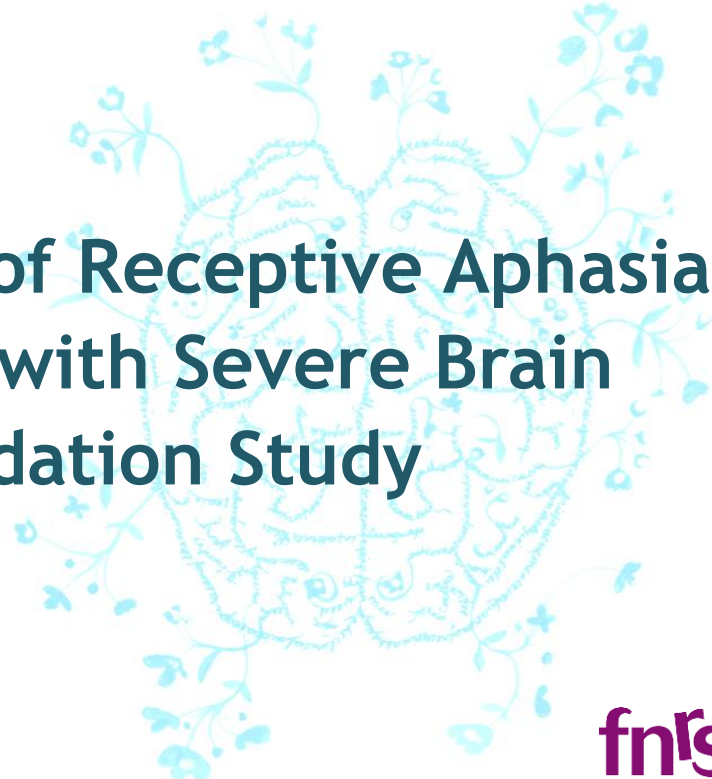


The Brief Evaluation of Receptive Aphasia (BERA) in Patients with Severe Brain Injury: A Validation Study

15th World Congress on Brain Injury
March 21st, 2025

Aubinet, C., Regnier, A., Gillet A., Cardone, P.,
Fritz, P., Lejeune, N., Gosseries, O. & Majerus, S.

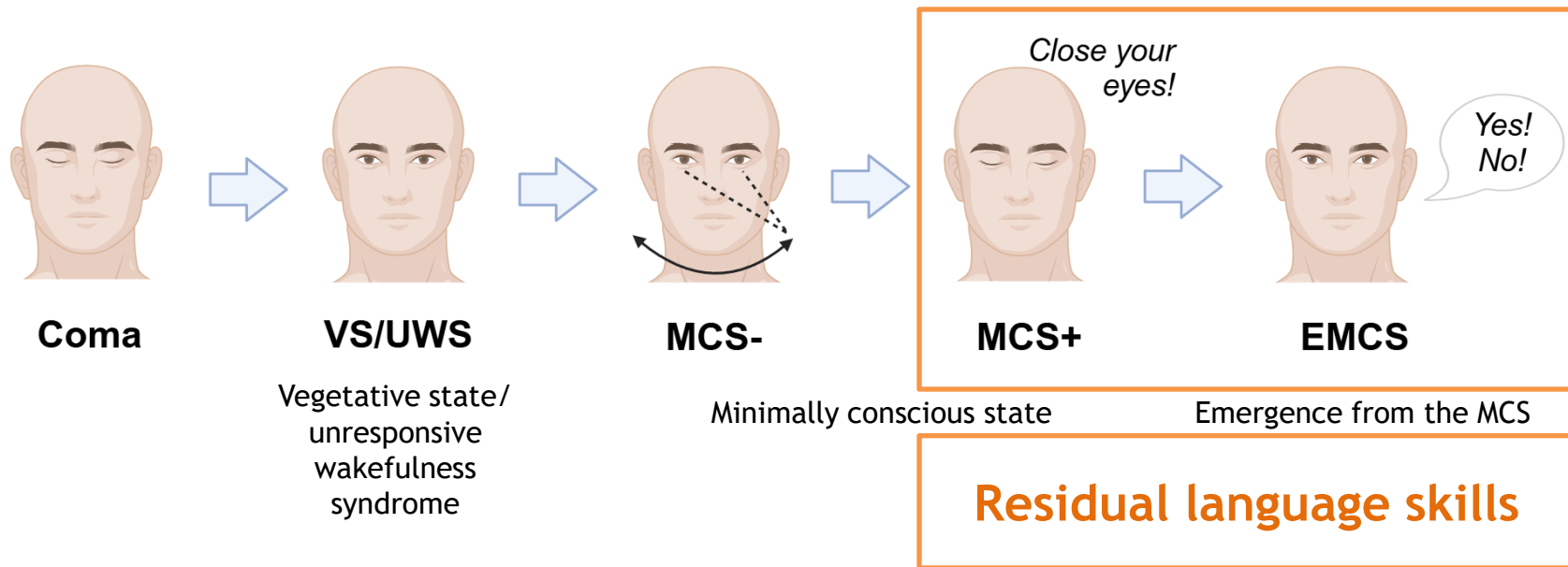


Disclosure

No interest to disclose.



