Project Number: 693349

D2.21 RELEASE OF TESTS

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Nature of deliverable[1]	R	DEM	DEC	O
Dissemination level[2]	PU	PP	RE	CO

[1] *R: Report, DEM: Demonstrator, pilot, prototype, DEC: Websites, patent fillings, videos, etc., O: Other*

[2] ***PU**: public, **PP:** Restricted to other programme participants (including the commission services), **RE** Restricted to a group specified by the consortium (including the Commission services), **CO** Confidential, only for members of the consortium (Including the Commission services)*

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History of changes

VERSION	DATE	CHANGE	REVIEWER(S)
1.0	25/01/2020	Initial version.	
1.1	31/01/2020	Revised version.	Josep Quer, Giorgia Zorzi

CONTENTS

1. Scope of the document

This document describes the testing tools that are installed and operative on the platform.

2. Introduction

All the tests that are made available on the platform have been administered after their validation and piloting (year 2-3) to a sample of the relevant population. For each language, 45 Deaf signers divided into native, early and late learners have been tested with each one of these tests. Only for LSE testing is still currently underway. The results of this first administration of the testing tools, which are now being analyzed and processed statistically, will yield a baseline for native signers, early signers and late signers. These data will be made available as a benchmark for the interpretation of the results of any assessment made using the testing tools on the platform.

These baselines, as well as detailed instructions and recommendations in English on how to use the tools, will also be made available before the end of the project.

For Italy, France, Catalonia and Spain, 9 tests are available on the platform: 4 lexical tests; 4 syntactic tests and one non-linguistic test. Each test will be assigned a digital object identifier (DOI) to identify it as an intellectual product with a unique code. In what follows, for each of the tests, we first give a general presentation, then we detail for each team the specifics of the test released.

In addition, 4 shorter tests adapted to children (2 lexical tests; one syntactic tests) are made available in LSF.

2.1. Lexical tests

LEXICAL PRODUCTION

Aim: Assess the capacity to retrieve and produce signs of varying degree of articulatory/phonological complexity and of varying frequency.

Test: from 43 to 90 pictures (the total amount differs across sign languages) eliciting signs varying along measures of phonological complexity and frequency. Most signs elicit only nouns but some may elicit signs that are ambiguous between a verb and the corresponding noun (e.g. DANCE). Each test comes with detailed instructions in the relevant sign language.

Procedure: the participant sees a picture. When ready they click on the recording button and sign the corresponding sign in front of the screen.

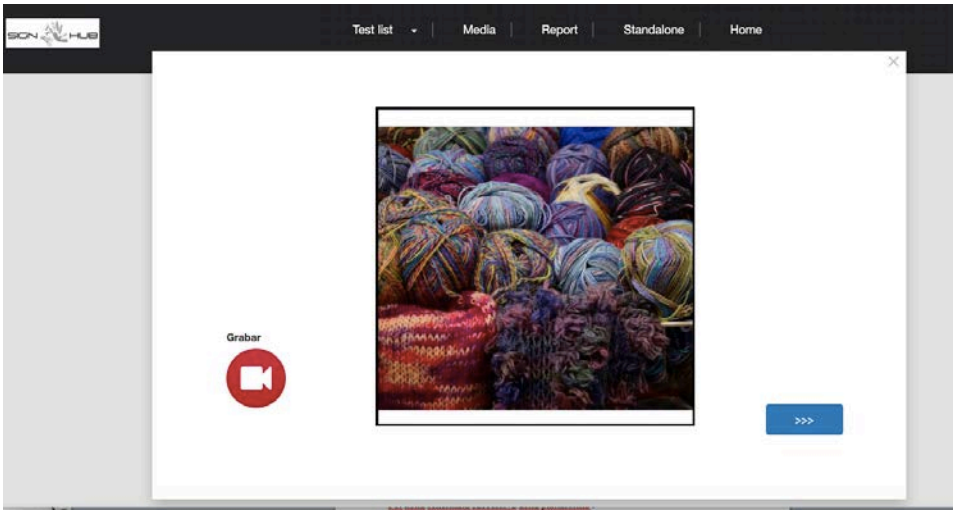

Figure 1. SCREENSHOT OF AN ITEM OF THE LSC TEST

Data: the platform generates a data sheet for each participant including a link to download the produced video for each item. No reaction time is recorded.

Specific designs:

LIS	LSF	LSC	LSE
43 targets 2 trainings Administration: all items in one block	90 targets 1 training Administration: two blocks (43 and 47 items, respectively) administered in two separate sessions	70 targets 2 trainings Administration: all items in one block	77 targets 2 trainings Administration: all items in one block

THE OPPOSITES TEST

Aim: Assess the capacity to comprehend and produce pairs of antonyms.

