# Designing a Sentence Repetition Task in LSF

## A new approach to assess LSF abilities

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# The Sentence Repetition Task (SRT)

- Since the 70's, SRTs are frequently used for testing Vocal Languages (among others Conti-Ramsden et al., 2001; Chiat et al., 2013)
- Provide **a good estimation of language processing and development**
  - in **various populations**
    - Native speakers
    - Bilingual speakers
    - Second language learners
    - Children with language disorders such as SLI or adults with aphasia ;
    - Socioeconomic disabled populations.
- Present several **technical advantages**
  - Easy and quick to run
  - Assess explicit linguistic structures previously specified
  - Not too time-consuming

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# Sign language SRT

- More recently, SL Repetition Tasks have been **adapted** to measure the language ability of deaf people
  - **ASL**
    - adults; native, late signers and hearing L2 signers (*Hauser et al., 2008 ; Suppalla et al., 2014 ; Morford, 2003*)
  - **BSL**
    - adults; natives, early and late signers (*Cormier et al., 2012* )
    - deaf SLI children and deaf controls (*Marshall et al., 2015*)
  - **LSF, LIS, LSC, and DGS**
    - Native signers and late signers, children and adults (SignMet Project; for LSF: *Bogliotti et al., in prep ;* for LIS : *Rinaldi et al., 2018*)

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# State of the art of LSF assessment tools

- **None of the existing tools are not used**
  - TESLSF, *Niederberger et al., 2001* (too long and difficult to score)
  - LSF receptive skills tests, *Courtin et al. 2010* (adaptation to improve)
  - EVASIGNE: battery of LSF assessment (Bogliotti & Blondel. See Puissant-Schontz poster, 2018)

- **Here, our goal is to fill this gap by providing a better screening tool in LSF,** for clinical, educative and scientific communities.

- **Our assessment will take into account the specificities of deaf populations** in terms of:
  - Age of acquisition
  - Length of exposition
  - Type of input

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# The present study

- Our task is inspired by the BSL-SRT and **adapted to French Sign Language and French cultural constraints** (European SignMET project, Italian PI CNR Cristina Caselli and Pasquale Rinaldi)

- Deaf people and SL linguists have discussed the syntactic elements and semantic interest of the sentences.

- **20 sentences**, varying in length and syntactic complexity.
- **10 minutes long**

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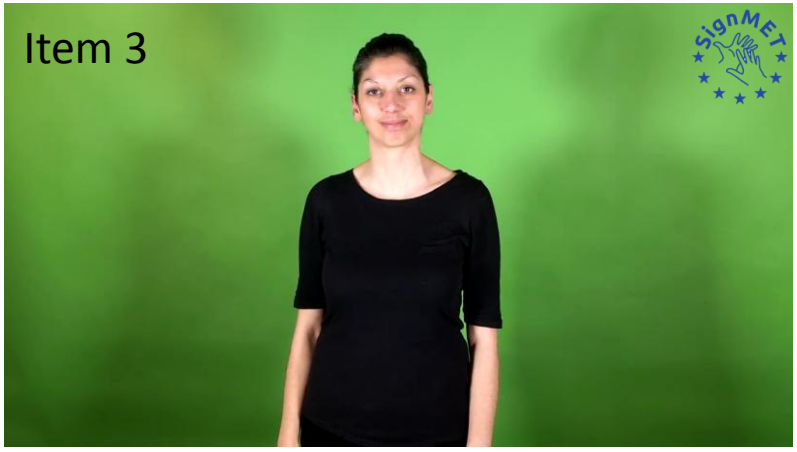
# Stimuli

| Item | Sign Span | Syntactic Complexity | Sentence content and inflections<br>GLOSE & *approximate translation* |
|---|---|---|---|
| 3 | 3 | Easy | FRIENDS – MEET CL index: person who meet– KISS<br>*Friends meet and kiss each other* |
| 7 | 4 | Intermediate easy | BONE - SMALL (SASS) - DOG – DISAPPOINTED<br>*The dog is disappointed because its bone is small* |
| 14 | 5 | Intermediate difficult | CHILDREN - HAT - CL: hat on the head – CL: put the hat on the child's head – CL: match the hat to the child's head<br>*I take the hat I have on my head and put it on the child's head* |
| 16 | 5 | Complex | BOX – CANDY + CL: box – EAT + CL: box – ANY CANDY LEFT + CL: box - DISAPPOINTED + CL: box + CL: any candy left<br>*I ate all candies I had in the box, it remains no more and I'm disappointed* |




