crosslinguistic insights into finger-point reading

- the CNR-BAS project -

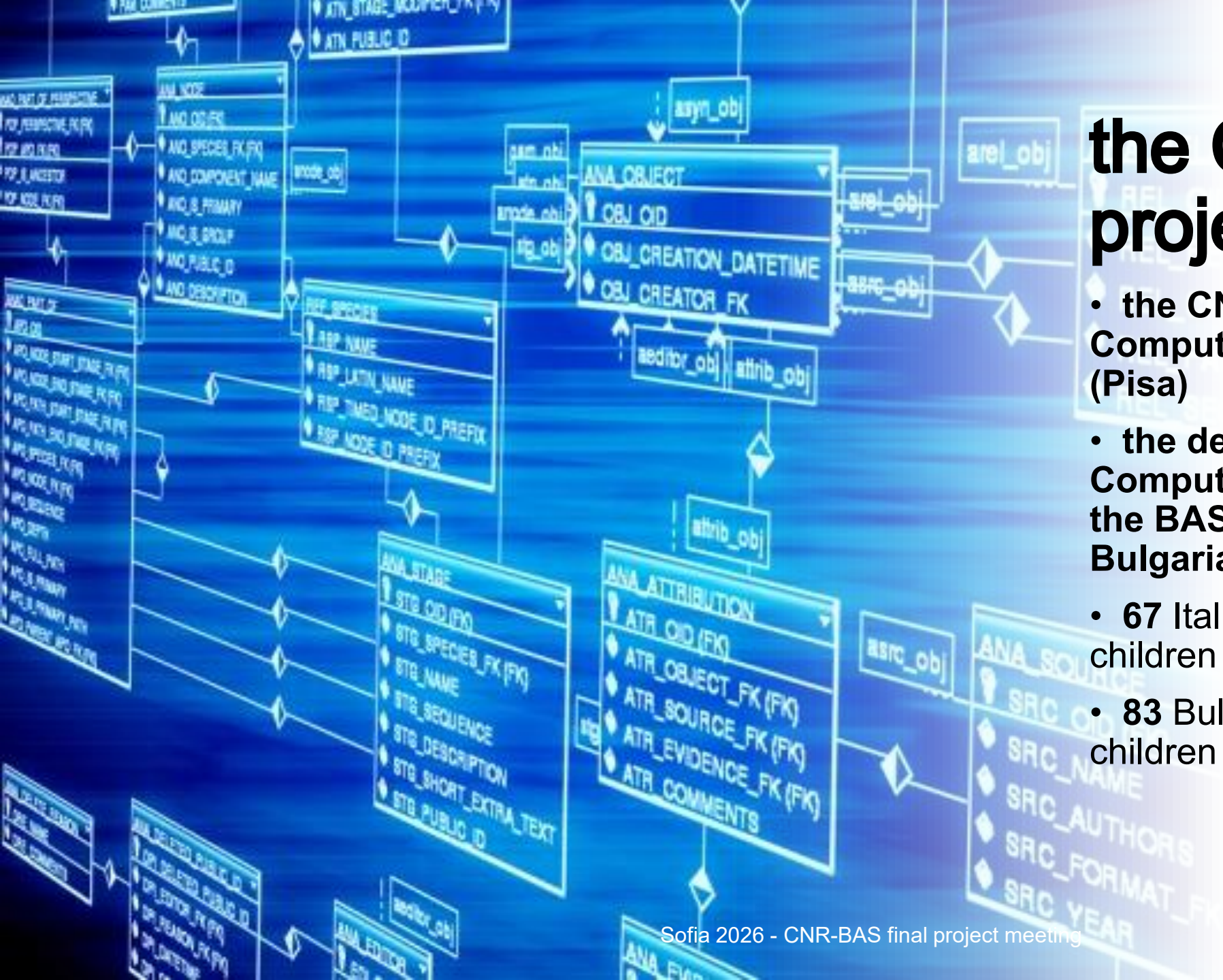
Comphys Lab - Pisa

Italian National Research Council

Institute for Computational Linguistics

finger-point reading: a multisensory task

- requires integration of:
  - a word's acoustic image
  - a word's visual image
  - a word’s articulatory plan
  - a word’s role in context
  - the tactile exploration of a word’s position in space coordinates
- provides a window on the cognitive development of a child’s reading skills

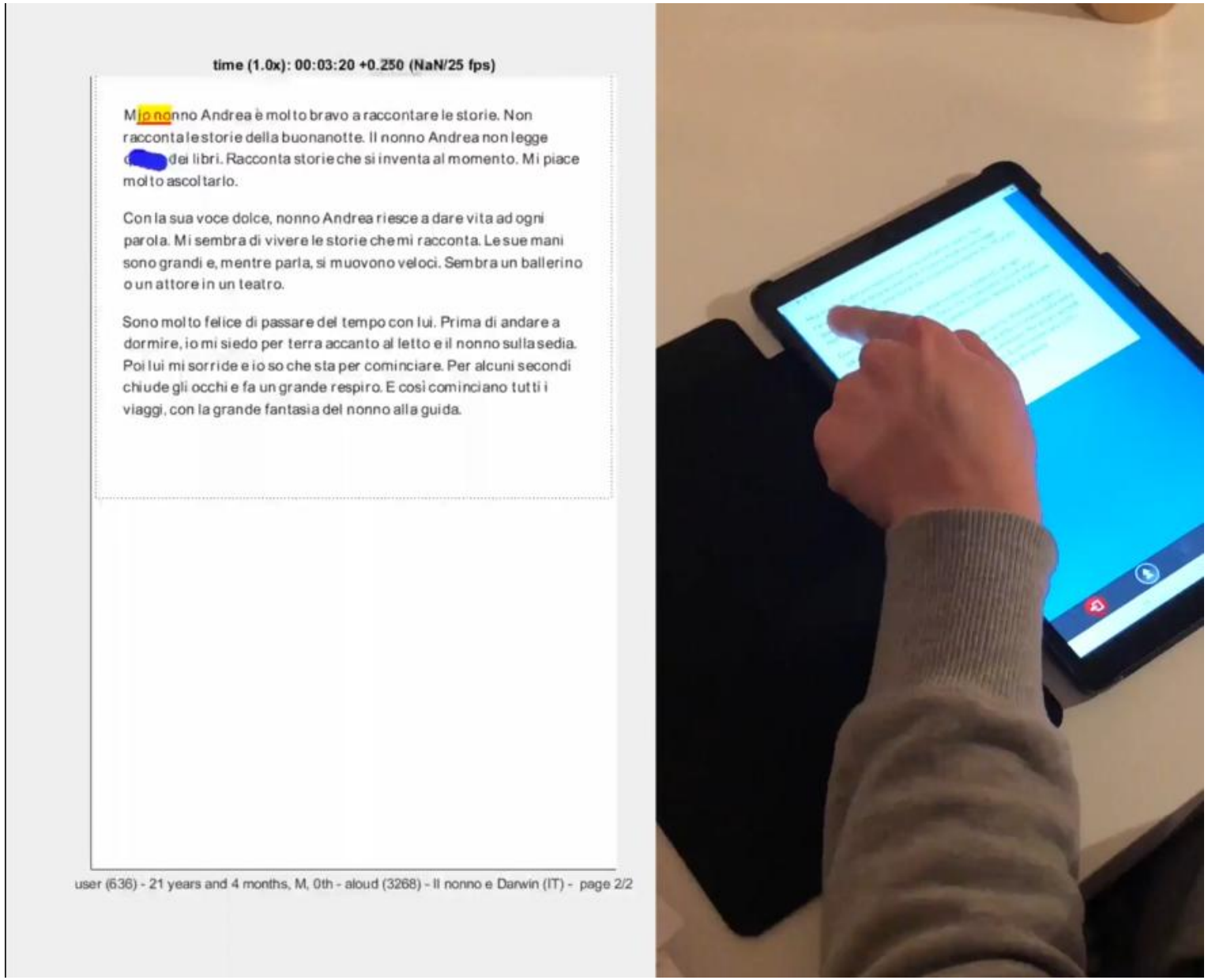


the CNR-BAS project

- **the CNR Institute for Computational Linguistics (Pisa)**
- **the department of Computational Linguistics of the BAS Institute for Bulgarian Language (Sofia)**
- **67** Italian primary school children (2 to 5 grade)
- **83** Bulgarian primary school children (2 to 5 grade)