Disorders of consciousness (DoC) following severe brain injury



Behavioral assessment scales to diagnose DoC

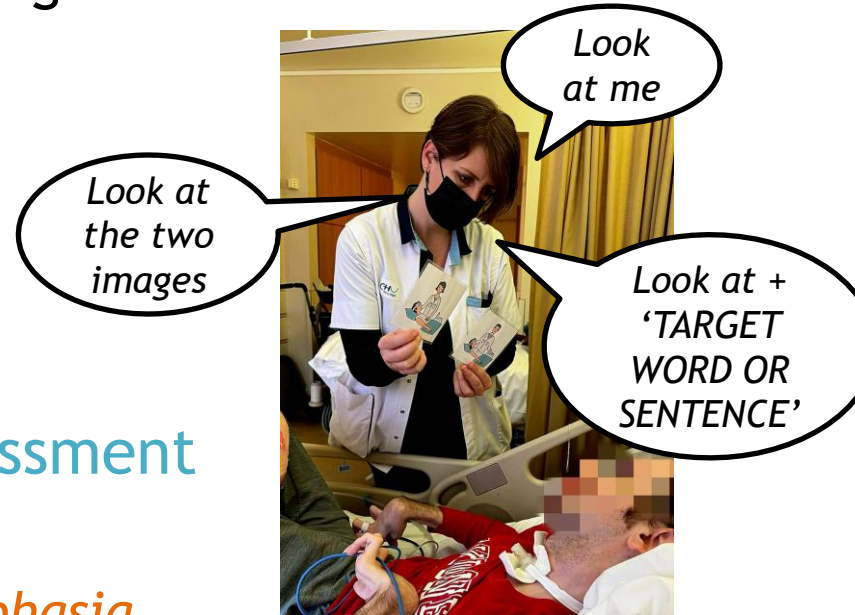
CRS-R, SECONDS: command-following
and communication items

BUT no language assessment...

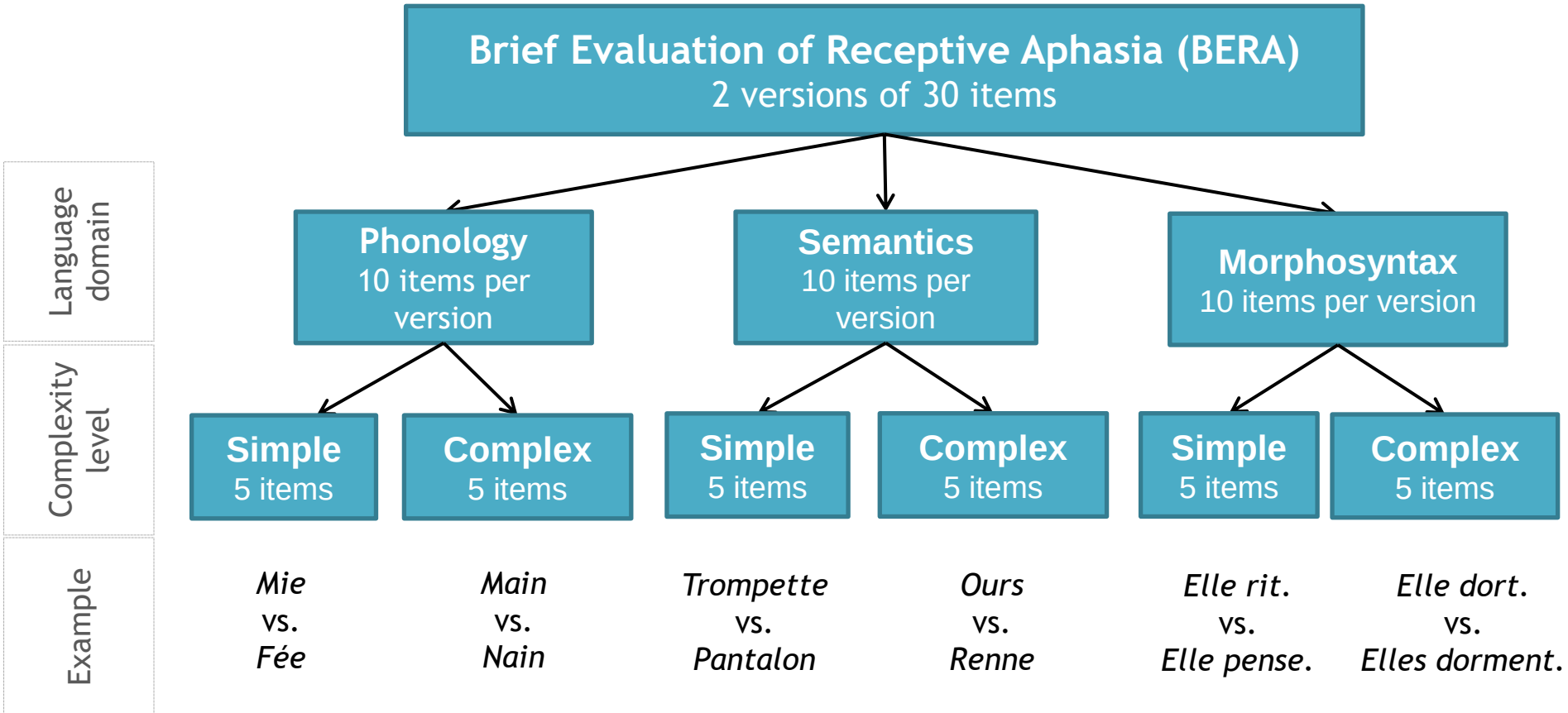
- Language components?
- Psycholinguistic variables?

