

# Investigating sign language variation through intelligibility testing: The recorded text test retelling method

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## Introduction to Study

The Recorded Text Test (RTT) is a method of language variety intelligibility testing that was developed to investigate levels of comprehension between language communities. There are two primary ways that this tool has been used in spoken languages: Grimes' (1995) methodology which develops a list of specific questions about the text to be answered by the participant (RTT-Q), and Kluge's (2006) approach which asks participants to retell a text with scoring based on the inclusion of particular content points (RTT-R). Although the use of RTTs for exploring variation has not been widely used with sign languages, we propose that with careful attention to deaf cultural factors, this intelligibility testing method can be successfully adapted and applied to provide valuable insights into sign language variation among diverse deaf communities.

Because of the widespread influence of American Sign Language (ASL) throughout various regions of the world, we investigated ASL intelligibility in a few countries that have a historical connection with the United States. During our initial research, we focused on three countries in Latin America and the Caribbean where deaf schools or religious ministries have been started by organizations from the United States, but sign language varieties in use are perceived to be distinct from ASL: Peru, the Dominican Republic, and Jamaica.

This study demonstrates that the RTT intelligibility testing used in spoken languages can be successfully adapted to be used in deaf cultural contexts with visual-gestural languages, providing a quantitative means for studying sign language variation and use. The results of this type of research can provide significant clues in evaluating the accessibility of sign language materials among related sign language communities, especially in conjunction with other research methods such as wordlist comparisons and sociolinguistic questionnaires.

### References:

Grimes, J. E. 1995. *Language survey reference guide*. Dallas: Summer Institute of Linguistics, Inc.

Kluge, Angela. 2006. RTT retelling method: An alternative approach to intelligibility testing. SIL International. Dallas, TX. Access: <http://www.sil.org/SILEWP/2007/silewp2007-006.pdf>.

## Methodology of the RTT-R Intelligibility Test

### ASL Narrative Text



### ASL Text Construction:

- Filmed native ASL signer in Tucson, Arizona telling personal narrative approximately three minutes long
- Splice ASL narrative into 16 sections, each 10-21 seconds long
- Identify content points of ASL narrative retold by native Tucson ASL users: 60 target content points identified from four tests in Tucson

### Construct practice test:

- Film native signer in target testing location telling personal narrative 35-45 seconds long
- Splice practice test narrative into five to seven sections, each five to nine seconds long

### Administer practice test:

- Gather participant consent and metadata from participants that will take test in pairs (one as a reteller, one as a learner)
- Show practice text in its entirety once
- Test-administrator demonstrates retelling first section of practice test with one participant repeating what is being retold
- Participants each practice retelling sections of practice test to partner two to three times each
- Participants decide which person will retell the ASL text and which will learn the text from the reteller

### Administering ASL test:

- Reteller watches ASL text in its entirety once; learner is not allowed to see it
- Reteller repeats each section to the learner; learner repeats each section back to reteller; reteller is allowed as many times as desired to ensure that the learner understands the story and may watch a section a second time if needed

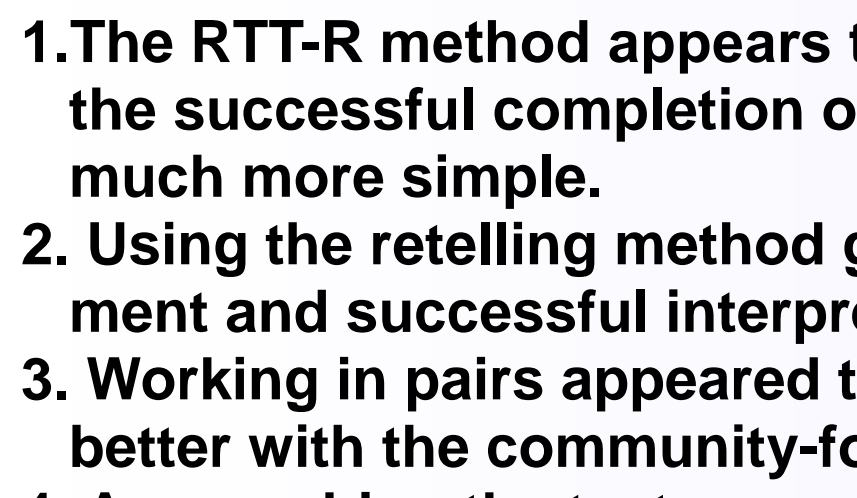
### Scoring the ASL test:

