Development of a Spanish Word Recognition Test for Spanish-Speaking Children

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Background

To date, there are few valid and reliable recorded word recognition tests available in the Spanish language. Several Spanish word lists have been developed in order to test word recognition abilities of Spanish-speaking adults and children, however, no such lists have been made commercially available for the assessment of Spanish-speaking children. In 1984, Comstock and Martin developed, recorded, and validated 4 lists of 25 bisyllabic Spanish words to assess word recognition scores of Spanish-speaking children through use of a picture-pointing task, but these recordings are no longer available.

The goal of this poster is to describe the first two phases of the development of a Spanish word recognition test and to increase awareness regarding the need for standardized speech recognition materials in Spanish. A unique feature of this word recognition test is that it can be used by English-speaking clinicians using a two-channel recording. The recording was created so that the Spanish target word is presented to the subject while simultaneously presenting the English translation to the examiner. In this way, the examiner has the ability to easily score the test based on the picture-pointing response.

Phase #1: Validation of Spanish Word Recognition Stimuli

Purpose:
To record and validate a word recognition test for Spanish-speaking children with the initial validation being completed on Spanish-speaking adults

Test Development Steps
1) Stimuli
Four lists of 25 bisyllabic words from the children’s Spanish word recognition test developed by Comstock & Martin (1984)

2) Stimulus Recordings
Two-channel recording
Channel 1 = Spanish stimulus item
Channel 2 = English translation
Talker: Adult, female, native Spanish speaker
Four sequential recordings were made of each stimulus item with and without the carrier phrase “Di la palabra” (“Say the word”)
The 1st and 4th recordings were discarded and the best of the 2nd or 3rd pronunciations was selected
The stimuli were edited using Adobe Audition (Version 2.0)

3) Validation of Recordings
3) Subjects
N = 15 adult Spanish speakers
Age: 22 to 45; M = 33.2 years
First language was Spanish
No known cognitive, speech, or language disabilities
All participants listened to all 4 word lists

4) Procedure
113 flash cards and 25 picture boards of each list were created using Adobe Illustrator

5) Validation of Pictorial Representation
Subjects
Subjects
N = 14 Spanish-speaking children
Age: 2 to 12; M = 3.9 years
7 males; 7 females

Procedure
113 flash cards and 25 picture boards of each list were created using digitally drawn depictions of the 100 target words
Children were shown each card and asked to verbally identify each picture in Spanish
If not able to perform task, children were shown the picture board and were asked to show the researcher the target item

Phase #1 Results

Word Recognition Scores

Figure 1. Mean percent correct scores in quiet and noise (ISTS)

- Ceiling effects were observed using percent correct scores
- List 2 was significantly poorer in quiet (p<0.05)*
- Performance in quiet significantly better than in noise for all lists

Word Recognition Scores

Figure 2. Mean normalized articule units (raus) in quiet and noise (ISTS)

- Conversion to raus spread out the variance to eliminate ceiling effects
- List 2 was significantly poorer in quiet (p<0.05)*
- Performance in quiet significantly better than in noise for all lists

Phase #2: Create and Validate Pictures

Purpose:
To create and validate pictorial representations for the test stimuli in all four word lists

Validation Steps
1) Picture Creation
Pictorial representations of each stimulus word were created using Adobe Illustrator
Words were presented in a CVCC context in which the vowel used was the same across lists; e.g.
List 1: huevo (egg) List 2: dedo (finger) List 3: huevo (egg) List 4: velo (veil)

2) Validation of Pictorial Representation
Subjects
N = 14 Spanish-speaking children
Age: 2 to 12; M = 3.9 years
7 males; 7 females

Procedure
113 flash cards and 25 picture boards of each list were created using digitally drawn depictions of the 100 target words
Children were shown each card and asked to verbally identify each picture in Spanish
If not able to perform task, children were shown the picture board and were asked to show the researcher the target item

3) Item Analysis and Redistribution of Stimuli Across the Four Word Lists
- The number of correct identifications of each target picture was calculated
- Some stimulus items were difficult to represent pictorially while others were different for the children to identify
- Items with the lowest percentage of correct identification in a group of four were moved to List 4
- When the lowest performance level was the same for two target items, the item was moved to List 4 if it had additional meanings in Spanish that might be confused
- It was difficult to convey pictorially
- It was inappropriate for the target population for the test

4) Re-recorded Stimuli for Revised Word Lists
Re-recording procedures were similar to those used in Phase #1 of this study
The carrier phrase was changed from “Di la palabra” (“Say the Word”) to “Enseñame” (“Show Me”)

Final Revised Word Lists

1) re-establish list equivalency with re-ordered words lists

- Present Lists 1, 2, and 3 to adult listeners whose:
  - First language is Spanish
  - Hearing is within normal limits
  - Establish performance-intensity functions for each list
  - Establish list equivalency

2) Validate the word lists
- Validate the word lists with Spanish-speaking children using the picture-pointing task
- Establish normative data for the word lists
- Validate these Spanish word lists and picture boards along with Spanish SRT picture board

Next Steps

Reference

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