ICT solutions for ecological multimodal collection of reading data

finger-point reading



time (1.0x): 00:03:20 +0.250 (NaN/25 fps)

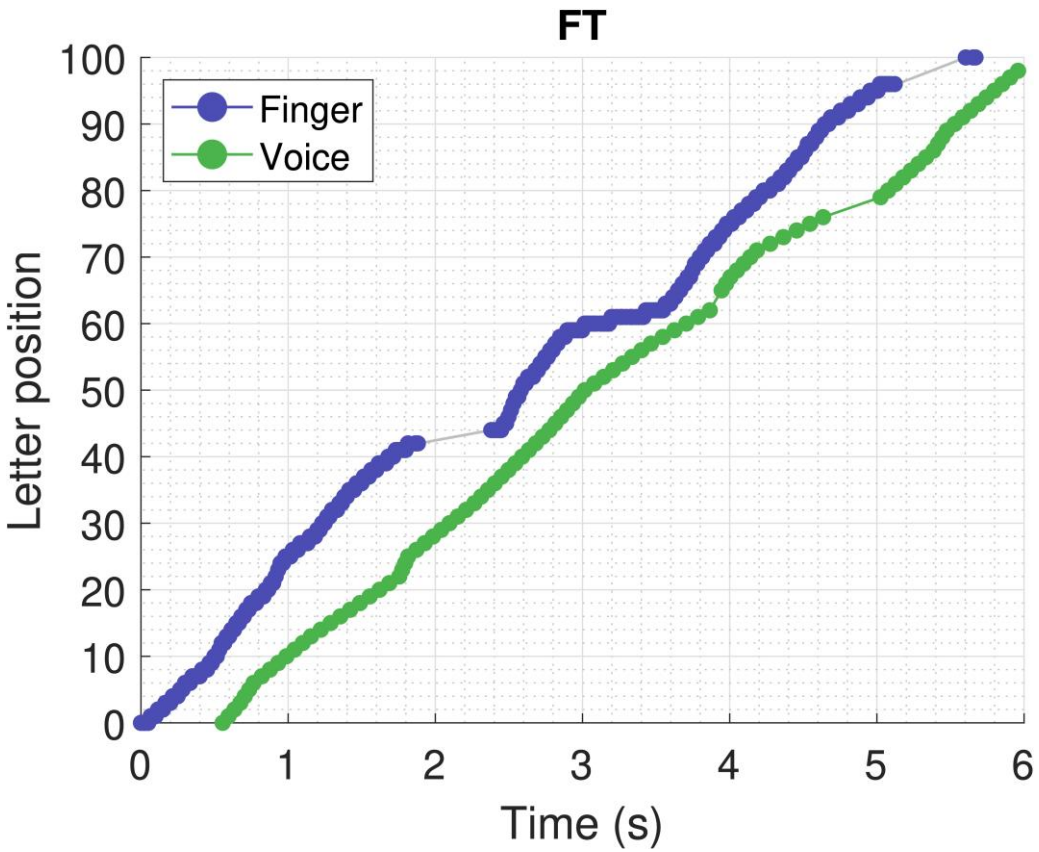
Mio nonno Andrea è molto bravo a raccontare le storie. Non racconta le storie della buonanotte. Il nonno Andrea non legge dei libri. Racconta storie che si inventa al momento. Mi piace molto ascoltarlo.

Con la sua voce dolce, nonno Andrea riesce a dare vita ad ogni parola. Mi sembra di vivere le storie che mi racconta. Le sue mani sono grandi e, mentre parla, si muovono veloci. Sembra un ballerino o un attore in un teatro.

Sono molto felice di passare del tempo con lui. Prima di andare a dormire, io mi siedo per terra accanto al letto e il nonno sulla sedia. Poi lui mi sorride e io so che sta per cominciare. Per alcuni secondi chiude gli occhi e fa un grande respiro. E così cominciano tutti i viaggi, con la grande fantasia del nonno alla guida.

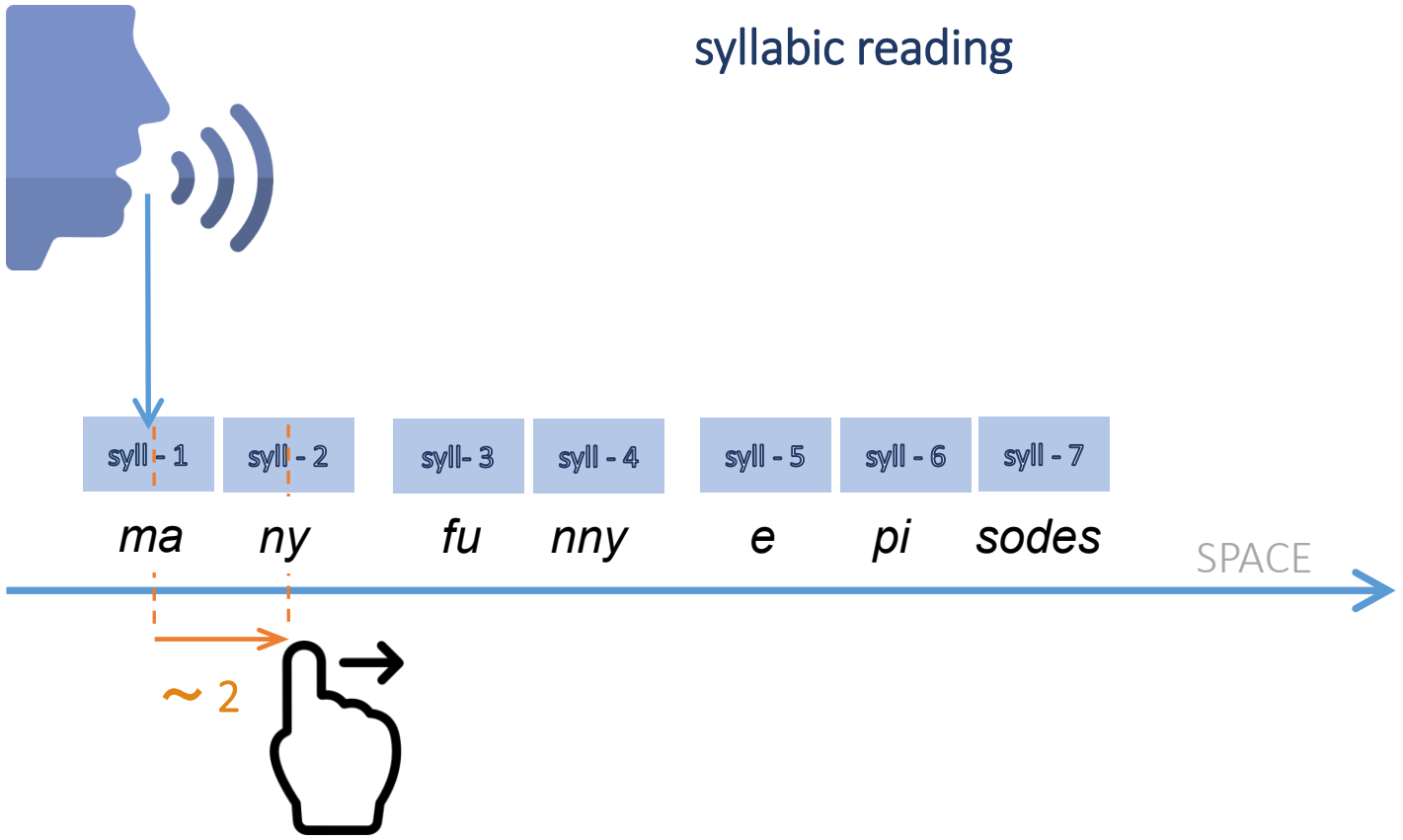
user (636) - 21 years and 4 months, M, 0th - aloud (3268) - Il nonno e Darwin (IT) - page 2/2