Towards a language-specific assessment

↳ Elaboration of the
Brief Evaluation of Receptive Aphasia
(BERA)

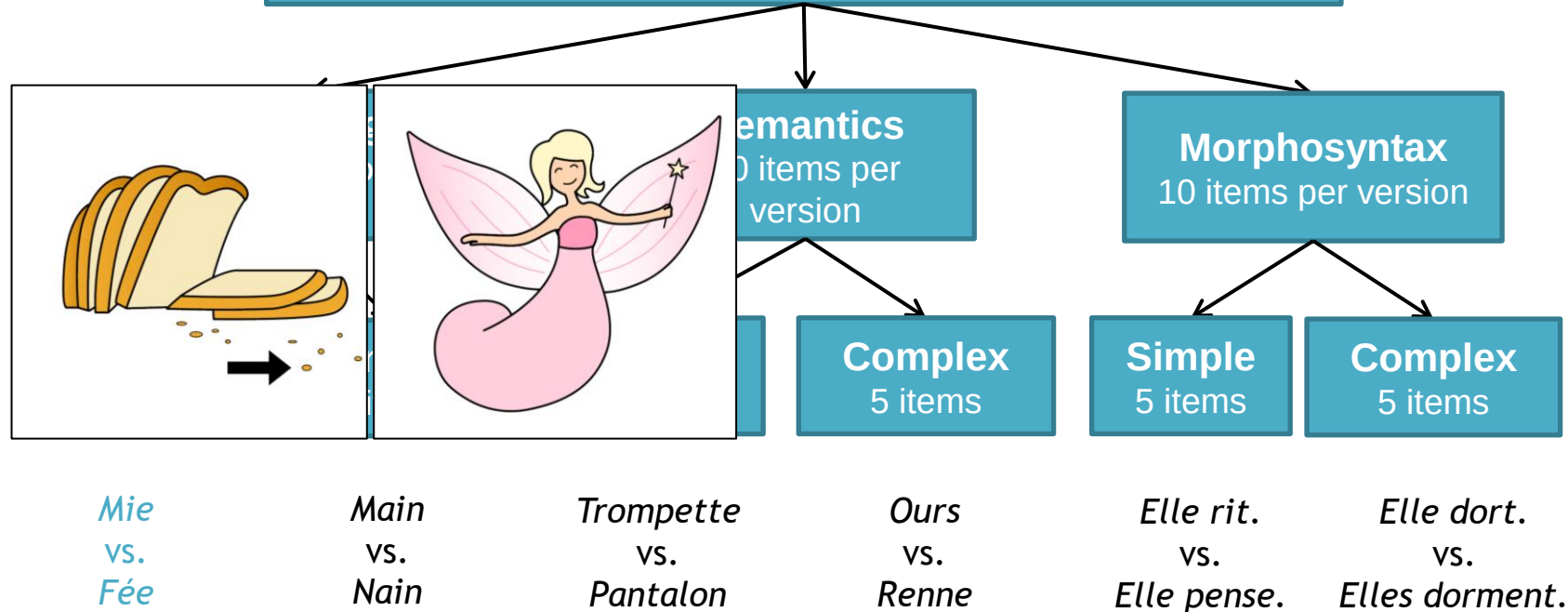


Elaboration of the BERA language-specific tool



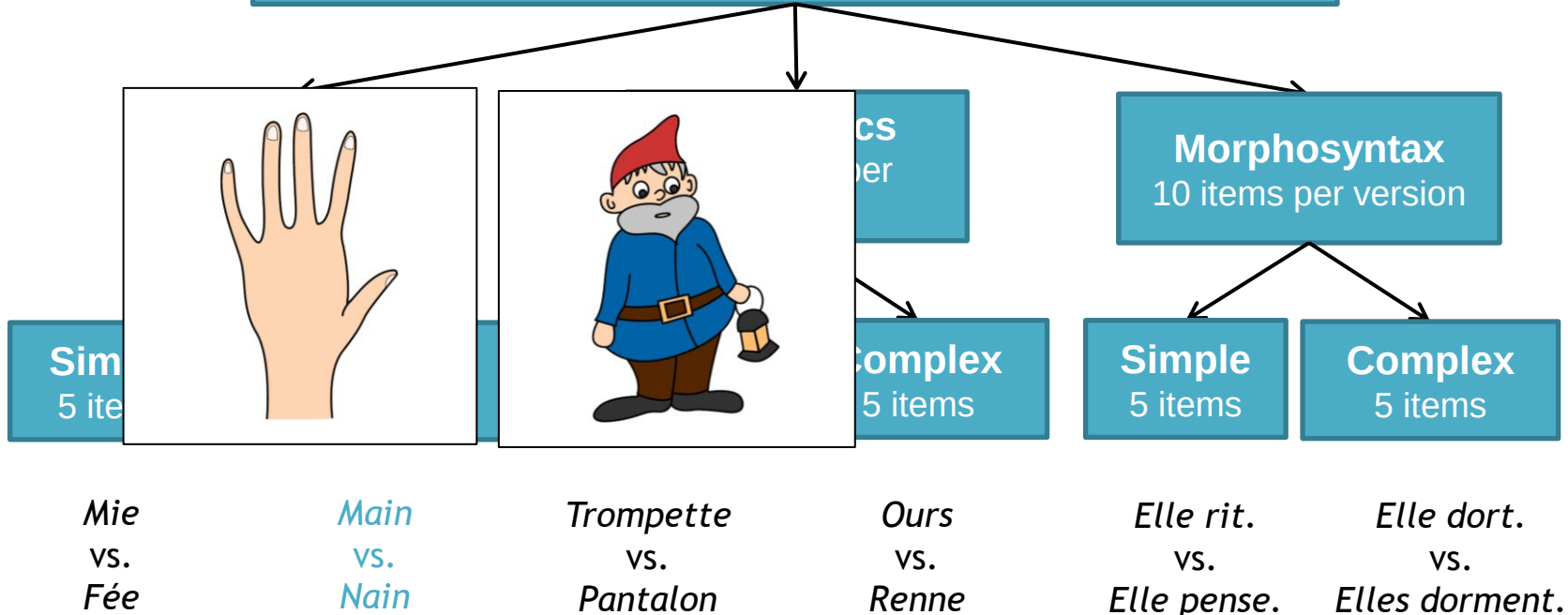