- Video recorded test response is imported into ELAN and original sections are marked
- Each section is analyzed to identify how many of the 60 target content points (up to six points in a section) are retold to the learner (using binary scoring system)
- The sum of the retold target content points are divided by the total number of target content points to give the intelligibility percentage

### DR Practice Test



### DR RTT-R Elicitation



### Conclusion

- The RTT-R method appears to have decreased the effect that a participant's educational level had on the successful completion of the intelligibility test and made the explanation of the testing process much more simple.
- Using the retelling method greatly increased the speed of test creation as compared to the development and successful interpretation of selected questions in the question and answer method.
- Working in pairs appeared to decrease test anxiety, increase the enjoyment for participants, and fit better with the community-focused nature of the deaf communities.
- Approaching the test as an opportunity to teach a deaf story from another location gave the test-taker an opportunity to give back to their community through storytelling, a value in both Jamaica and the Dominican Republic.

## Development of the Sign Language RTT

Recorded Text Testing using the question and answer method (RTT-Q) took place in Peru in 2007. After initially administering the test, it became apparent that the traditional question and answer RTT procedure was not working well. Throughout fieldwork, various adjustments were made in pursuit of a method that would be successful in a deaf cultural context. RTT-Q scores were calculated for both the ASL text and a Lima sign variety Peruvian Sign Language (LSP) text each with 11 questions that were asked of the participant in LSP. The following charts show the results of the 28 Peruvian RTTs of both texts, with 10 tests being administered to individuals and 18 tests administered to groups of two or more. Tests were administered in five different deaf communities: Arequipa (10), Chiclayo (4), Cusco (4), Iquitos (3), and Lima (9).

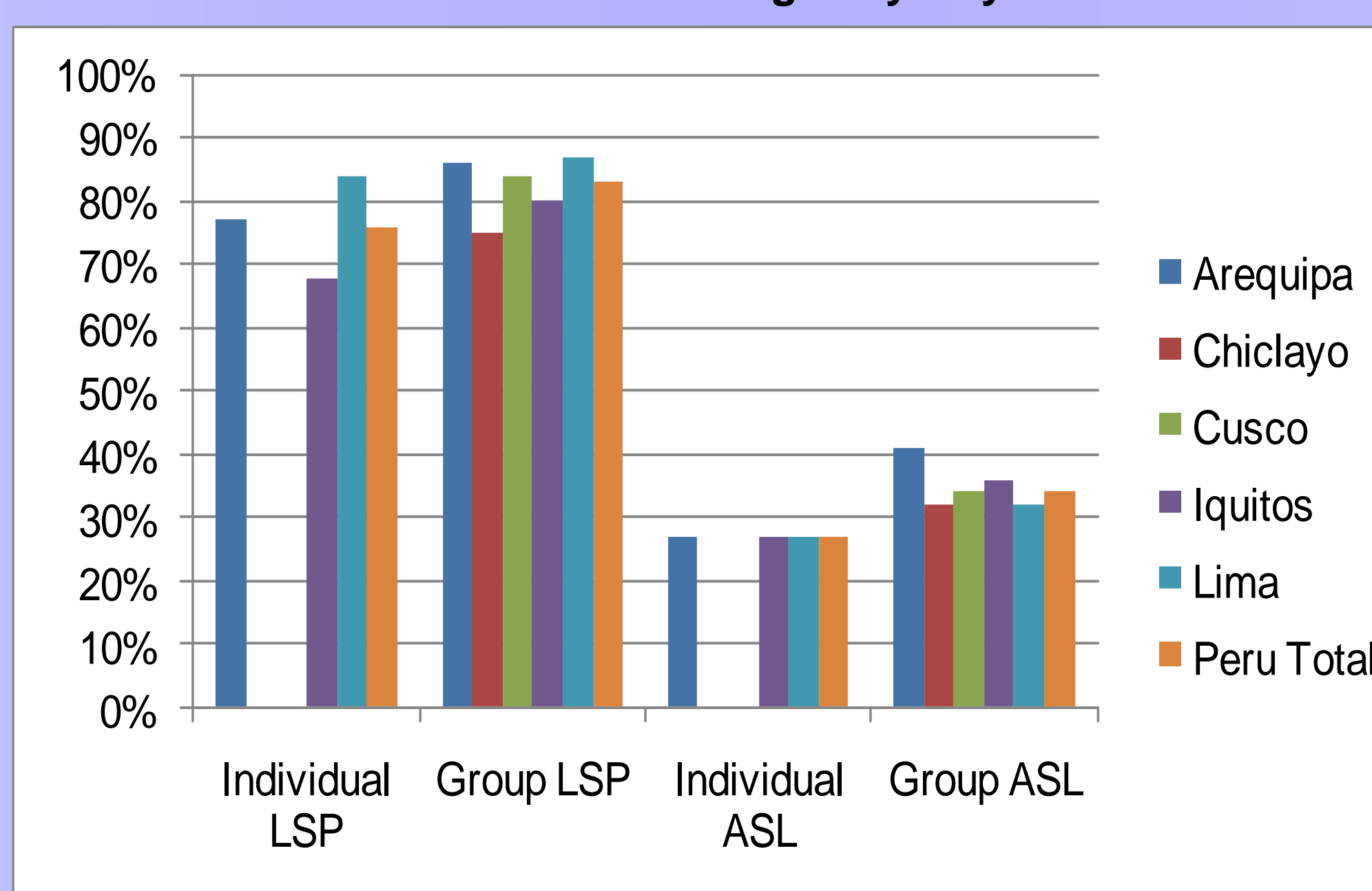
### Number of Individual and Group Tests by City