finger-voice time alignment

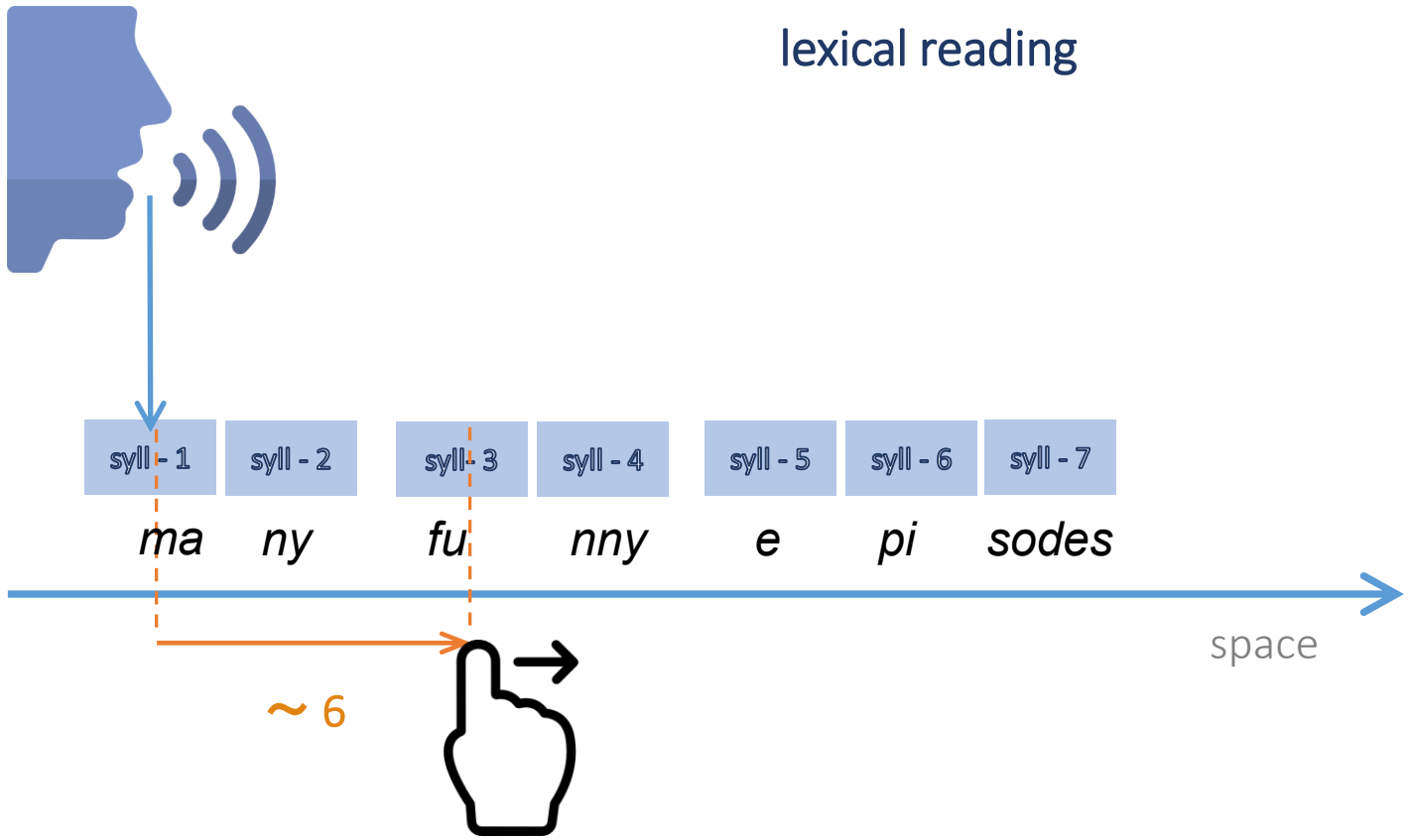


reading development

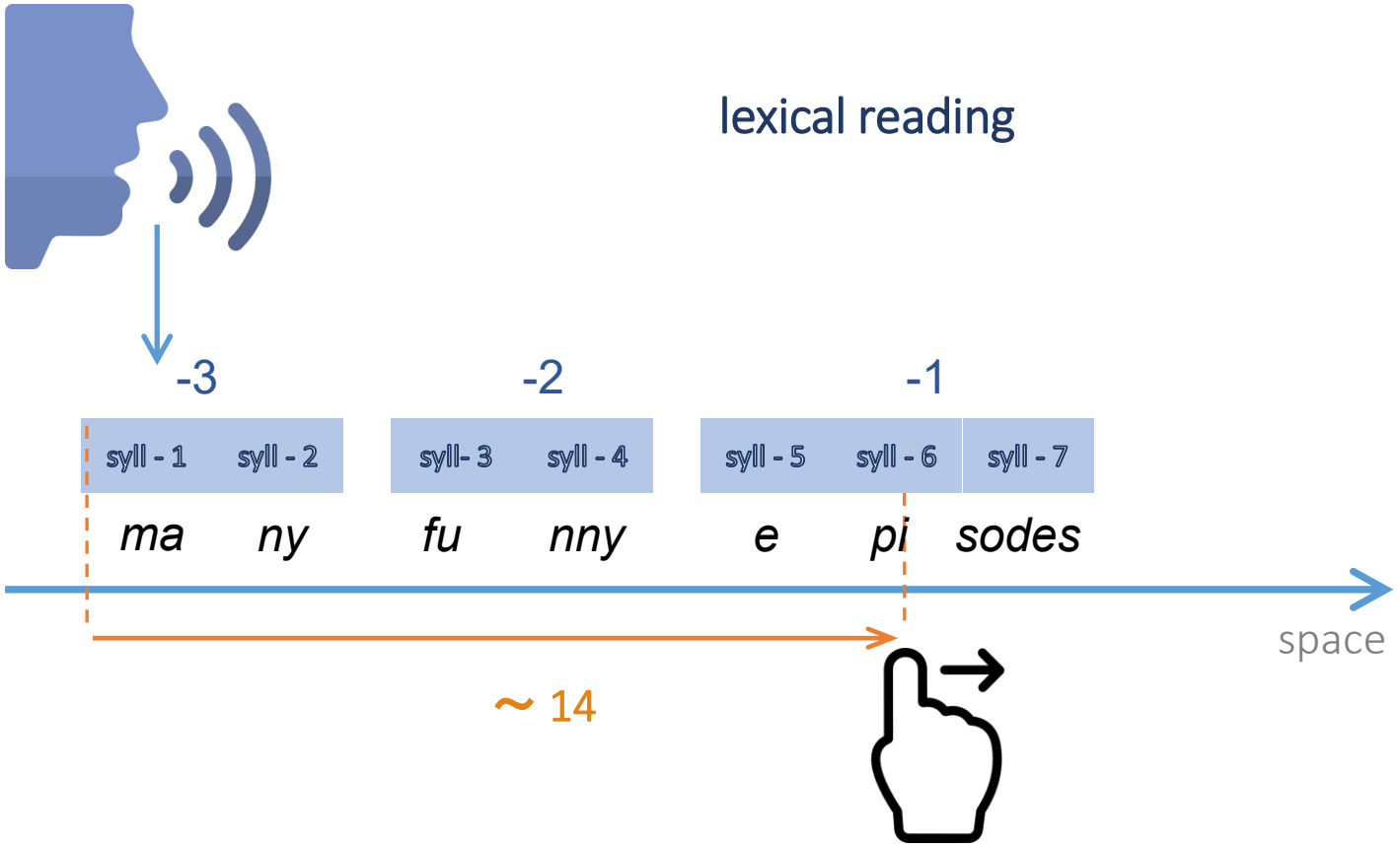
space eye-voice span



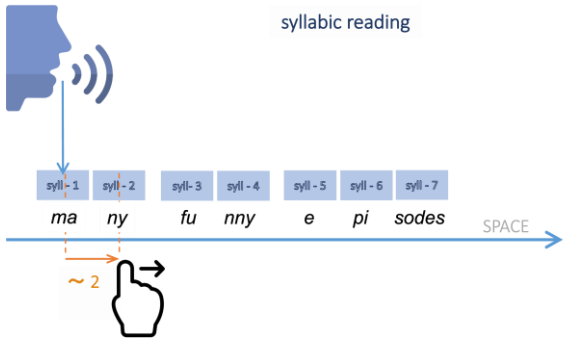
space finger-voice span



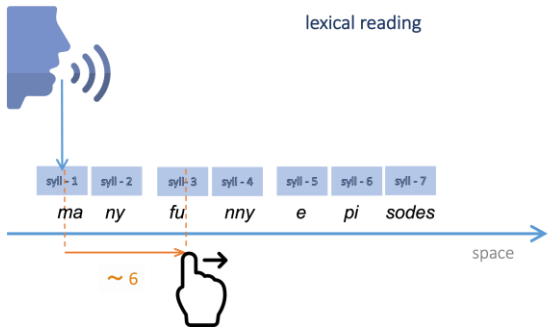
space finger-voice span