# Participants and procedure

- **62 children** (38 female)
  - 34 native signers
  - 28 late signers
- Age: **6;01 to 12;09 years.**
- All children received a bilingual education and used **LSF** as their **preferred language**
- None of the children had other cognitive and / or social impairments.
- Instruction: **to repeat the sentences exactly as the signer in the video.**
- The children's repetition were video-recorded in order to score their repetition abilities.

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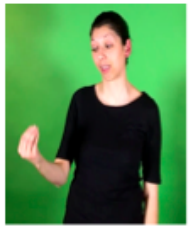
# Some repetitions

*« I take the hat that I have on my head and I put in on the child head »*

# Scoring

| TARGET SIGN | GLOSS | Is the sign is REPEATED ? | If the sign is repeated, is it DIFFERENT from the model ? | If the sign is DIFFERENT, at which level is the difference? | | |
|---|---|---|---|---|---|---|
| | | | | Linguistic criteria | | Difference |
|  | CHILD (UL) | YES or NO | YES or NO | Repeated sign | Substitution _ regionalism | |
| | | | | | Substitution _ other sign | |
| | | | | | Variant of the target sign | |
| | | | | UL - Manual Parameters | Handshape | |
| | | | | | Movement | |
| | | | | | Orientation | |
| | | | | | Place | |
| | | | | CL Dominant Hand | CL size | |
| | | | | | Handshape | |
| | | | | | Movement | |
| | | | | | Orientation | |
| | | | | | CL-DH non held (non held reference) | |
| | | | | | Inflection | |
| | | | | | Wrong CL-DH location and conserved structure | |
| | | | | | Wrong CL-DH location and non conserved structure | |
| | | | | CL Non Dominant Hand | CL NDH size | |
| | | | | | Handshape | |
| | | | | | Movement | |
| | | | | | Orientation | |
| | | | | | CL NHD non held (non held reference) | |
| | | | | | Inflection | |
| | | | | | Wrong CL-NDH location and conserved structure | |
| | | | | | Wrong CL-NDH location and non conserved structure | |
| | | | | Laterality | Dominant Hand - Non Dominant Hand relation | |
| | | | | Facial Expression | Lexico-semantic | |
| | | | | | Grammatical + CL | |
| | | | | Eye gaze | Eye gaze | |
| | | | | Mouth actions | Mouthing | |
| | | | | | Mouth gestures | |
| | | | | Chest | Lexico-semantic | |
| | | | | | Grammatical | |

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# Results

| | Native | Late |
|---|---|---|
| 6-7 | 12 | 10 |
| 8-9 | 11 | 10 |
| 10-12 | 11 | 8 |

- We expected differences
  - General repetition abilities according to AOA and CA
  - Lexical errors (rate and types)
  - Phonological errors