Test: From 17 to 39 opposite terms. We included items that are harder to elicit through pictures, including abstract nouns, adjectives, and verbs. They overlap in all sign languages. The test comes with detailed instructions in the relevant sign language.

Procedure: the participant sees the video of a sign. When ready they click on the recording button and sign the opposite in front of the screen.

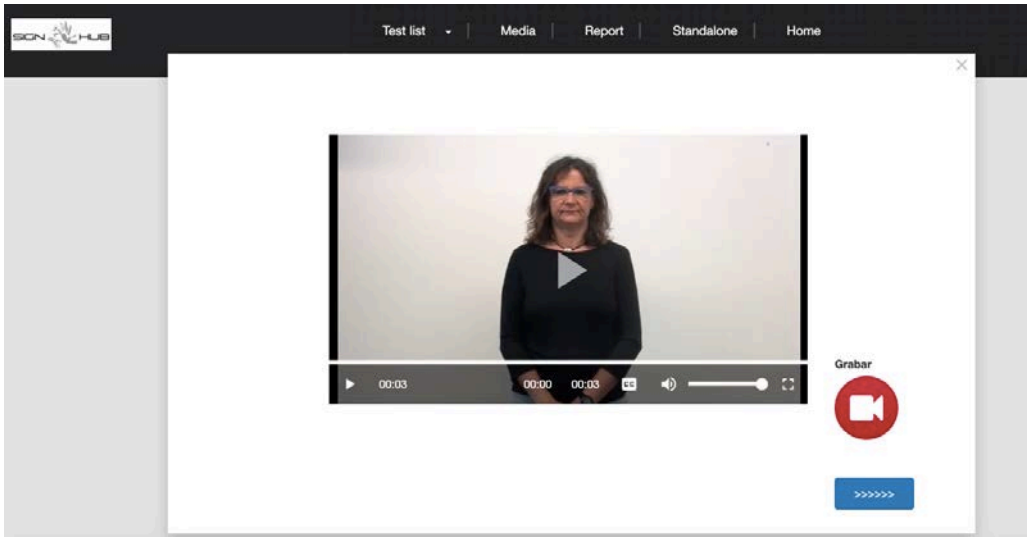

Figure 2. SCREEN SHOT OF AN ITEM OF THE LSC TEST

Data: the platform generates a data sheet for each participant including a link to download the produced video for each item. No reaction time is recorded.

Specific designs:

LIS	LSF	LSC	LSE
17 target pairs 3 trainings Administration: all items in one block	27 target pairs 3 trainings Administration: all items in one block	39 target pairs 2 trainings Administration: all items in one block	30 target pairs 2 trainings Administration: all items in one block

COMPREHENSION: PHONOLOGICAL DISTRACTORS

Aim: Assess the capacity to discriminate a target sign from a set of five phonologically close competitors.

Test: From 20 to 27 signs, including the practice items, have been selected based on the attempt a) to minimize regional variation; b) avoid "extreme iconicity". These signs include mostly nouns but also verbs. Each item is presented with six pictures, one corresponding to the target, and 5 to phonological distractors, i.e. signs that are close competitors of the target. More precisely the distractors are:

- 3 minimal pairs: ideally, 1 minimal pair was selected for each phonological parameter, handshape (HS), location (L) and movement (M).
- 2 phonologically related distractors: 2 signs differing from target in more than one parameter were selected. Here we took into account orientation, too.

The test comes with detailed instructions in the relevant sign language.

Procedure: The participant watches a video with the target sign and has to click on the matching picture in a set of 6 pictures, corresponding to the target and the 5 distractors. The participant is instructed that time is important. Their reaction times are recorded.