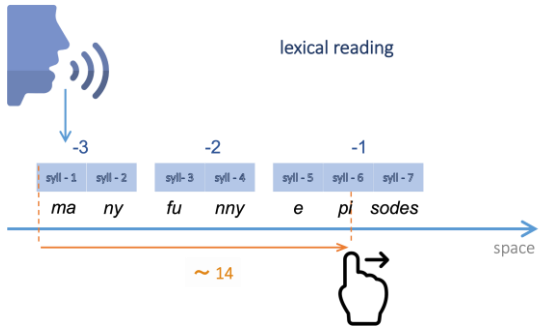
< 2 grade



< 3 grade

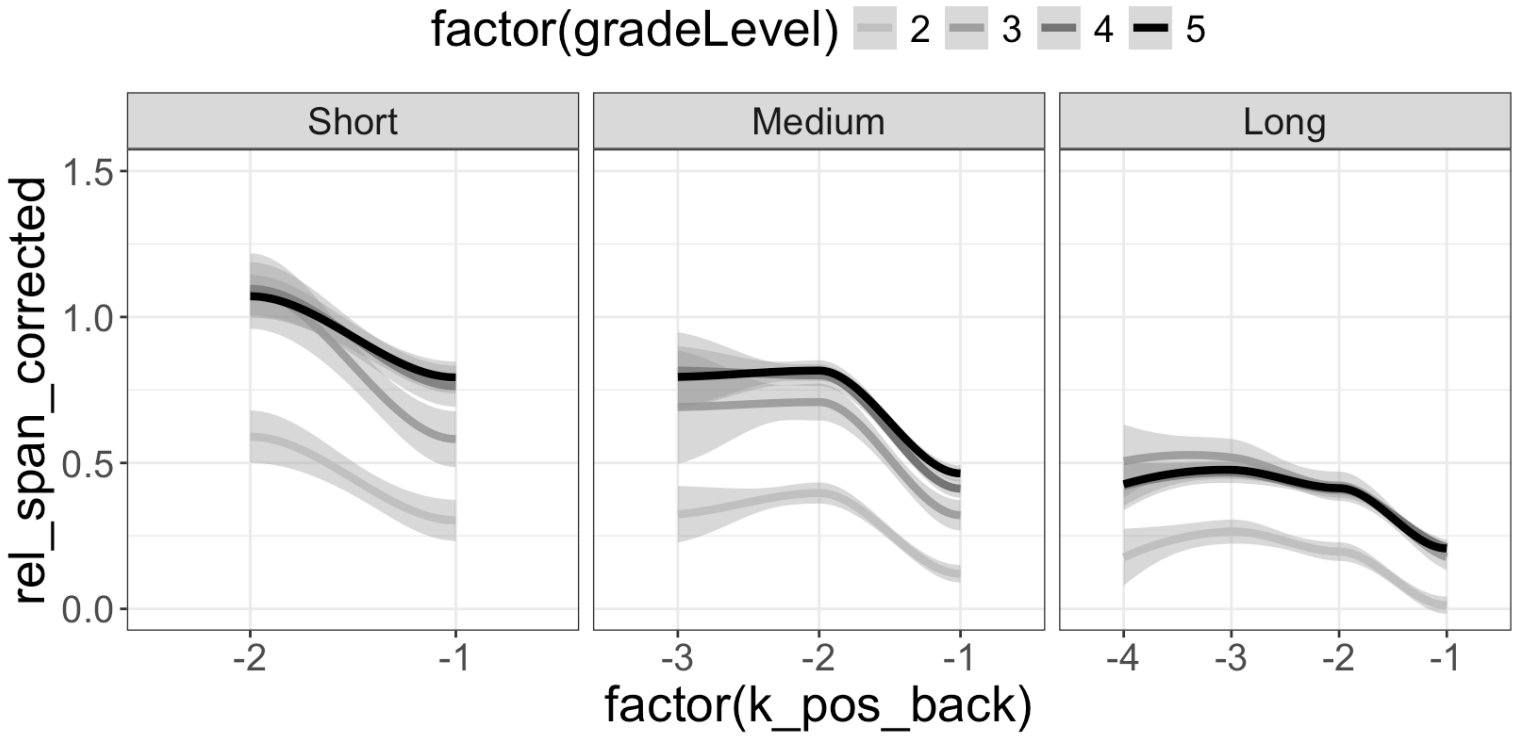


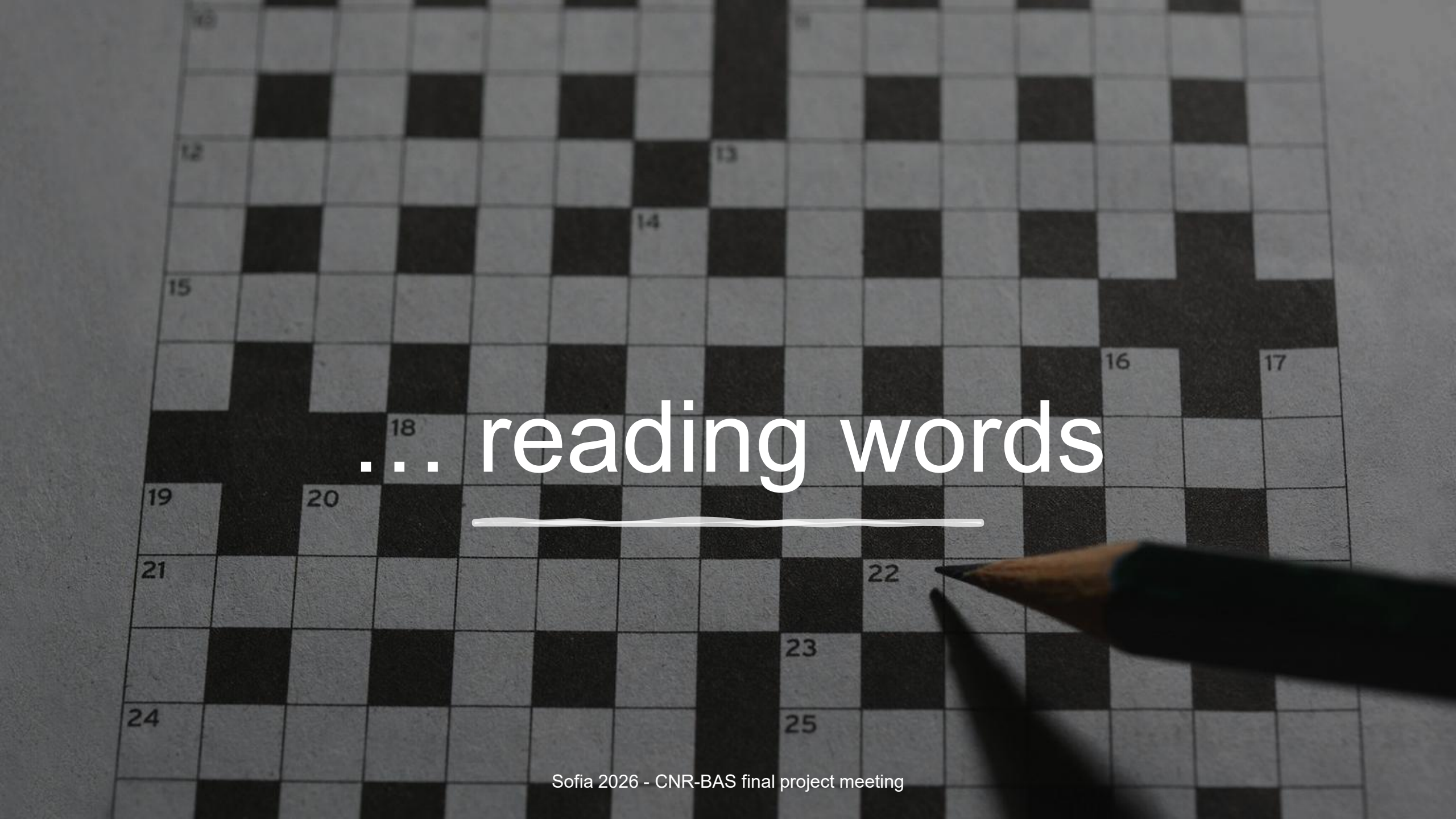
< 4 grade



reading development

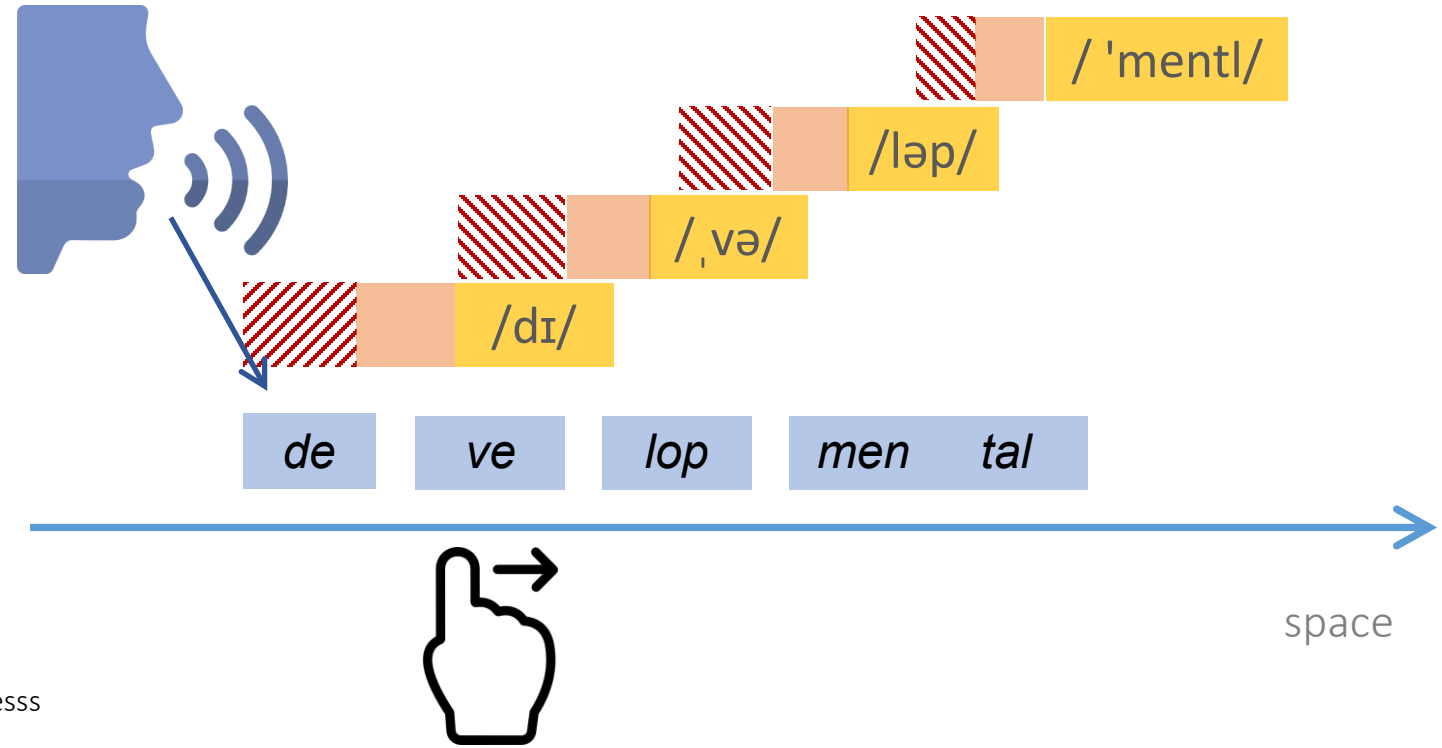
space EVS: a developmental marker





… reading words

syllabic finger-voice span