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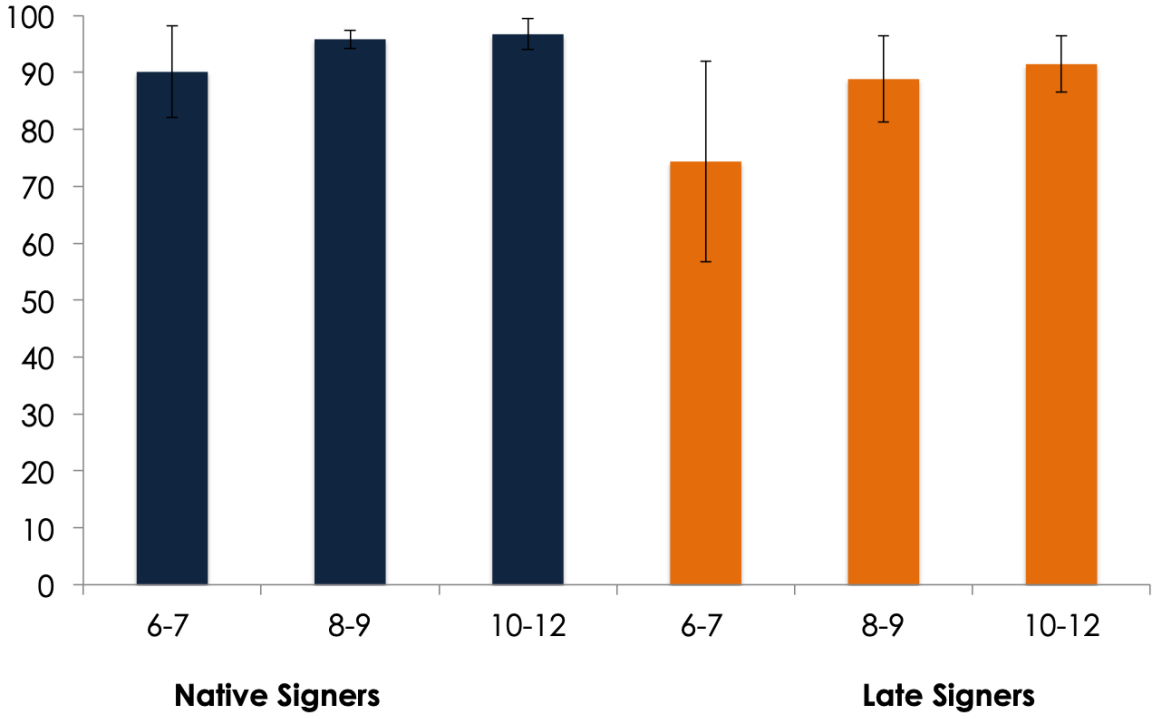
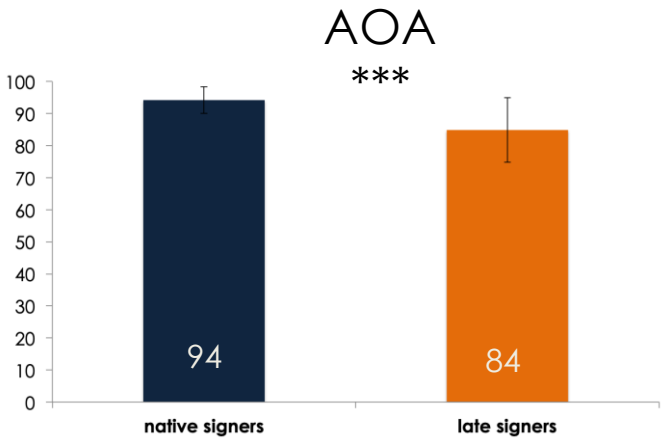
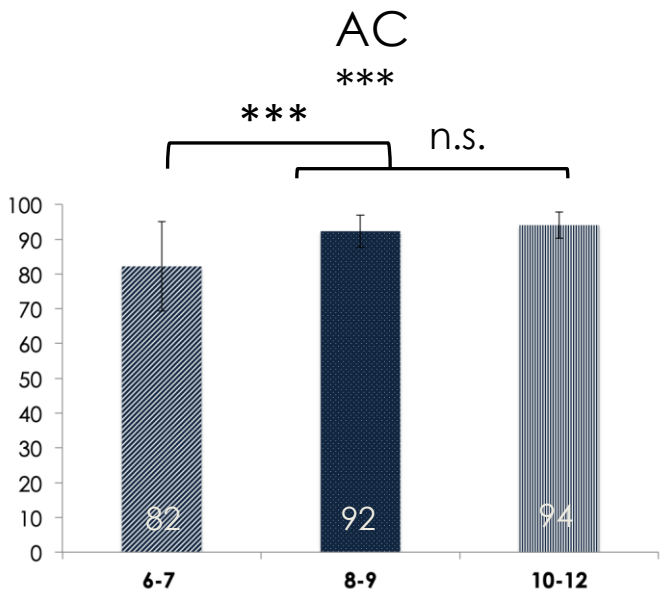
# % of repeated signs