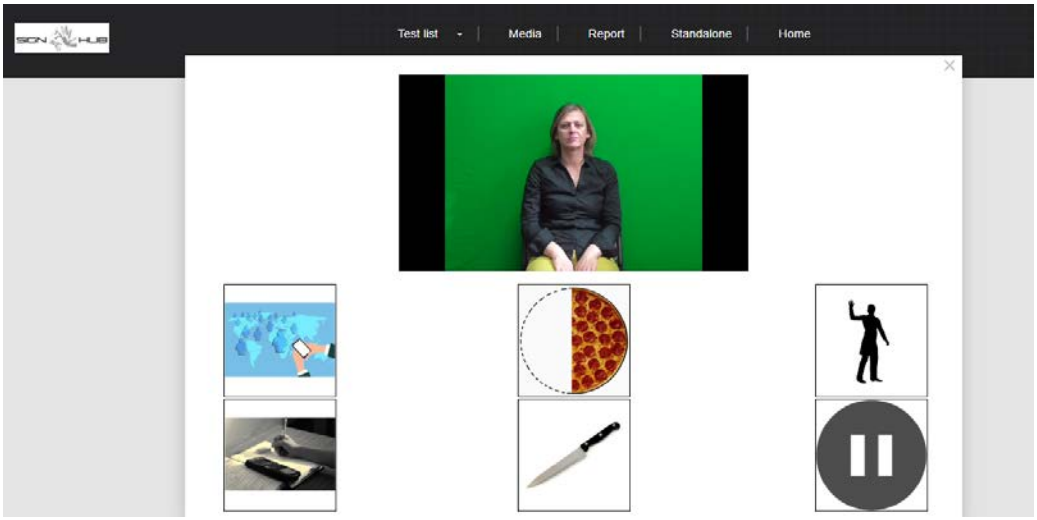

Figure 3. SCREEN SHOT OF AN ITEM OF THE LIS TEST

Data: the platform generates a data sheet for each participant encoding the score for each target sign.

Specific designs:

LIS	LSF	LSC	LSE
22 items 1 training Administration: all items in one block	25 items 3 trainings Administration: all items in one block	23 items 1 training Administration: all items in one block	25 items 1 training Administration: all items in one block.

COMPREHENSION: SEMANTIC DISTRACTORS

Aim: Assess the capacity to discriminate a target sign from a set of seven close semantic competitors.

Test: 18 signs, including the practice items, have been selected based on the attempt a) to minimize regional variation; b) avoid "extreme iconicity"; c) maximize overlapping across the sign languages. These signs include only nouns. Each item is presented with eight pictures, one corresponding to the target, 6 to semantic distractors, i.e. signs that are close semantic competitors of the target; 1 to a semantic distractor that is also visually related to the target, that is, there is a visual relation between the sign of the target and the concept of the distractor. For example, in LSC WATCHMAKER has been selected as a visually related distractor of the target DOCTOR since both concepts belong to the semantic category *jobs*, and the articulation of DOCTOR may remind a watchmaker.

The test comes with detailed instructions in the relevant sign language.

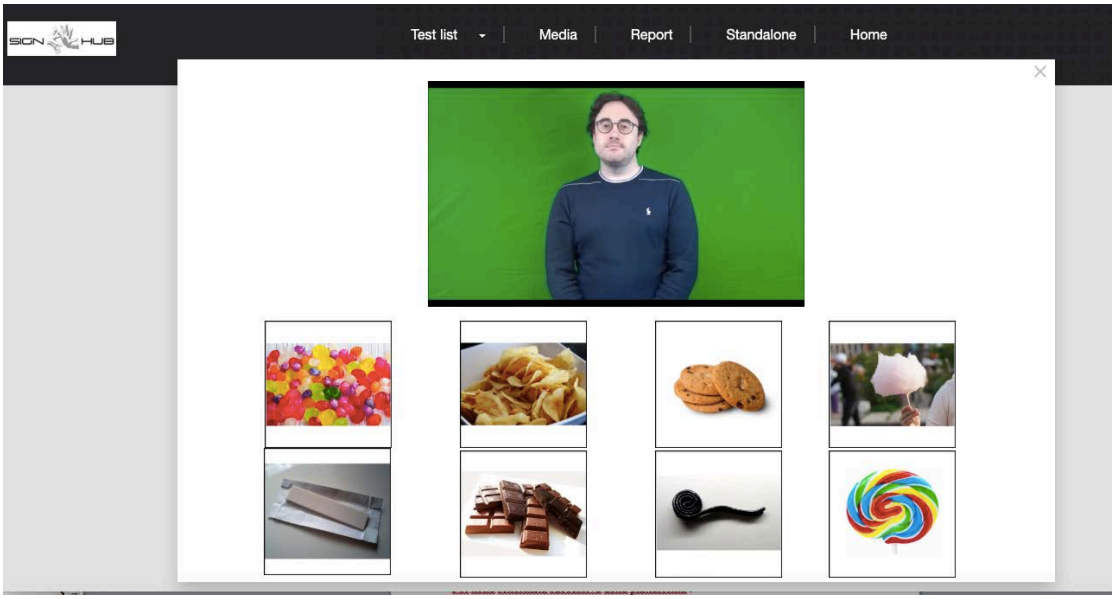

Figure 4. SCREEN SHOT OF AN ITEM OF THE LIS TEST

Procedure: The participant watches a video with the item sign, and has to point to the matching picture in a set of 8 pictures. The participant is instructed that time is important. Their reaction times are recorded.