Elaboration of the BERA language-specific tool

Brief Evaluation of Receptive Aphasia (BERA) 2 versions of 30 items



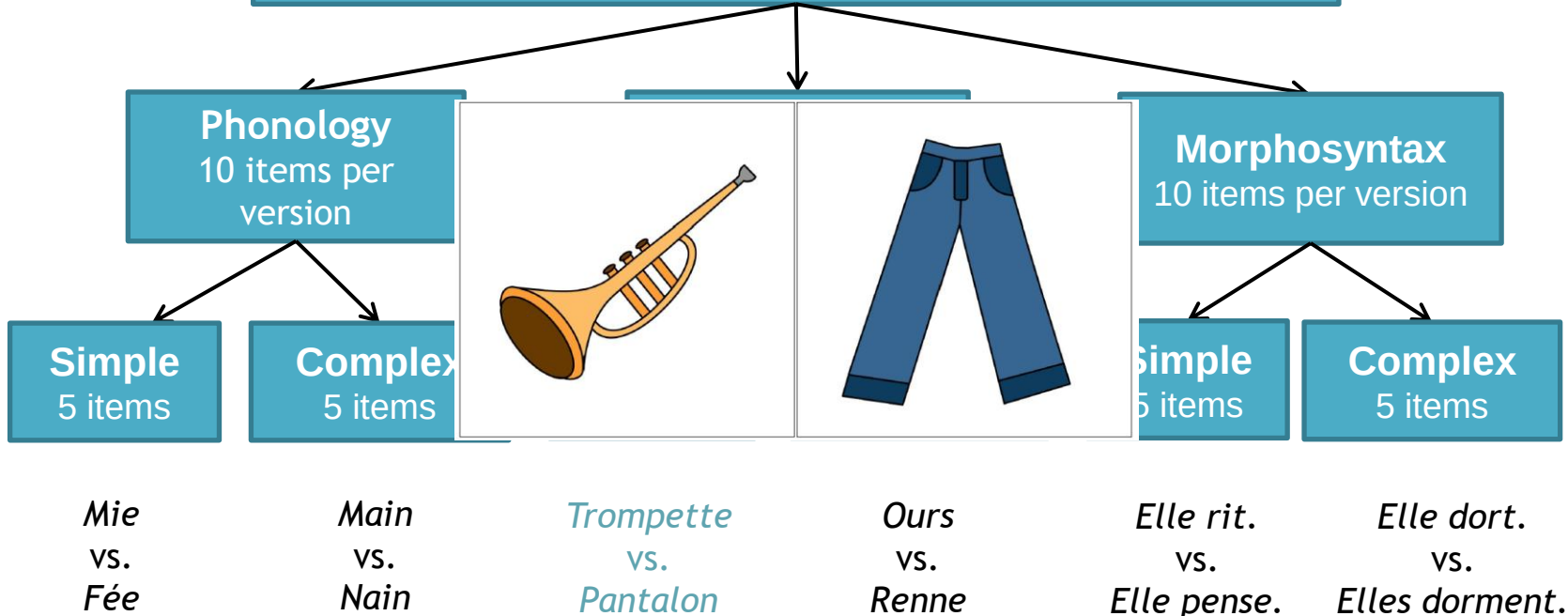
Elaboration of the BERA language-specific tool