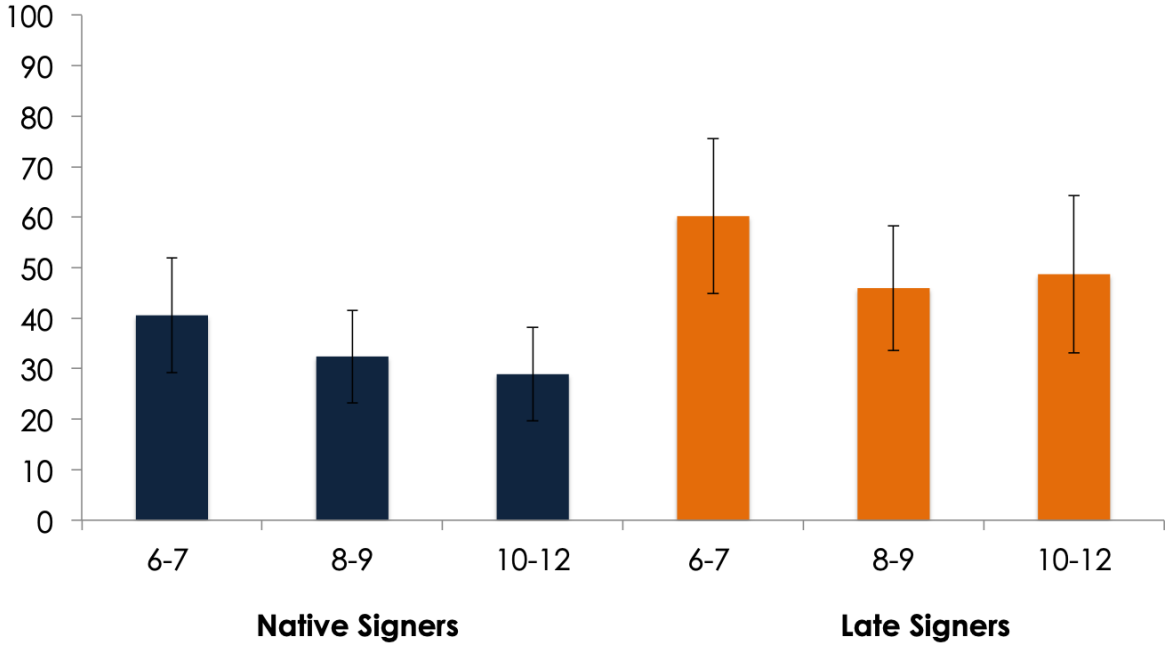



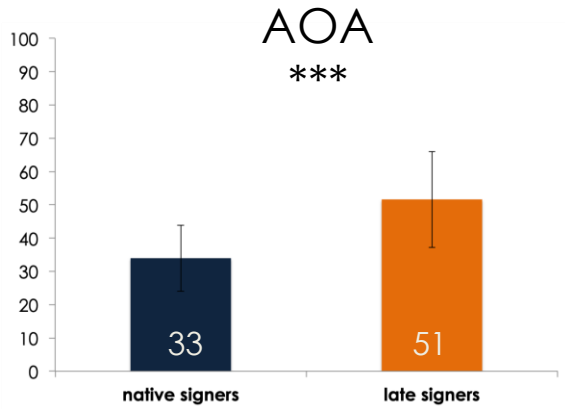



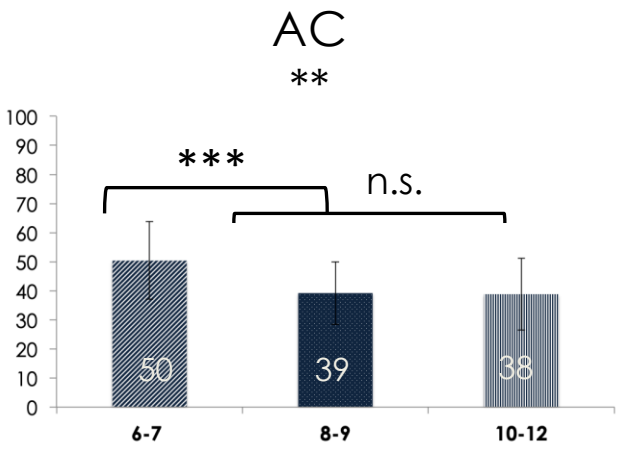



*** p<.001; ** p<.01; * p<.05

# % of repeated