Data: the platform generates a data sheet for each participant encoding the score for each target sign.

Specific designs:

LIS	LSF	LSC	LSE
18 items 2 trainings Administration: all items in one block	18 items 2 trainings Administration: all items in one block	18 items 2 trainings Administration: all items in one block	18 items 2 trainings Administration: all items in one block

2.2. Syntactic tests

WH-QUESTION COMPREHENSION

Aim: Assess the capacity to comprehend wh-questions, as structures that involve long distance dependencies.

Test: 40 to 60 questions balanced across four conditions (for LSC, LSF, LSE): subject *who* question; object *who* question; subject *which* question; object *which* question are presented followed by the presentation of one of 20 to 31 complex pictures. For LIS, where *who* questions proved not to be felicitous during piloting, only subject and object *which* questions are included. In order to minimize a d-linking effect, w*hich* question are introduced by a description of the picture that the question will refer to (e.g., *There are two clowns and one kid*), while *who* questions are preceded by a warning that a question is going to be asked.

The test comes with detailed instructions in the relevant sign language.

Procedure: The experimental subject watches a video with a question and has to answer pointing to the correct character in a picture containing 3 characters (see the image below). The participant is instructed that time is important. Their reaction times are recorded.

This test is a modified version of the one developed by Friedmann & Novogrodsky (2011) for Hebrew and other spoken languages.

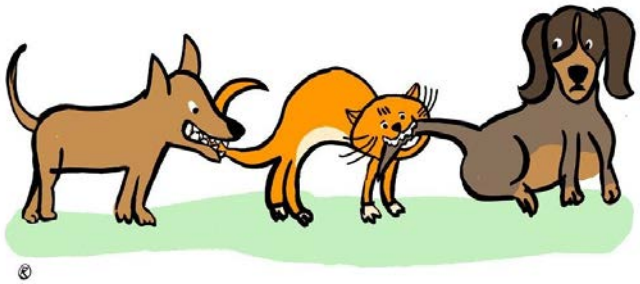

Figure 5. ONE OF THE ANSWER PICTURES

Data: The platform generates a data sheet for each participant encoding the score for each target sign.

Specific designs:

LIS	LSF	LSC	LSE
20 pictures 3 trainings 40 questions (2 per picture: one object *which* question; one subject *which* question) 12 filler pictures, 2 questions per picture Administration: 2 lists to be administered in 2 blocks. 32 questions (20 targets and 12 fillers) per list.	31 pictures 3 trainings 32 *who* questions (16 object/16 subject) 30 *which* questions (15 object/15 subject) 13 filler pictures: 1 *where* question per picture. Administration: 2 lists administered in 2 blocks. 31 target questions and 13 fillers per list.	20 pictures 2 trainings in the first block; 1 in the 2nd. 40 questions, 2 per picture (10 *who* object question, 10 *who* subject question, 10 *which* object question, 10 *which* subject question) 12 fillers : 6 pictures, 2 questions per picture (types of question: *who* question, *which* question) Administration: 2 lists administered in 2 blocks. 20 target questions per list, 6 filler questions per list.	20 pictures 2 trainings in the first block; 1 in the 2nd. 40 questions, 2 questions per picture (10 *who* object question, 10 *who* subject question, 10 *which* object question, 10 which subject question) 10 fillers : 10 pictures, 1 question per picture (types of question: *who* question, *which* question) Administration: 2 lists administered in 2 blocks. 20 target questions per list, 6 filler questions per list

RELATIVE CLAUSES COMPREHENSION

Aim: Assess the capacity to comprehend relative structures, as notoriously complex structures involving long distance dependencies.

Test: 40 to 56 relative clauses balanced across two conditions: subject relatives and object relatives are presented embedded in a request like *Please touch/select the child that pushes the man* (subject relative), or *the child that the man pushes* (object relative); the request is followed by the presentation of one of 20-28 complex pictures.

Procedure: The experimental subject watches a video with a request embedding a relative clause and has to answer pointing to the correct character in a picture containing 3 characters (see the image below). The participant is instructed that time is important. Their reaction times are recorded. The test comes with detailed instructions in the relevant sign language.

This test is a modified version of the one developed by Friedmann, Belletti & Rizzi (2009) for Hebrew and other spoken languages.