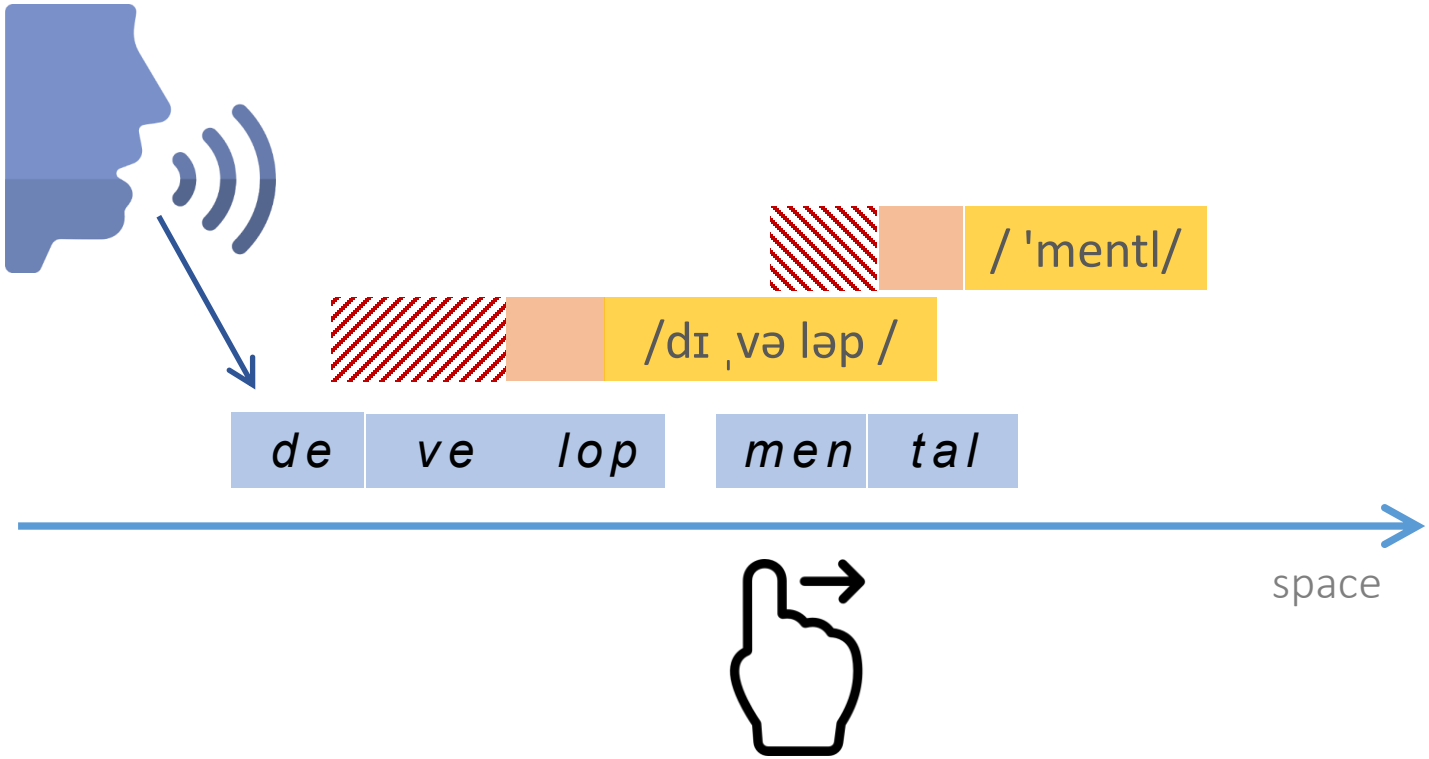
fixation

phonological accesss

articulatory coding

phonation

sublexical eye-voice span



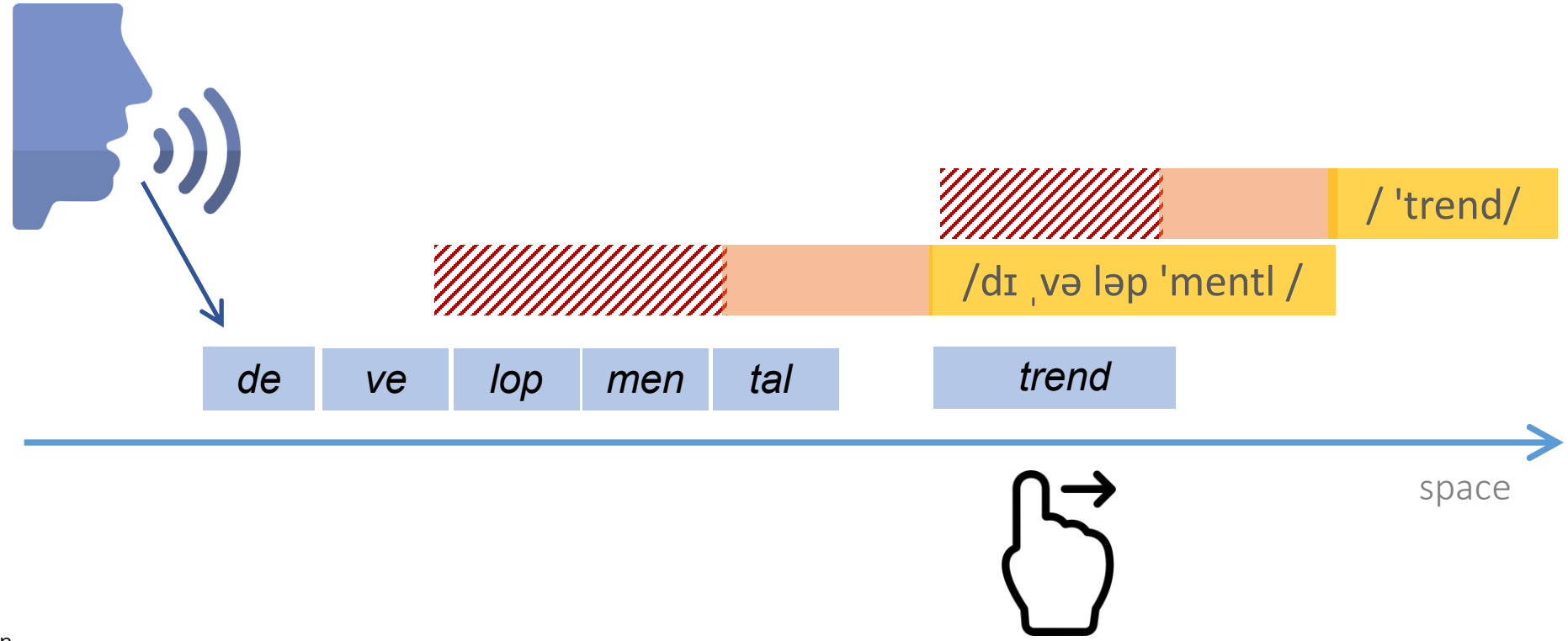
fixation

phonological accesss

articulatory coding

phonation

lexical eye-voice span



fixation

phonological accesss