signs with errors



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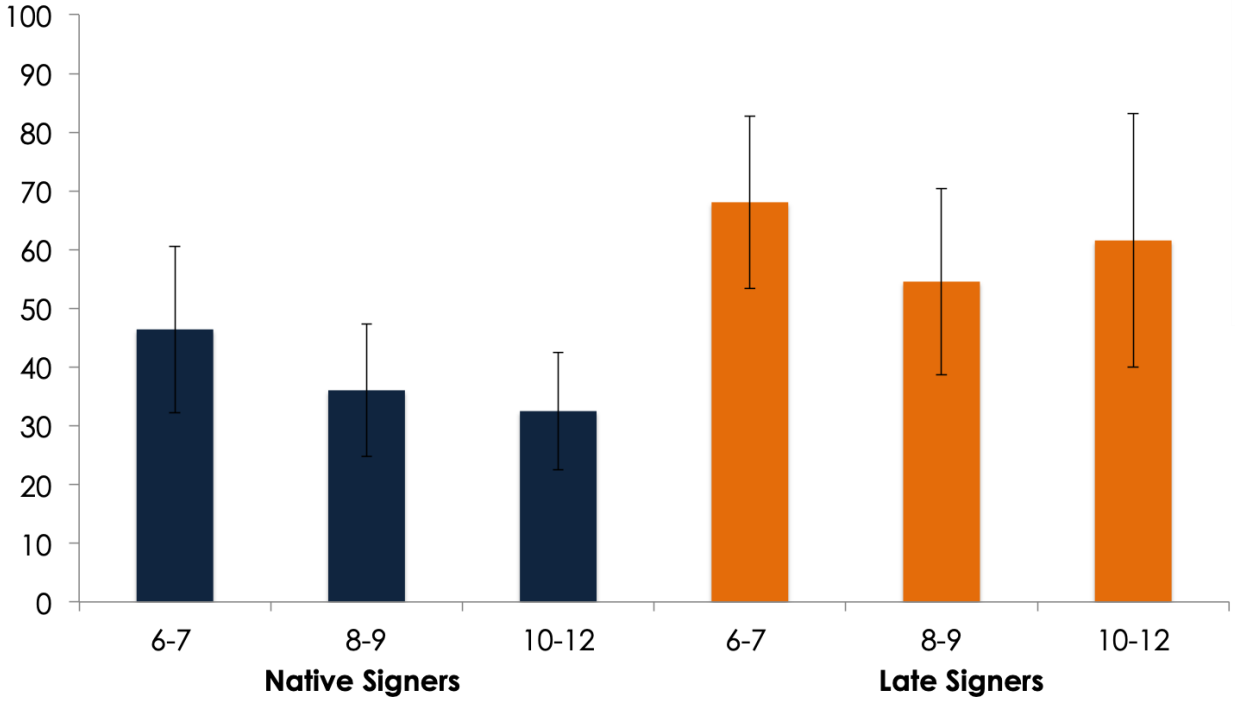
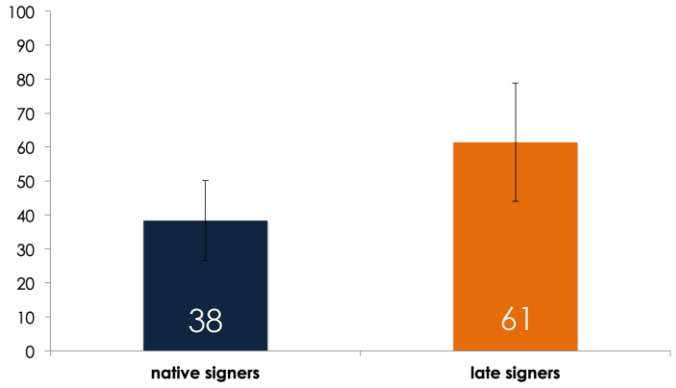
# Lexical errors