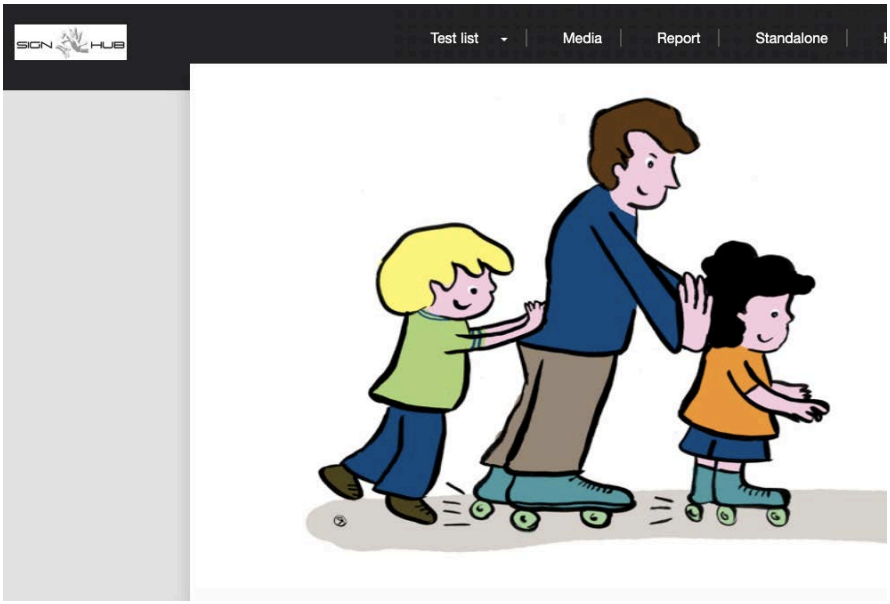

Figure 6. SCREEN SHOT OF AN ANSWER ITEM

Specific designs:

LIS	LSF	LSC	LSE
20 pictures	28 pictures	20 pictures	20 pictures
2 trainings	3 trainings	2 trainings in the first list, 1 in the second list	2 trainings in the first list, 1 in the second list
40 relative clauses (2 per picture: one object relative and one subject relative)	28 subject relatives	20 subject relatives	20 subject relatives
	28 object relatives	20 object relatives	20 object relatives
12 fillers pictures, two sentences per picture	14 fillers per list	5 fillers per list	5 fillers per list
			Administration: 2 lists administered in 2 blocks. 20 target rela-

Administration: 2 lists administered in 2 blocks. 32 sentences per list (20 relatives and 12 fillers).	Administration: 2 lists administered in 2 blocks. 28 relatives per list (14 subject and 14 object relative clauses)	Administration: 2 lists administered in 2 blocks. 20 target relatives per list (10 subject and 10 object).	tives per list (10 subject and 10 object).

ROLE SHIFT COMPREHENSION

Aim: Assess the capacity of detecting change in interpretation under role-shift by using a picture matching task.

Test: 48 utterances where the speaker reports a sentence that either s/he or the person with whom s/he was interacting pronounced, using role shift or not. The utterances are balanced as for the position of the potentially shifted pronoun: subject, object or possessive and for the type of verb involved (agreement V; non agreement verb; copular). The target sentence is preceded by the presentation of two pictures corresponding respectively to the role shifted and the non role shifted interpretation. The same pictures appear below the video of the target sentence to be selected for the answer. In all these cases role shift is introduced by the verb SAY, while the embedded verb varies.

Procedure: The participant watches a video with the target utterance and has to choose the matching one between two pictures: one depicts the signer in the situation described by the sentence, the other depicts another person designated by the pronoun under role-shift.