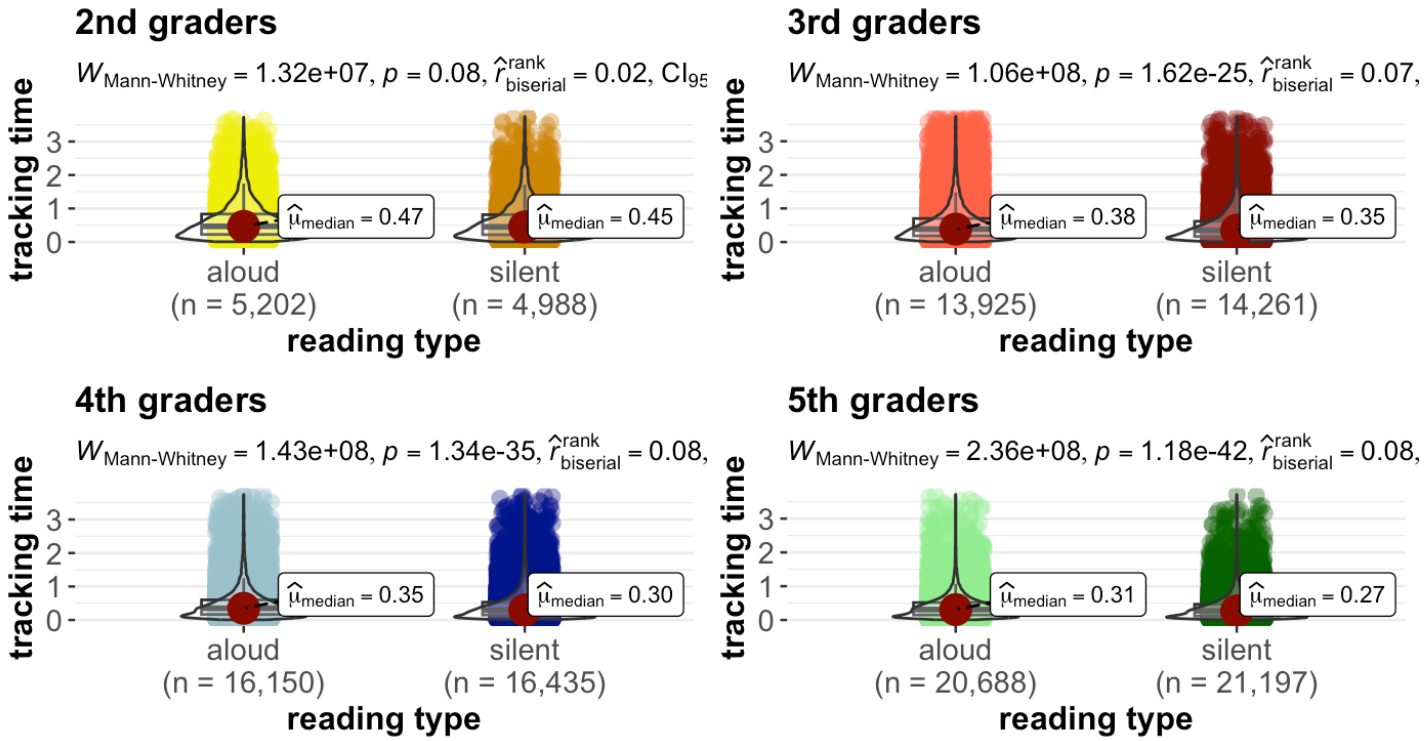
articulatory coding

phonation

reading time,
speed & comprehension
of Bulgarian and Italian early graders

Bulgarian

tracking times
in oral
and
silent reading

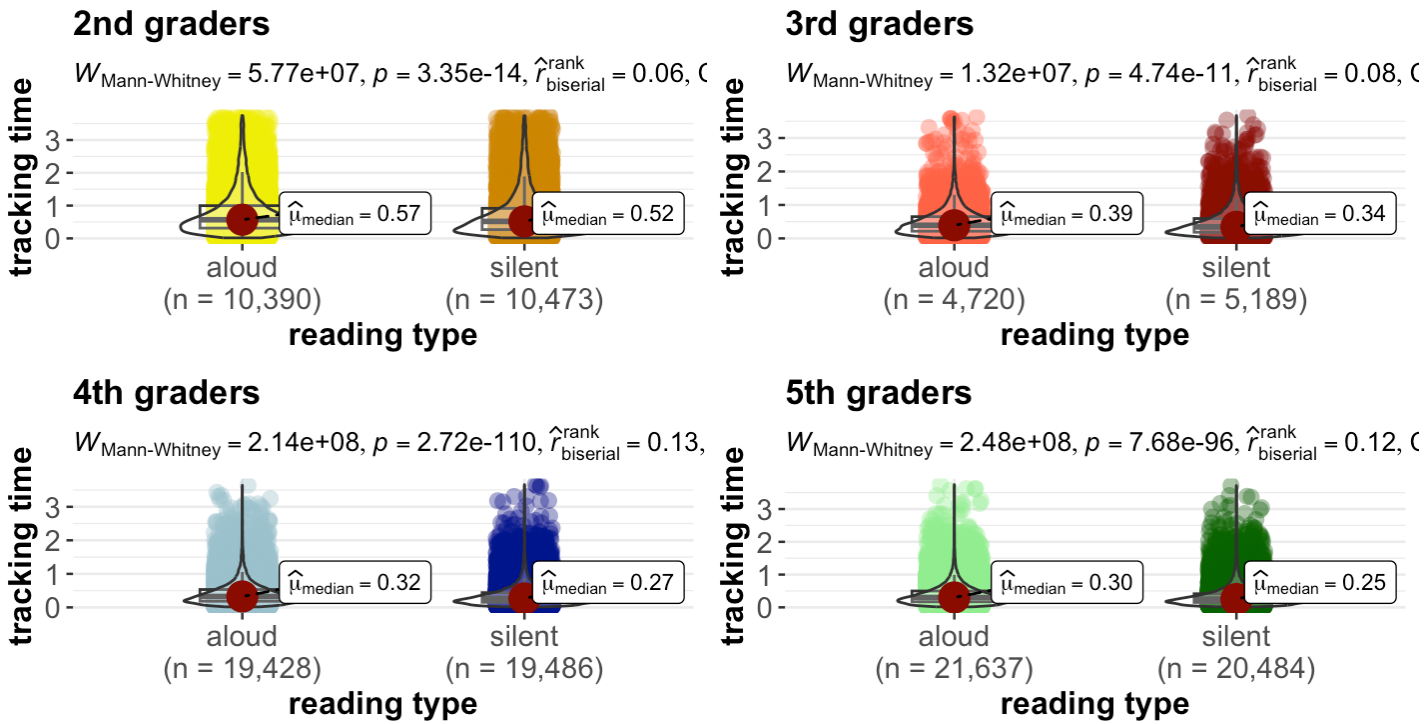


Automation Index = $\frac{silent\_speed}{aloud\_speed}$ $increases\ 2 < 3 < 4 \sim 5$

