The Spanish version of the NIH Toolbox: Overview and development

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Language Use Among Hispanics/Latinos in the United States

Figure 1
English Proficiency Rising Among Latinos as Spanish Use at Home Declines
% of Latinos ages 5 and older who ...

Speak Spanish at home

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<td>78</td>
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Speak English proficiently

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<td>89</td>
<td>61</td>
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Note: Latinos who speak English proficiently are those who speak only English at home or, if they speak a non-English language at home, indicate they can speak English "very well." Source: Pew Research Center tabulations of 1990 and 2000 censuses (5% IPUMS) and 2010 and 2013 American Community Surveys (1% CPS/ACS).

Figure 3.2
English Speaking and Reading Ability, by Generation (%)

- Speak English "very well"/"pretty well"
- Read English "very well"/"pretty well"

All Hispanics: 61/60
Hispanics by generation:
- First: 30/30
- Second: 92/91
- Third and higher: 96/94

Note: N=1,220. Source: Pew Hispanic Center, 2011 National Survey of Latinos

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Figure 3.3
Spanish Speaking and Reading Ability, by Generation (%)

- Speak Spanish "very well"/"pretty well"
- Read Spanish "very well"/"pretty well"

All Hispanics: 82/78
Hispanics by generation:
- First: 91/91
- Second: 82/82
- Third and higher: 47/41

Note: N=1,220. Source: Pew Hispanic Center, 2011 National Survey of Latinos

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Cultural Considerations

Cultural Working Group (CWG)

• **Purpose**: Ensure all included measures were culturally and conceptually appropriate for diverse groups

• Reviewed all English-language measures according to 5 criteria:
  1. Incorporating input from diverse end-users
  2. Ensuring equivalence across groups
  3. Psychometric equivalence
  4. Differential Item Functioning
  5. Comparable utility of measurement properties (e.g., Likert-type scales)

Gershon et al., 2013; Neurology; Victorson et al., 2013, Neurology
Cultural Considerations

Spanish Language Working Group

Purpose: Assess translatability

1. Universality
2. Cultural relevance
3. Figure of speech/jargon
4. Ambiguity
5. Register
6. Number of words
7. Translation reversal
8. Double-negative
9. Double-barrel
10. Sex and number agreement
11. Parts of speech
12. Oral vs. written
13. Mode of administration/technology

Gershon et al., 2013; Neurology; Victorson et al., 2013, Neurology
Translation methodology

• Sensation/Motor/Cognition Batteries: Modified FACIT translation methodology
  - 1 forward translation
  - 1 back translation
  - Comparison of source and back-translated versions

• Emotion Battery and select other tests: Full FACIT translation methodology
  - 2 forward translations followed by reconciliation
  - 1 back translation
  - Comparison of source and back-translated versions
  - Reviews from 3 bilingual experts
  - Finalization by language coordinator
  - Harmonization and quality assurance
  - Formatting, typesetting, proofreading
  - Cognitive pre-testing via interviews

Bonomi et al., 1996, Quality of Life Research; Cella et al., 1998, Medical Care; Eremenco, Cella, & Arnold, 2005, Evaluation & the Health Professions; Lent, Hahn, Eremenc, Webster, & Cella, 1999, Acta Oncologica
Sensation Battery

Olfaction, Audition, Vision, Taste, Pain

• Overall recommendations:
  - Deliver last
  - Video demonstrations

• Test-specific recommendations
  - Taste: use non-scientific descriptors
  - Hearing: all sounds in Spanish (e.g., background noise)
  - Smell: only universally familiar smells, pre-screening measure for children
Motor Battery
Endurance, Locomotion, Strength, Dexterity, Balance

• Overall recommendations:
  - Instructions should include information about speed and accuracy

• Translatability of select measures

• No other review or recommendations
Emotion Battery

Negative Affect, Social Relationships, Psychological Well-Being, Stress and Self-Efficacy

• More rigorous approach
• Broad discussion:
  - Impact of migration experience effects
  - Importance of culturally-relevant examples

• Items from PROMIS measures retained as-is
• Additional items reviewed by 3 CWG members
  - “no cultural problem,” “possible cultural problem requiring discussion”,
    “definite cultural problem requiring revision”
Cognition Battery

Attention, Executive Function, Episodic Memory, Processing Speed, Working Memory, Language

• Fluid abilities
  - Minimal language
  - Instructions use informal for children and formal for adult

• Crystallized abilities
  - Tests developed independently of English versions
Picture Vocabulary Test

• Receptive vocabulary measure
  - Respondent is presented with 4 pictures and hears audio recording say a word
    • Synonym (correct image)
    • Antonym (distractor)
    • Look-/sound-alike word (distractor)
    • Close mislead (distractor)
  - Instructed to select the picture that most closely shows the meaning of the word

Gershon et al., 2014, JINS
Picture Vocabulary Test

• Why not just translate it?
Picture Vocabulary Test

• Started with translation
• Reviewed by 6 bilingual experts
  - Suggested alternatives when needed
• Final items audio-recorded and tested via online panel

• Final item bank: 258 items
Oral Reading Recognition Test

• Tests ability to read and pronounce letters and words

• Developed de novo
  - 390 candidate words from Corpus del Español
    (http://www.corpusdelespanol.org/)

• Words have 2-14 letters (30 words per word length)

BRILLO
Oral Reading Recognition Test

- All caps without accents
- Includes irregularly stressed words and unambiguously pronounced words
  - Irregular:
    - Accent on 3rd syllable or later (e.g., película)
    - Ends in “n” or “s” and accent is on the last syllable (e.g., francés);
    - Ends in “d,” “l,” “n,” or “r” and accent is not on the last syllable (e.g., difícil)
    - Ends in “ia” and accent is not on the penultimate letter “i” (e.g., divisoria)
- Efforts to include words with unusual letter combinations

- Pilot tested with 50 respondents
- Final item bank: 162 items
Norming

- **English**
  - 2,917 children age 3-17 (15.0% Hispanic/Latino)
  - 1,038 adults age 18-85 (9.6% Hispanic/Latino)

- **Spanish**
  - 496 children age 3-7 only
  - 408 adults age 18-85

- Recruitment targeted Spanish-speaking population – market research firm La Verdad
  - in-person recruitment at community events
  - recruitment through community organizations/partners
  - social media advertising
  - snowball sampling techniques
As of October 2018...

NIH Toolbox En Español at 63 institutions (of > 900)
- 58 users (92%) in the United States
- 2 users in Spain
- 3 users in Latin America

• Widely!
What should I know if I want to use NIH Toolbox En Español?

- Scores on English and Spanish language measures cannot be compared or combined
- Additional instruction and reinforcement may be needed
  - E.g., “home base” for cognition tests
- Spanish version takes longer to administer
- Instructions for administrators and support materials only available in English
Summary

• English-language version designed to be culturally sensitive

• Spanish-language version developed through an extensive translation process
  - More rigorous approach used as needed

• NIH Toolbox En Español provides a much-needed set of tools

• Information regarding reliability and validity forthcoming
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• **Working Group Leaders:** Jennifer Beaumont, Helena Correia, David Victorson

• **Participants of the NIH Toolbox norming study**
Thank you!
Questions?

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