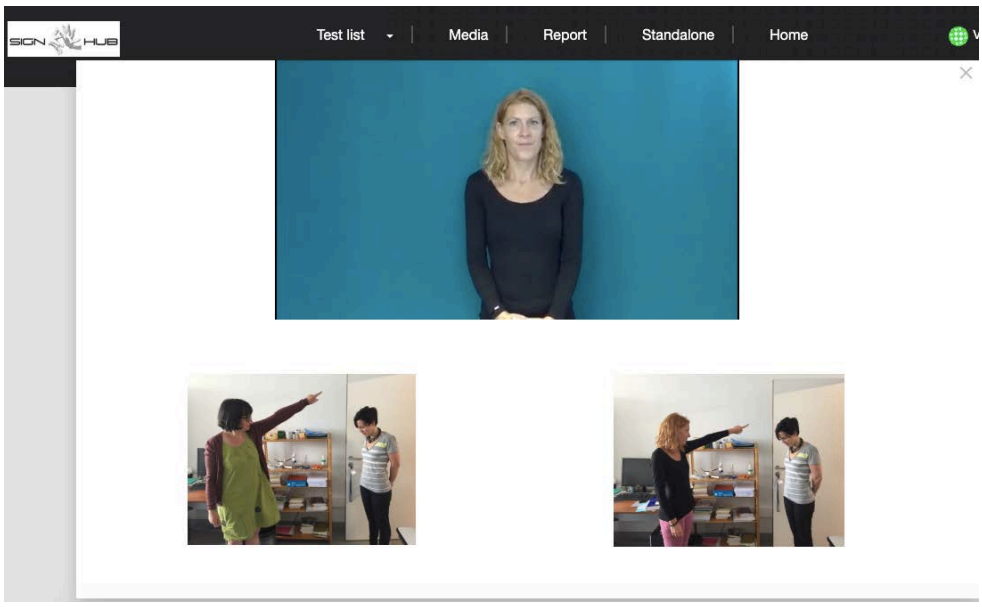

Figure 7. SCREEN SHOT OF AN ITEM OF THE LSF TEST

Specific designs:

LIS	LSF	LSC	LSE
3 trainings 8 agreement verbs (4 conditions: subject/object; role shift/non role shift). Total= 32 items. 8 non agreement verbs (4 conditions: subject/object; role shift/non role shift). Total= 32 items. 8 copula construction (2 conditions: role shift and non role shift on possessive). Total= 16 items. 16 fillers Administration: 4 lists administered in 2 blocks. 20 experimental items per list. 5 fillers per list (fillers could be repeated).	3 trainings 36 target sentences 12 items with 6 agreement verbs (4 conditions: subject/object; role shift/non role shift) 12 items with 6 non agreement verbs (4 conditions: subject/object; role shift/non role shift) 12 items with copula (2 conditions: role shift and non role shift on possessive) 12 fillers Administration: 2 lists administered in 2 blocks. 36 experimental items + 12 fillers per list. The copula items were displayed twice.	2 trainings in the first block; 1 in the second 32 items with 8 agreement verbs (4 conditions: subject/object; role shift/non role shift) 32 items with 8 non agreement verbs (4 conditions: subject/object; role shift/non role shift) 20 items with copula (2 conditions: role shift and non role shift on possessive) 16 fillers Administration: 2 lists administered in 2 blocks. 42 experimental items per list. 8 fillers per list.	2 trainings in the first block; 1 in the second 32 items with 8 agreement verbs (4 conditions: subject/object; role shift/non role shift) 32 items with 8 non agreement verbs (4 conditions: subject/object; role shift/non role shift) 16 items with copula (2 conditions: role shift and non role shift on possessive) 16 fillers Administration: 2 lists administered in 2 blocks. 40 experimental items per list. 8 fillers per list.

AGREEMENT COMPREHENSION

Aim*:* Assess the capacity to comprehend the subject and object entailed by path and/or facing direction of agreement verbs.

Test*:* 48 to 72 sentences employing agreement verbs preceded by a non-verbal situation that either matches or does not match the sentence.

Procedure: The participant watches a video of a situation. Then, s/he watches a video sentence and s/he has to assess if the sentence matches the situation or not, and click on the corresponding button. Verb agreement is typically relevant to assess the matching. The test comes with detailed instructions in the relevant sign language.

