Italian Sign Language (LIS) comprehension in school-aged Deaf LIS L1 Signers and Hearing LIS L2 Learners

Italian Sign Language (*Lingua dei segni italiana* – LIS) has been extensively studied over the last decades (e.g., Volterra et al., 1987; Branchini and Mantovan, 2020): nonetheless, only few studies focused on LIS acquisition and its assessment (e.g., Pizzuto, 2002; LIS-SRT, Rinaldi et al., 2018; VOLIS, ISTC-CNR, 2021). Our study aims to trace the comprehension process of some syntactic structures in school-aged deaf LIS L1 signers and hearing LIS L2 learners by taking into account what we know about the acquisition of spoken languages, as well as specific issues that arise in testing signed languages comprehension.

Task (a). *Picture-matching task on locative clauses (items: 24 experimental, 3 training).* Method: children see pairs of images featuring two objects in opposite spatial relations and have to match a LIS locative clause to the corresponding image. Experimental items: 8 left-right, 8 in front of-behind, and 8 on-under locatives. Aim: understand whether children take the signer's perspective or keep their own: linguistic rotation abilities may be crucial for a good performance in sign language comprehension tasks. ***Task (b).*** *Picture-matching task on declarative clauses (items: 32 experimental, 4 training).* Method: children see pairs of images featuring two characters performing an action one to the other, or vice versa, and have to match a LIS declarative clause to the corresponding image. Experimental items: 8 SOV and 8 OSV clauses with the subject on the signer's left; 8 SOV and 8 OSV clauses with the subject on the signer's right. Aim: collecting a baseline on comprehension abilities of simple sentences, understanding whether children equally understand SOV and OSV sentences, whether the subject spatial position interferes with comprehension, and whether the visual rotation required to match the sentence with the pictures hinders comprehension. ***Task (c).*** *Character-matching task on relative clauses (items: 16 experimental, 3 training, 4 fillers).* Method: children see an image featuring three characters (two identical characters on the sides, a different character in the middle) performing the same action on one another, and have to match a LIS subject or object relative clause (referred to as SRC and ORC, respectively) to the corresponding character. Experimental items: 8 SOV-SRCs; 8 SOV-ORCs. Aim: collecting data on comprehension of a complex structure such as RCs, understanding whether children equally understand SRCs and ORCs, and whether the visual rotation required to match the sentence with the pictures hinders comprehension. ***Participants.*** We collected data from 2 deaf LIS L1 signers (age 105-109 months; mean age 107 months; 1 female, 1 male) and 16 hearing LIS L2 learners (age 110-131 months; mean age 119 months; 8 females and 8 males).[1] ***Provisional results.*** *Task (a).* Children have a strong tendency to interpret locative clauses keeping their own perspective (133/144 left-right; 143/144 in front of-behind). *Task (b).* Accuracy results show that SOV clauses are better understood than OSV clauses (157/288 SOVs vs 99/288 OSVs). Nonetheless, three profiles emerge: (1) poor performance on the whole task; (2) SOV > OSV; (3) OSV > SOV. *Task (c).* Accuracy results show that SRCs are better understood than ORCs (91/144 SRCs vs 34/144 ORCs). Two main profiles emerge: (1) poor performance on the whole task; (2) SRC > ORC. ***Discussion.*** Results from Task (a) signal a possible difficulty in linguistic perspective taking. This difficulty might be reflected in the poor performance exhibited by some children in Task (b), in which the sentence morphosyntax is overshadowed by the verb directionality, mirrored without rotation. Further results from Task (b) show that children often overgeneralize the SOV basic structure onto the OSV, being OSV a marked structure usually learned later in LIS teaching lessons (hearing LIS L2 learners are taught LIS at school). Results from Task (c) mostly align with previous research on RCs in adults (e.g. Hauser et al., 2021), and may be explained by the lack of an optional reinforcer in the clause (a determiner-like element glossed as PE in LIS linguistic literature). Finally, these results call for some methodological considerations related to the use of images and signed sentences.

Sentence examples

Task (a)

TREE CL-TREE$_{LEFT}$, HOUSE CL-TREE$_{LEFT}$ CL-HOUSE$_{RIGHT}$. [Left-right locative]

'The house is on the right of the tree.'

Task (b)

KING$_{LEFT}$ QUEEN$_{RIGHT\ LEFT}$CUT-HAIR$_{RIGHT}$. [SOV, subject on the left]

'The king cuts the queen's hair.'

Task (c)

KING$_{LEFT}$ QUEEN$_{RIGHT\ LEFT}$CUT-HAIR$_{RIGHT}$, YOU TOUCH$_{LEFT}$. [SOV-SRC]

'Touch the king who is cutting the queen's hair.'

Provisional results

ID	Sex	Age (months)	Task (a)		Task (b)		Task (c)	
			Left-right (own perspective/8)	In front of-behind (own perspective/8)	SOV (correct/16)	OSV (correct/16)	SRC (correct/8)	ORC (correct/8)
D1	F	105	8	8	15	16	8	0
D2	M	109	7	8	5	7	4	1
H1	F	112	7	8	0	0	2	1
H2	F	114	8	8	10	10	7	1
H3	F	116	8	8	15	0	0	8
H4	F	116	3	7	14	2	5	2
H5	M	114	7	8	7	2	6	5
H6	M	111	8	8	1	4	6	0
H7	M	110	8	8	0	0	4	0
H8	M	111	8	8	1	16	0	0
H9	F	127	8	8	16	1	8	2
H10	F	121	7	8	14	2	7	8
H11	F	124	7	8	14	1	8	0
H12	F	126	8	8	0	16	1	0
H13	M	122	7	8	4	8	2	0
H14	M	131	8	8	11	14	7	0
H15	M	124	8	8	16	0	8	6
H16	M	127	8	8	14	0	8	0
Total			133/144	143/144	157/288	99/288	91/144	34/144

Table 1 – Provisional results. D1-D2 are deaf LIS L1 signers; H1-H16 are hearing LIS L2 learners.

1. Additional participants will be tested: at GALA 2025 results from a total of 4 deaf LIS L1 signers and 50 hearing LIS L2 learners will be presented.

References

Branchini C. and Mantovan L. (2020). A Grammar of Italian Sign Language. 1st ed. Venezia, Edizioni Ca' Foscari – Digital Publishing. / Hauser C., Zorzi G., Aristodemo V., Giustolisi B., Gras D., Sala R., et al. (2021). Asymmetries in relative clause comprehension in three European sign languages. *Glossa*, 6(1), 1-36. / Pizzuto E. (2002). The development of Italian Sign Language (LIS) in deaf preschoolers. *Directions in sign language acquisition* (eds. Morgan and Woll), 77-114. / Rinaldi P. et al. (2018). Language Skills Assessed Through a Sentence Reproduction Task. *Journal of Deaf Studies and Deaf Education*, 408-421. / VOLIS: https://www.volis.it / Volterra V. et al. (1987). *La lingua dei segni italiana: la comunicazione visivo-gestuale dei sordi*. Bologna, Il Mulino.