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Using a Sentence Repetition Task in French Sign Language: a new approach to assess LSF abilities

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I. The Sign MET Project
Our aim was to develop new methodologies and tools in several sign languages (LIS, LSF, DGS, LSC) to order to evaluate SL comprehension and production skills in deaf children (4-11 y.o.)

- Linguistic goal: to define methodologies to study sign language acquisition and master processes in deaf signing children.
- Clinical and rehabilitative goal: to diagnose language disorders in sign language.
- Educational goal: to assess linguistic skills and strengthen these skills.


II. The assessment of LSF skills: a short review
There is no existing specific test operational enough that assesses linguistic abilities in LSF. Two tests have been developed previously: lack of several methodological features for the first one (too long for caretakers to administer, need to have a strong linguistic knowledge, etc.; TELS, 2001) and failure to adapt the second one (LSF Receptive Skills test adapted from BSL Receptive Skills test, 2010).

As a result, caretakers, teachers and others transpose vocal tests to SL tests without taking into account the linguistic specificities of SL.

Coding

III. Assessment of repetition skills in sign languages
In vocal languages, the repetition ability is a strong marker of general linguistic abilities (Marshall et al., 2014). It is a reliable marker of language development and language processing. It requires robust linguistic representations, accurate phonological skills. Gestural skills and short-term memory are not sufficient to recall a longer and/or syntactically complex sentence correctly.

Sentence Repetition Tasks already existed in ASL, BSLS, and BSL have been used in several psycholinguistic studies with native and late signers. 4 SRT were created for LSF, LIS, DGS, LSC

IV. The current study: to elaborate a tool in order to assess repetition abilities in LSF

Participants
- 33 Deaf signing Children of Deaf signing Parents, aged from 4:02 to 10:8, all deaf native signers.
- 7 children of 4-5 y.o., 9 children of 6-7 y.o., 9 children of 8-9 y.o., 8 children of 10 y.o.

Procedure
Participants were asked to recall in the exact same way 20 sentences that varied in complexity. Complexity is defined according to length of the sentence, morphosyntactic structures (classifiers, inflection, role shift). Sentences are presented from the easiest to the hardest ones.

Results can be discussed in terms of

- Phonological development and mastery. Phonological skills are mastered early, even by young toddlers.
- Movement seems to cause more difficulties to all children.
- Classifiers are less failed than frozen signs: are their articulatory structures more reliable? Are children better trained to produce classifiers? Is a classifier occurrence that shows the structure while the referent is different, more frequent?

V. Main results

VI. Conclusion and perspectives

Conclusion
The first test to assess repetition skills in LSF, and to assess some overall abilities of deaf signing people.

First data on sign language development.

Perspectives
Coding of the late signing children is in progress. Are difficulties detected in the SRT observed in the narrative production task, and in natural (spontaneous) sign? How could non manual parameters be better assessed?

We need to evaluate the potential to use this tool to diagnose language disorders.

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Results from Group 1 vs Group 2 signers

Main effect of group on sign repetition
F(3,29)=10,79; p=0.0001***
Main effect of group on error repetition
F(3,29)=9,34; p=0.0001***
No interaction age x type of error

Main effect of error type F(1,34)=6,06; p=0.01***
Main effect of group F(3,29)=18,994 p=0.0001**
Interaction group x error type: phonological
F(3,29)=4,64; movement vs. orientation r=0.33; movement vs. place r=0.31; all p<0.05

Main effect of lexical structures F(1)=34,86; p<0.0001***
Interaction structure x group near the significance level for effect of group
Bonferroni correction: FS vs CL DH vs. CH NDH p=0.0001***
Pearson correlation r(33)=-0.667**

Main effect of lexical structures F(1)=19,25; p<0.0001***
Interaction structure x group near the significance level for effect of group
Bonferroni correction: FS vs CL DH vs. CH NDH p=0.0001***
Pearson correlation r(33)=-0.504**