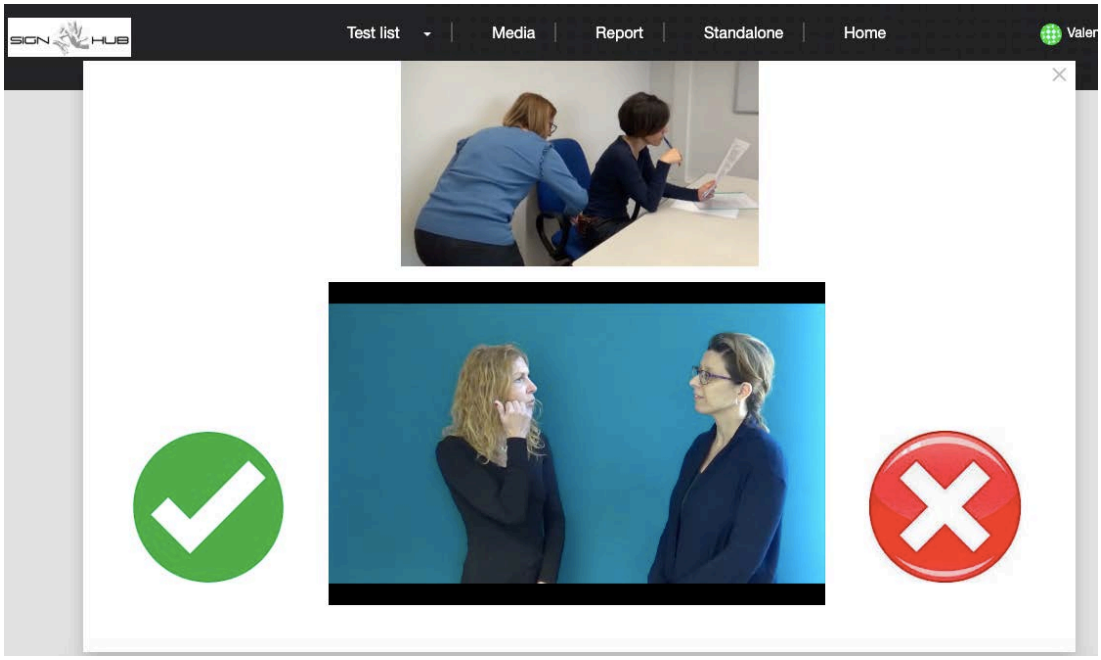

Figure 8. SCREEN SHOT OF AN ITEM OF THE LSF TEST

Specific designs:

LIS	**LSF**	**LSC**	**LSE**
18 verbs (6 concrete, 6 abstract, 6 backward), 4 items per verb (1 correct, 2 with wrong agreement, 2 conditions, 1 control) 54 experimental items + 18 controls 2 trainings Administration: 4 lists administered in 2 blocks. 18 items per list, 36 items per block.	24 verbs (6 abstract transitive, 6 concrete transitive, 6 ditransitive, 3 backward verbs repeated twice) 2 to 3 items per verb (1 correct; 1 wrong agreement, optionally one control) 48 experimental items + 20 controls No training Administration: 2 lists administered in 2 blocks. 34 items per list	24 verbs (6 transitive concrete, 6 transitive abstract, 6 ditransitive, 3 backward verbs repeated twice), 4 items per verb (1 correct, 2 with wrong agreement, 1 control) 72 experimental items + 24 control 2 trainings in the first block ; 1 in the second Administration: 2 lists administered in 2 blocks. 36 items per list. 12 control sentences per list, 2 training items in the first list, 1 training item in the second list	24 verbs (6 transitive concrete, 6 transitive abstract, 6 ditransitive, 3 backward verbs repeated twice), 4 items per verb (1correct, 2 with wrong agreement, 1 control) 72 experimental items + 24 control 2 trainings in the first block ; 1 in the second Administration: 2 lists administered in 2 blocks. 36 items per list. 12 control sentences per list, 2 training items in the first list, 1 training item in the second list.

SENTENCE REPETITION TASK

Aim: Assess sentence production by means of a repetition task.

Test: This test was developed for LIS only. 10 sentences of similar length, but containing structures of different syntactic complexity. The sentences were video recorded and presented following different orders through a Power-Point presentation.

Procedure: The participant watches a video with the target sentence and has to repeat it as similar as possible.

Design: 10 target sentences presented following different orders in one single block. 2 training items.

2.3. Non-linguistic tests: the odd one out

A non-linguistic test was also produced and it is available on the platform for all sign languages. It is an odd one out test, where participants are asked to find the intruder in a set of 4 pictures, as illustrated in the screenshot below.