Comprehension = $aloud\_reading > silent\_reading$

Italian

tracking times
in oral
and
silent reading



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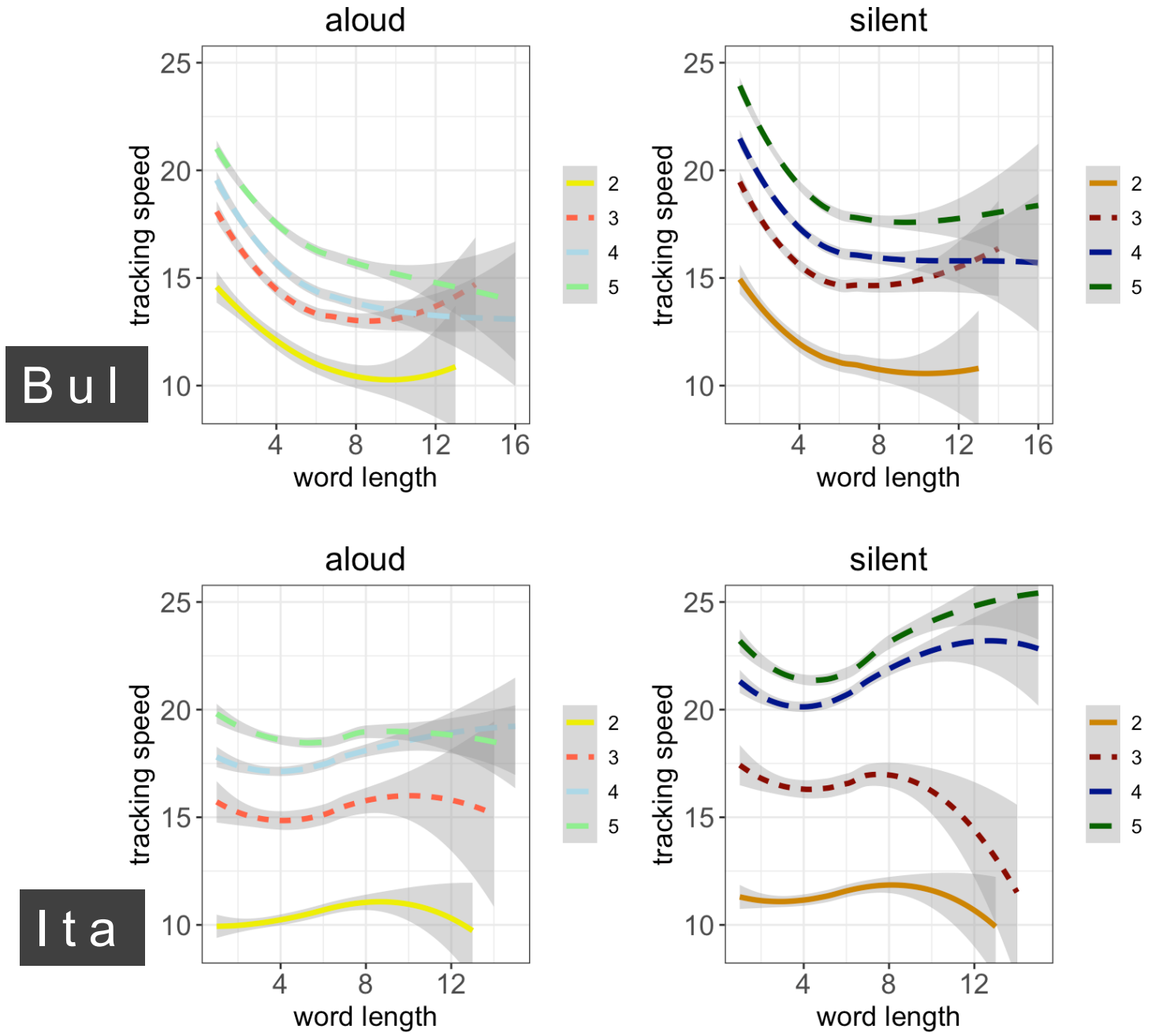
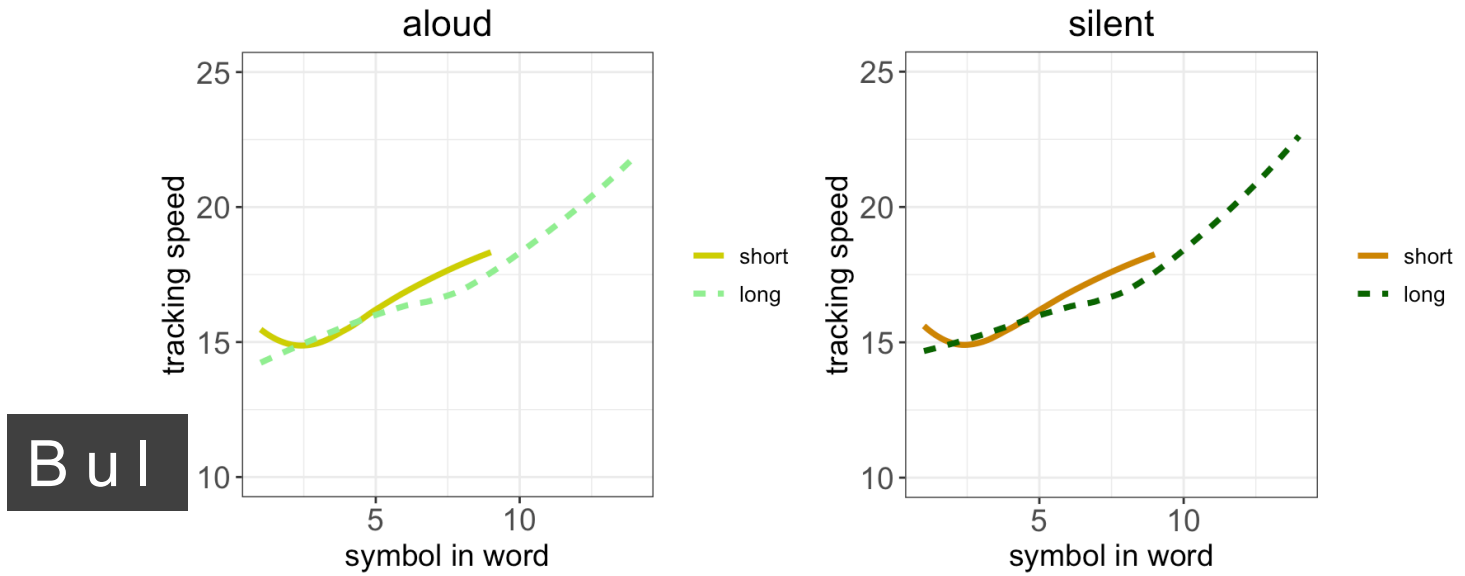
speed & length

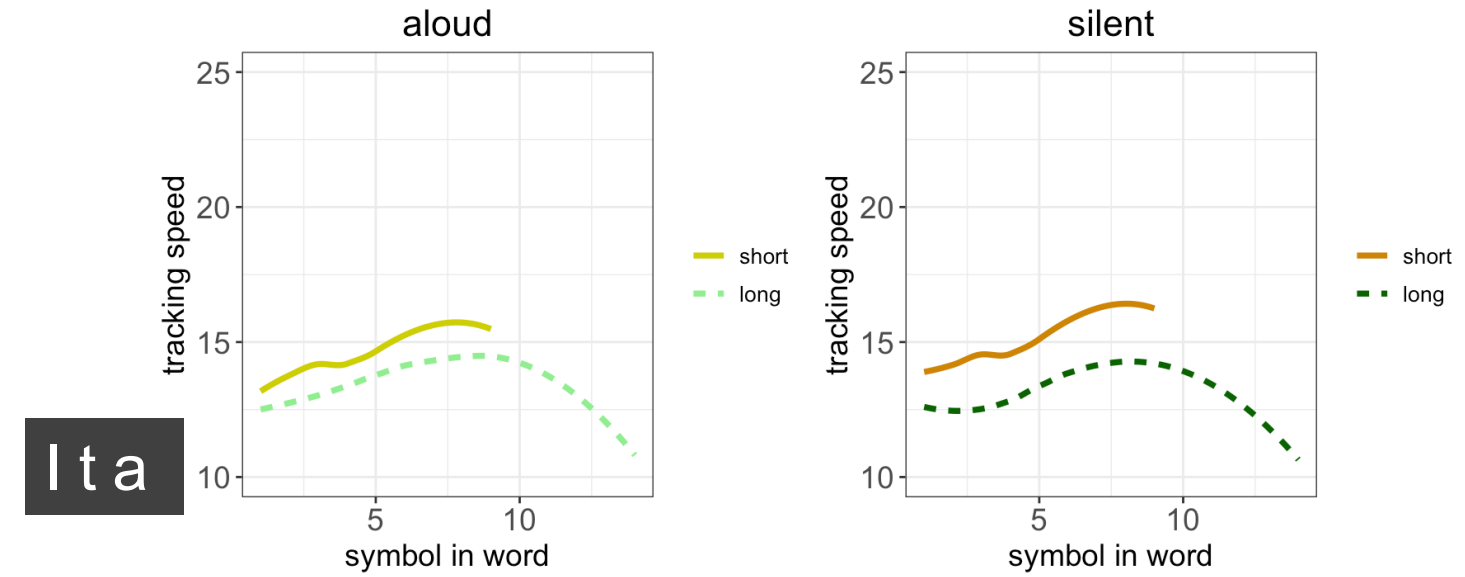


speed across short & long words (2 & 3 grade)

Bul

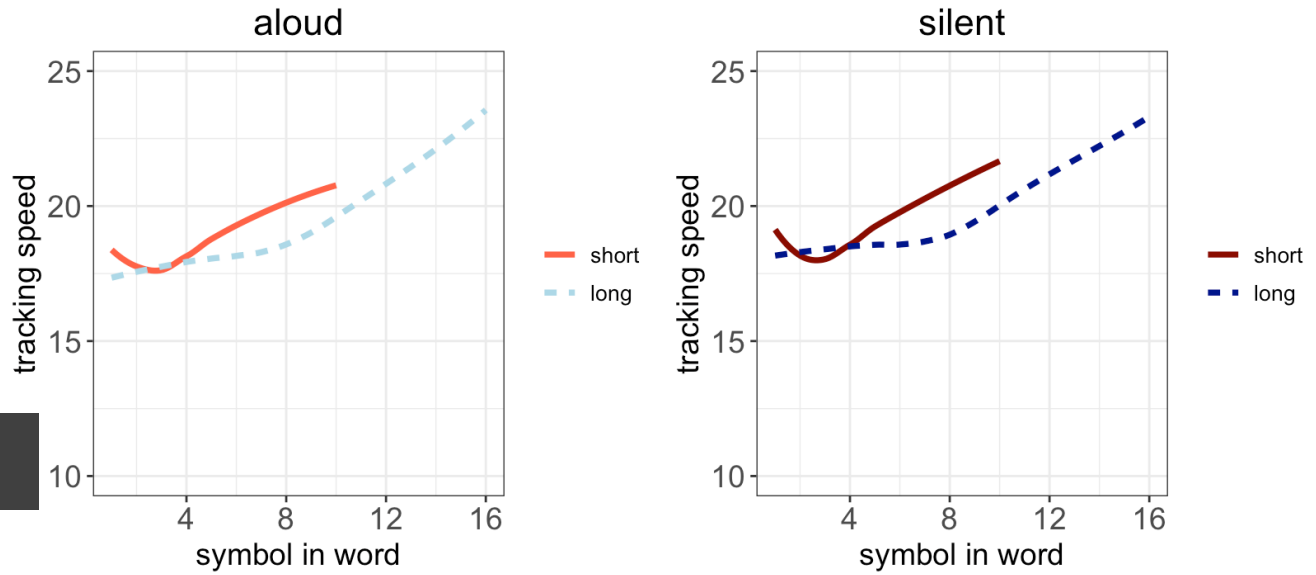


Ita

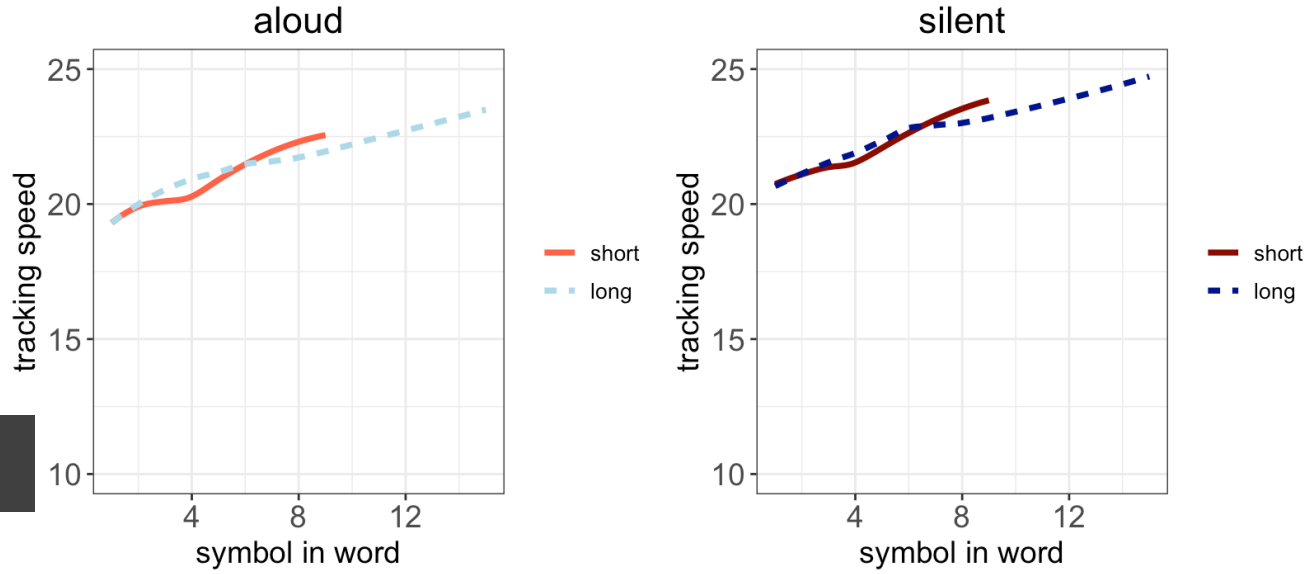


speed across short & long words (4 & 5 grade)

Bul



Ita



upshots

01

common cross-linguistic patterns in reading development and important differences due to age and script transparency

02

oral reading helps children focus on both decoding and comprehension and should be practised extensively in early grades

03

reading well requires much more than just decoding, and includies extensive phonological, morphological and syntactic awareness