Brief Evaluation of Receptive Aphasia (BERA) 2 versions of 30 items



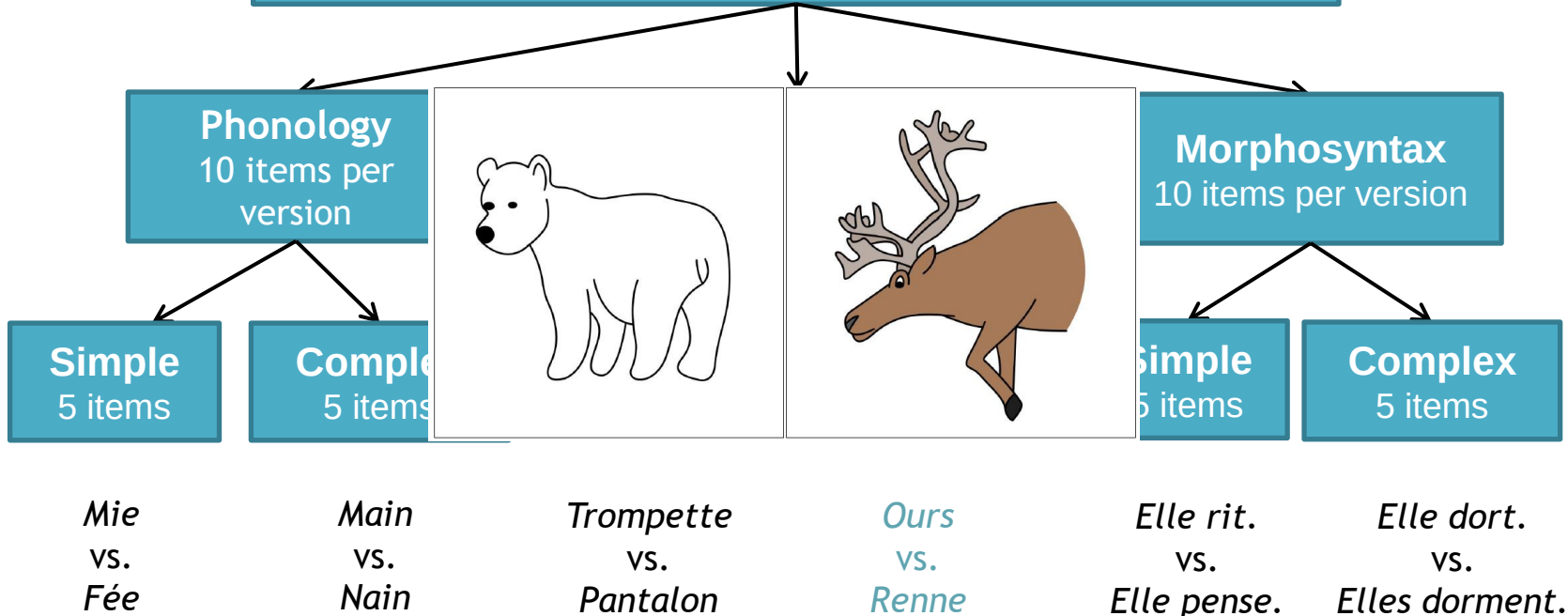
Elaboration of the BERA language-specific tool