City	Number of Individual Tests	Number of Group Tests
Arequipa	7	1
Chiclayo	0	4
Cusco	0	4
Iquitos	1	2
Lima	2	7
<b>Peru Total</b>	<b>10</b>	<b>18</b>



Map of Peru

### RTT-Q Test Result Averages by City in Peru



Based on our experience administering RTT-Qs in Peru, we identified the following issues with the traditional question/answer RTT approach when applied to deaf cultural contexts:

Issue	Some participants . . .	Proposed solution
<b>Recognition of Signers</b>	recognized the persons signing the text and responded negatively to them. This led to value judgments toward the person signing and prevented effective participation.	Show potential participants photos of the signers beforehand and do not include anyone who recognizes the storyteller or question asker.
<b>Interpretation of Questions</b>	misunderstood the questions because signing became confusing when viewed on a screen. For example, indexing was used to refer to specific people in the text but on screen it appeared that the question signer was pointing at the test-taking participant, leading them to answer questions about themselves instead of the text.	At times, less natural signing can lead to clearer questions. Some participants indicated that being asked a question like they would be in their school systems (e.g. following the spoken language word order) actually made the questions clearer because the style is what they would expect.
<b>Test Anxiety</b>	felt that they were being examined and buckled under test anxiety.	Anxiety seemed to lessen and scores consistently improved when the test was given to at least two people at a time. Make it a teaching instead of a test-taking environment. Have the reteller "teach" the story to others, making it a group project, instead of an individual test of knowledge.
<b>Preference to Retell</b>	retold the entire text section instead of answering the specific questions.	Educational backgrounds of rote memorization and cultural preferences for storytelling indicate that the RTT-R may more clearly show intelligibility levels than the RTT-Q method. Knowing and sharing a new story also appears to increase respect for the test-taker in their deaf community.
<b>Level of Education</b>	had less than seven years of education, a threshold that appeared to affect a participant's ability to understand the question/answer test-taking procedure.	Screen participants more closely for amount of education and see whether a retelling method may decrease the need for familiarity with the question/answer educational experience.

## Application of RTT-R: ASL Testing

We tested ASL materials in three locations: Dominican Republic (2008), Jamaica (2009), and Los Angeles, USA (2010). The following charts give results from each of these test sites, with 11 tests from 5 cities in the Dominican Republic, 9 tests from 5 cities in Jamaica, and 6 tests in Los Angeles, USA.

### Dominican Republic



RTT Test Number	City	Years of Education	RTT Score
1	Santo Domingo	17	70%
2	Santo Domingo	18	30%
3	Santo Domingo	NA	77%
4	Santo Domingo	15	32%
5	Santo Domingo	14	68%
6	Bonao	12	65%
7	Santiago	NA	60%
8	Santiago	0	38%
9	La Vega	5	57%
10	La Vega	5	63%
11	Puerto Plata	10	55%

RTT Test Number	City	Years of Education	RTT Score
1	Kingston	14	95%
2	Kingston	17	88%
3	Mandeville	9	95%
4	St. Elizabeth	14	60%
5	St. Elizabeth	6	60%
6	Montego Bay	9	73%
7	Montego Bay	10	65%
8	Brown's Town	17	47%
9	Brown's Town	16	88%