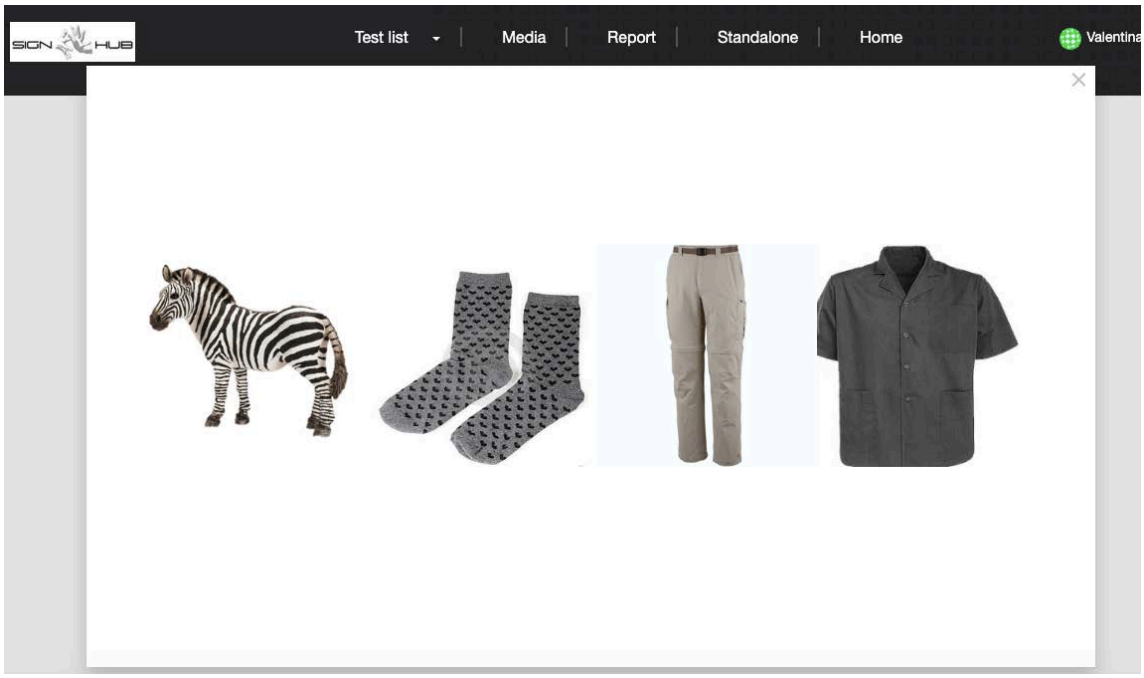

Figure 9. SCREEN SHOT OF AN ITEM of the ODD-ONE OUT TEST

Specific designs:

ODD-ONE OUT
2 trainings 28 items

No fillers

Administration: all items in one block

2.4. Adaptations for children

Three tests have been adapted in order to be suitable for children: two lexical tests (both comprehension tests) and one syntactic test (relative clauses comprehension). They have been shortened, and simplified, as described below. The adapted version of the lexical test of comprehension with phonological distractors is available only for LSF. The one with semantic distractor, instead, could be used also for the other sign languages due to the maximized overlapping of the items across languages.

COMPREHENSION: PHONOLOGICAL DISTRACTORS

Aim: Assess the capacity to discriminate a target sign from a set of five phonologically close competitors.

Test: 20 items, including 2 practice items, have been retained based on the attempt a) to minimize regional variation; b) avoid "extreme iconicity". Each item is presented with 4 pictures, one corresponding to the target, and 3 to phonological distractors, i.e. signs that are close competitors of the target, all belonging to minimal pairs. Ideally, 1 minimal pair was selected for each phonological parameter, handshape (HS), location (L) and movement (M).

The test comes with detailed instructions in the relevant sign language.

Procedure: The participant watches a video with the target sign, and has to click to the matching picture in a set of 4 pictures, corresponding to the target and the 3 distractors. The participant is instructed that time is important. Their reaction times are recorded. 3 rewarding animations appear randomly between slides to amuse the child.

Data: The platform generates a data sheet for each participant encoding the score for each target sign.

Specific designs:

LSF

20 items

2 trainings

3 animations

Administration : all items in one block

COMPREHENSION: SEMANTIC DISTRACTORS

Aim: Assess the capacity to discriminate a target sign from a set of seven close semantic competitors.

Test: All 18 signs of the original adult version have been retained. Each item is presented with only 4 pictures, one corresponding to the target, 3 to semantic distractors, i.e. signs that are close semantic competitors of the target. The test comes with detailed instructions in the relevant sign language. 3 rewarding animations appear randomly between slides to amuse the child.

LSF
18 items 2 trainings 3 animations Administration: all items in one block

COMPREHENSION: RELATIVE CLAUSES

Aim: Assess the capacity to comprehend relative structures, as notoriously complex structures involving long distance dependencies.

Test: 24 relative clauses balanced across two conditions: subject relatives and object relatives are presented embedded in a request like *Please touch/select the child that pushes the man* (subject relative), or *the child that the man pushes* (object relative); the request is followed by the presentation of one of 12 complex pictures.

Procedure: The experimental subject watches a video with a request embedding a relative clause and has to answer pointing to the correct character in a picture containing 3 characters. The participant is instructed that time is important. Their reaction times are recorded. The test comes with detailed instructions in the relevant sign language. 2 rewarding animations appear randomly between slides to amuse the child.

LSF
24 items 2 trainings 2 animations Administration : all items in one block