Brief Evaluation of Receptive Aphasia (BERA) 2 versions of 30 items



Elaboration of the BERA language-specific tool

Brief Evaluation of Receptive Aphasia (BERA) 2 versions of 30 items



Elaboration of the BERA language-specific tool

Brief Evaluation of Receptive Aphasia (BERA) 2 versions of 30 items

Language
domain

Complexity
level

Example

Phonology
10 items per
version

Simple
5 items

Complex
5 items

Simple
5 items



Complex
5 items

Complex
5 items

Mie
vs.
Fée

Main
vs.
Nain

Trompette
vs.
Pantalon

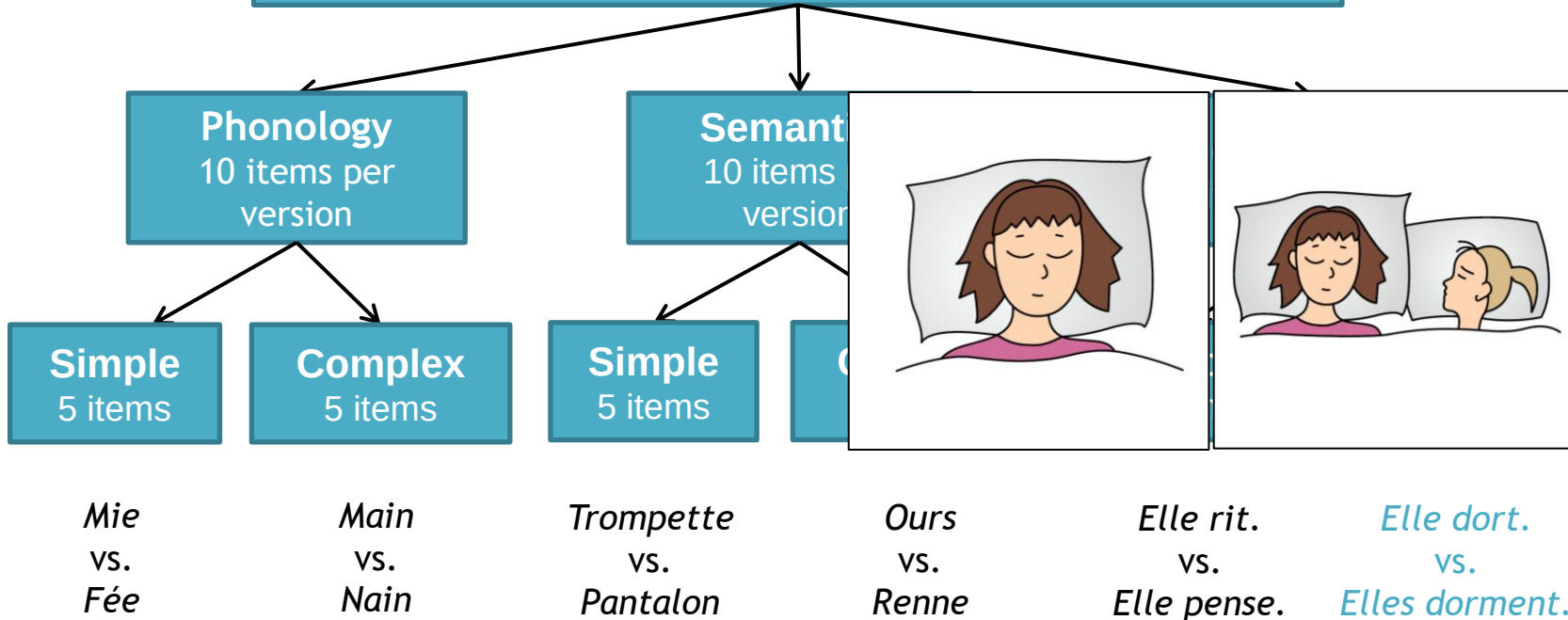
Ours
vs.
Renne

Elle rit.
vs.
Elle pense.

Elle dort.
vs.
Elles dorment.

Elaboration of the BERA language-specific tool

Brief Evaluation of Receptive Aphasia (BERA) 2 versions of 30 items





Administration and scoring of the BERA tool

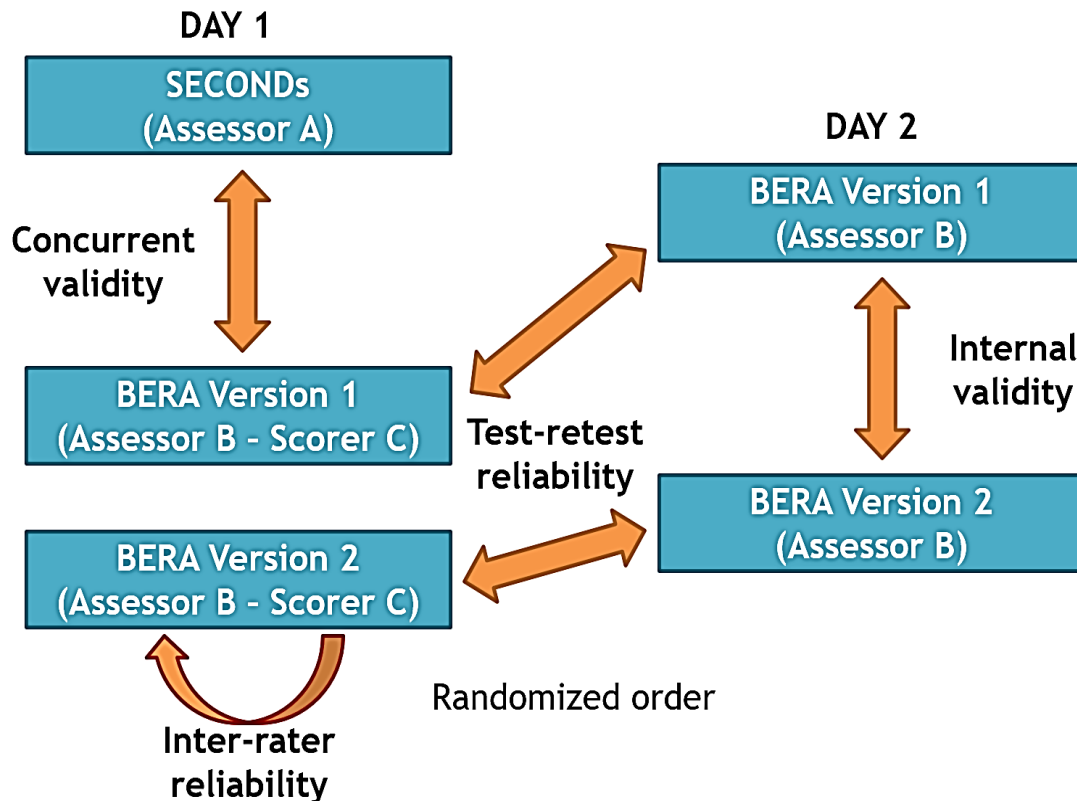
- ▶ Word comprehension (= phonology and semantics) then sentence comprehension if the patient succeeds at least for half of word targets
- ▶ For each item, indicate whether the fixation was:
 - Correct (C)
 - Incorrect (E) = towards the distractor
 - Hesitant (H) = from one image to the other one
 - Random (A) = elsewhere, anywhere
- ▶ Words /20 + Sentences /10
 - Subscales /10 → simple /5 vs. complex /5
 - + Semantics: /10 → frequent /5 vs. non-frequent /5
 - Left /10 or /15 vs. right /10 or /15
- ▶ Stop criterion : no visual fixation (either correct or incorrect) for 5 consecutive items