### Jamaica

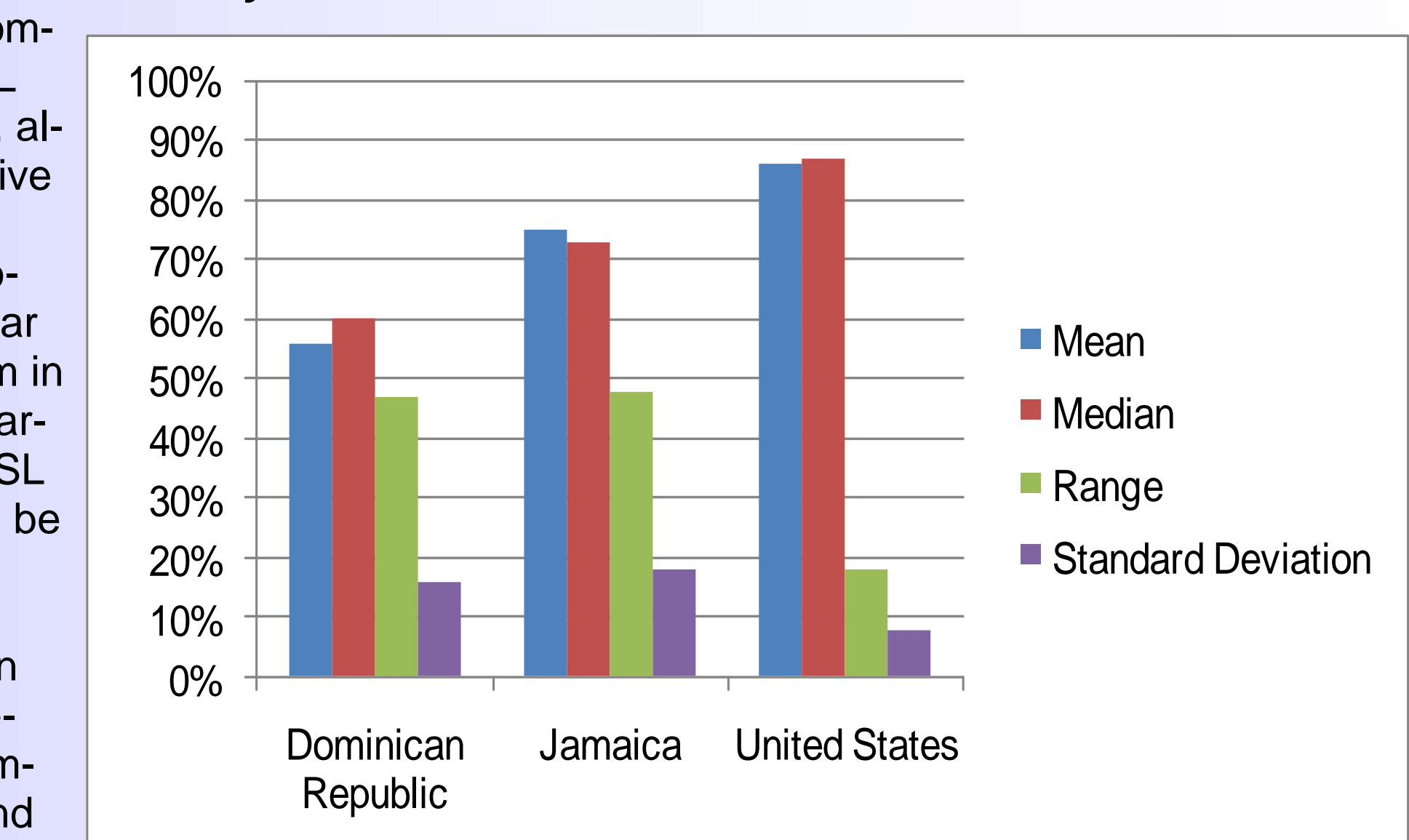


### Los Angeles, USA



RTT Test Number	Years of Education	RTT Score
1	15	95%
2	12	92%
3	20	80%
4	14	95%
5	12	87%
6	18	77%
7	35	86%

### Summary of RTT-R Results



It appears that the Jamaican deaf community has higher intelligibility of ASL than the Dominican deaf community, although neither scored as well as native -ASL users from the United States. Higher standard deviations in the Dominican Republic and Jamaica appear to reflect the presence of bilingualism in both deaf communities, with some participants having more contact with ASL than others. There does not seem to be any specific participant trait, such as amount of education, affecting test scores. This is an important finding in both locations, contradicting other reports that most members of both communities understand and use ASL and questioning the successful use of ASL materials in either country.

We are very grateful to the deaf communities of the Dominican Republic, Jamaica, Los Angeles, and Tucson for their involvement in this project. We especially thank Karen Gouby, Jose Caminero, and Kamar Groves for their willingness to share their stories with us, their own communities, and around the world! We deeply appreciate SIL International for funding this research and Albert Bickford, Holly Williams, and Christina Epley for sharing of their time and resources to support this project.