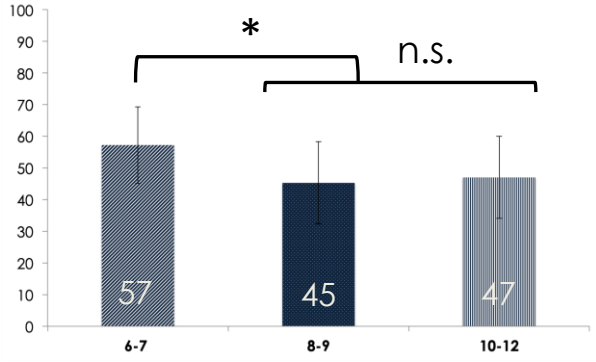

AOA

***




AC

*



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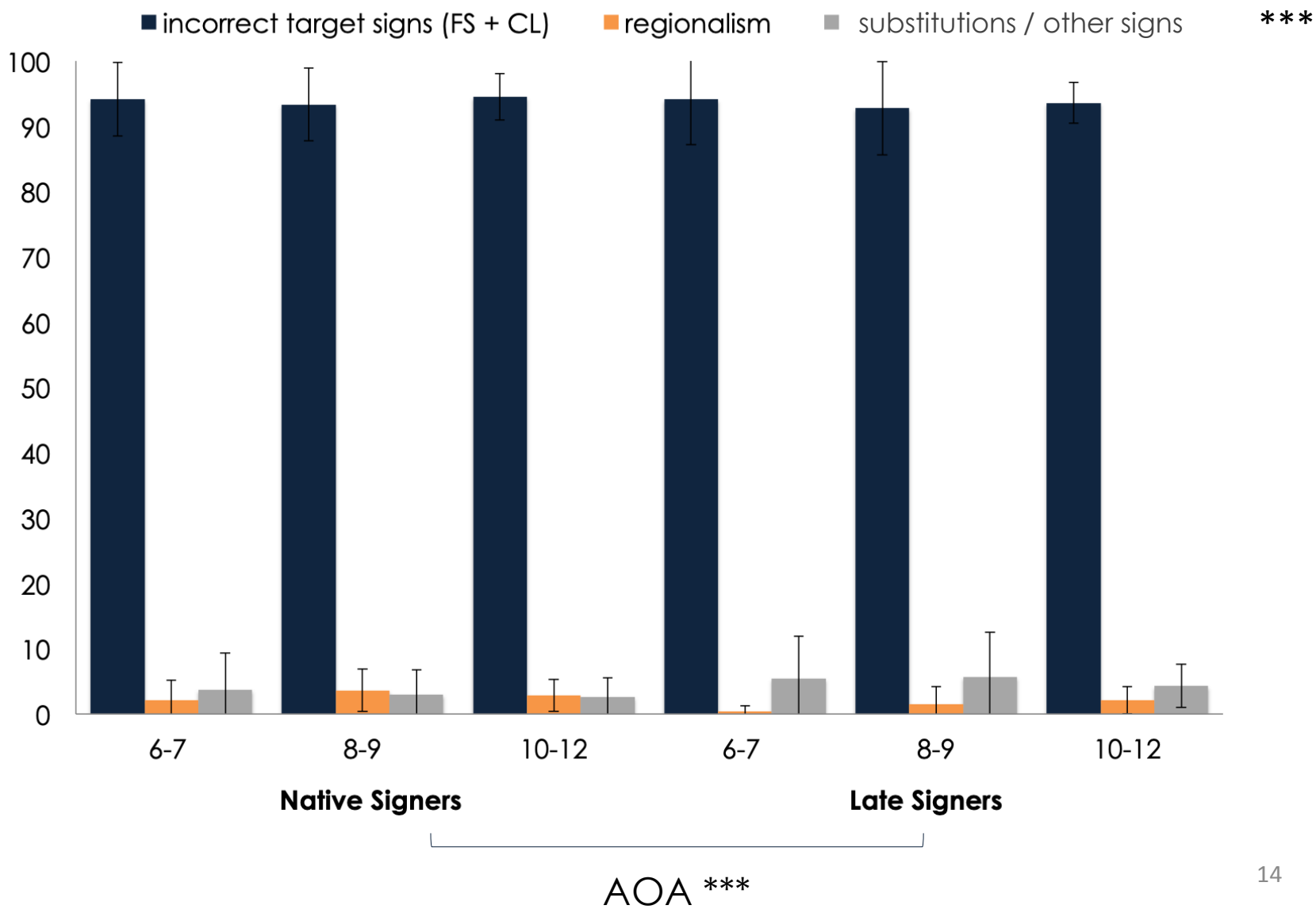
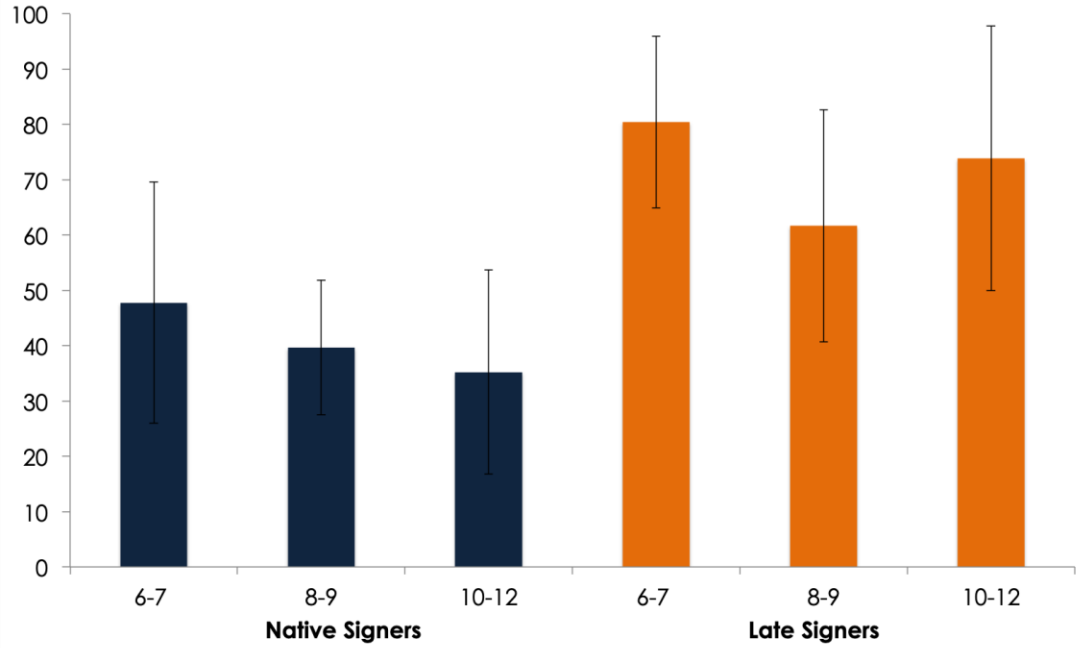
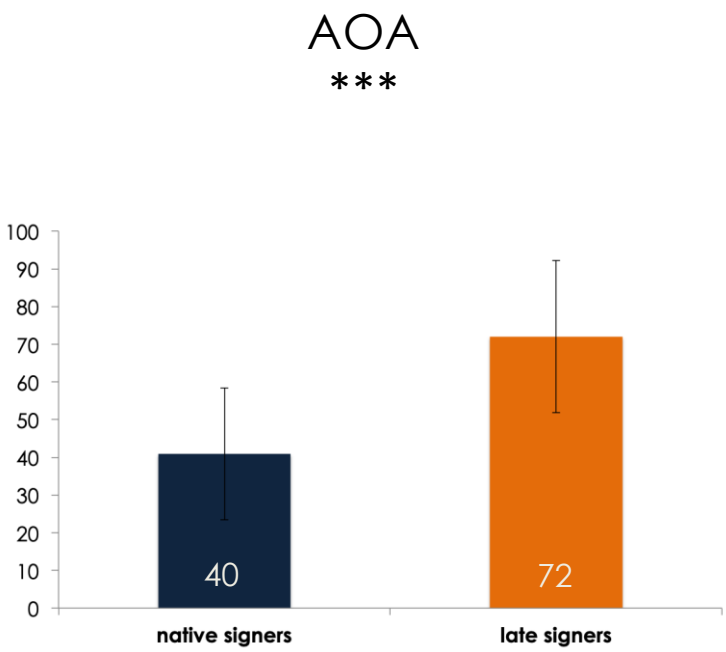
# Types of lexical errors



# Phonological errors

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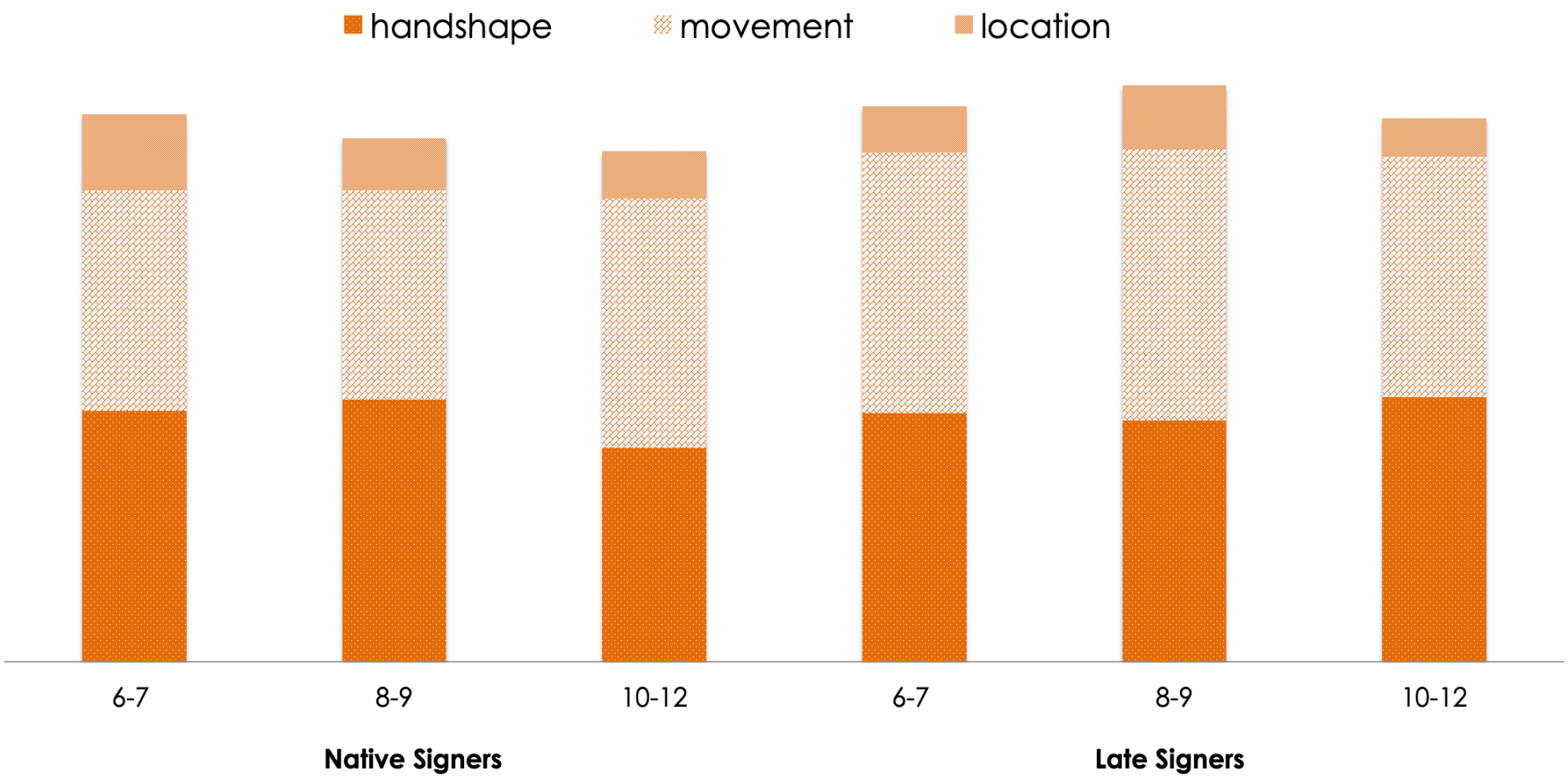
# Types of phonological errors

type of parameter ***

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# Discussion

- The adaptation for LSF is successful.
- Highlights differences in repetition abilities between native and late LSF signers according to AOA, developmental tendency, length of exposition.
- Replication of previous SL studies showing **that movement and handshape are the most complex** phonological parameters to acquire. Location is mastered early.
- Usage-based explanation: **experienced structures could be repeated better.**

# Perspectives

- We need qualitative analyses
  - Phonetic analysis : Measurement of failed sign **phonetic complexity**
  - **Sign stream** (ratio of number of signs / minute) : Late signers seem slower in their production.
  - **Semantic analysis** : in late signers, are substitutions mostly gestural or lexical ?
- Further investigation could be run on Specific Language Impairment for deaf children in order to assess the **screening power** of SRT.
- To demonstrate whether SR **abilities are predictive** of other language skills.

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