Inclusion criteria and validation procedure

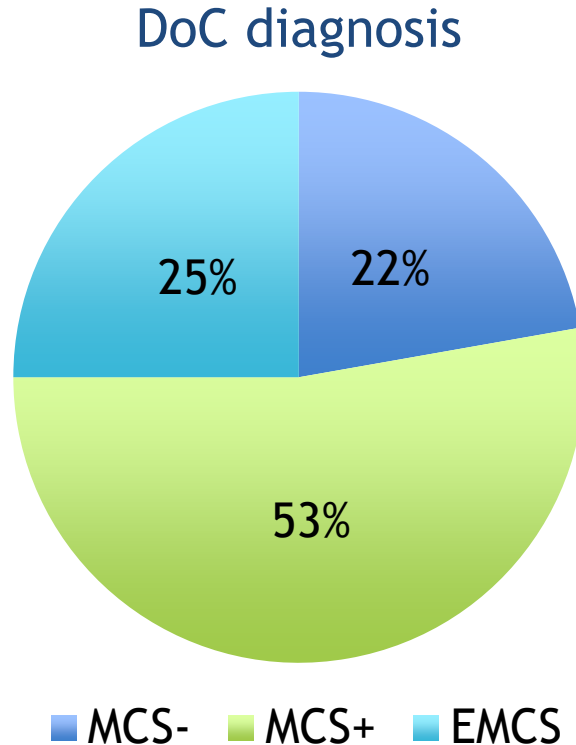
n = 48 patients

- Coma following severe brain injury
- Time post-onset: > 28 days
- Age: 18-80 y.o.
- French-speakers
- Preserved visual fixation or pursuit





Preliminary results in post-comatose patients



36 included patients

- Duration mean for one version:
Mdn = 12min (range = 2-24min)
- 15/36 patients could perform the morphosyntax subscale
 - 7 MCS+
 - 8 EMCS



Preliminary results in post-comatose patients

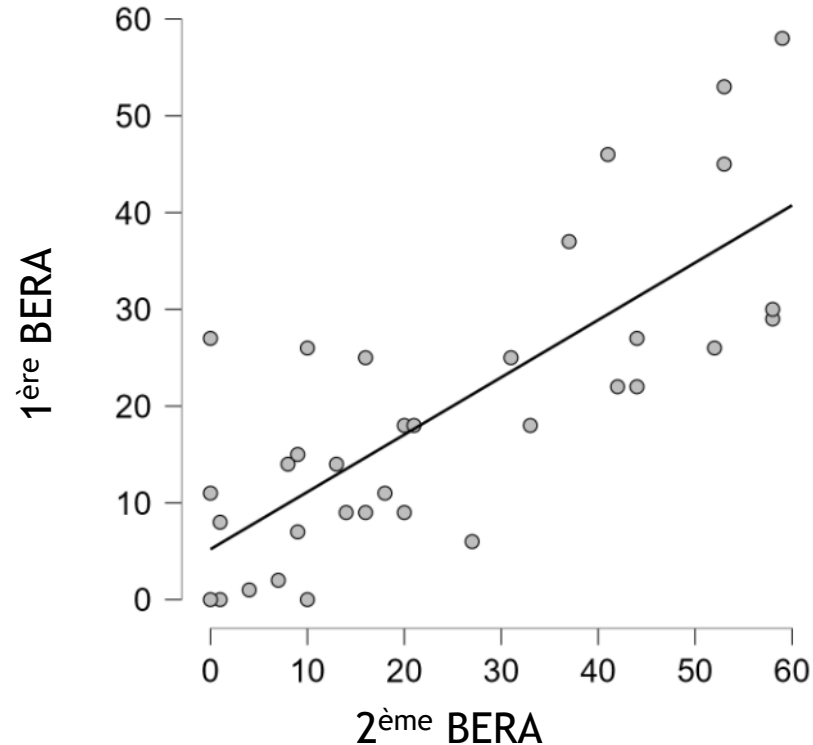
Psychometric data (n = 36)

Inter-rater reliability:

ICC = 0.971

Test-retest reliability

$\rho = 0.73^*$





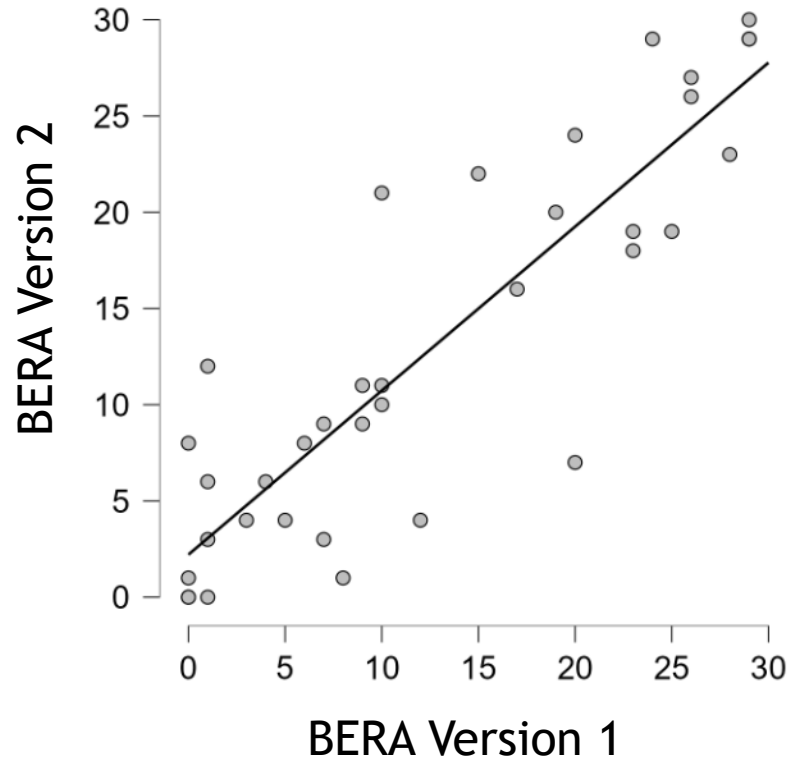
Preliminary results in post-comatose patients

Psychometric data (n = 36)

Internal validity

$$\rho=0.86^*$$

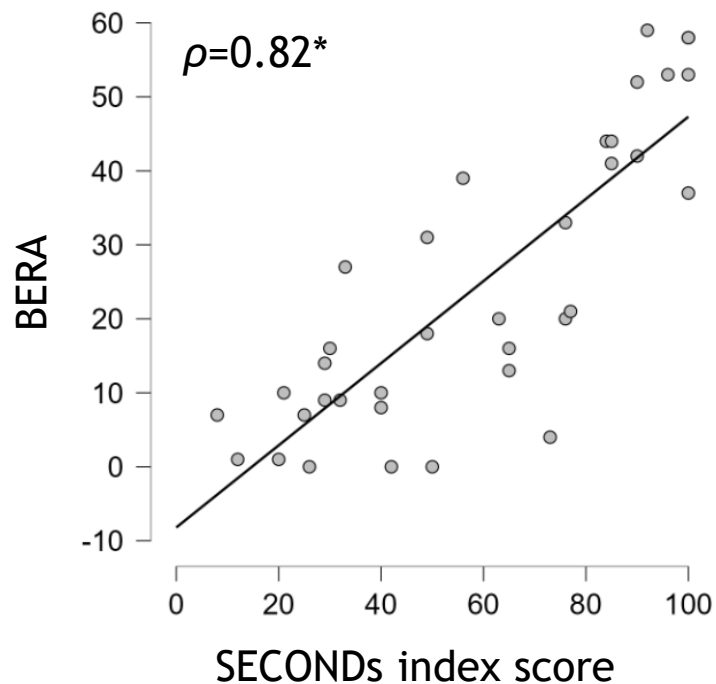
$$\alpha=0.936$$



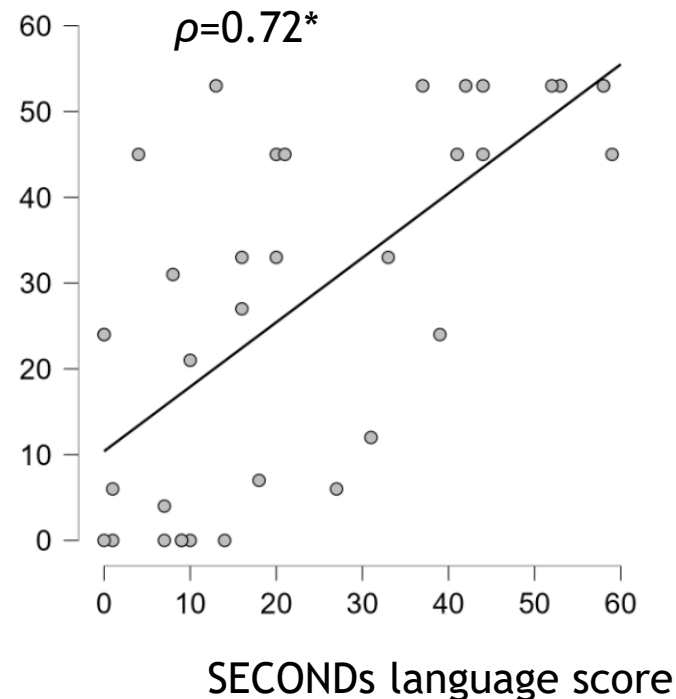


Preliminary results in post-comatose patients

Psychometric data (n = 36)



Concurrent
validity





BERA assessment tool

- ▶ First language-specific assessment developed for DoC patients
- ▶ Preliminary data demonstrate validity in post-comatose patients
- ▶ Complementary to other tools (CRS-R, SECONDS,...)
- ▶ Refined cognitive/language profiles (working memory, spatial neglect, visual agnosia)
- ▶ Better disentangle language and consciousness disorders

Thank you!

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BERA tool (French version)
available here:

