Audition

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For more information, please visit www.nihtoolbox.org
Disclosure

I am an employee of Northwestern University in Evanston, Illinois with no outside activities or conflicts of interest to disclose.

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Why include Audition?

Important for Daily Living and Quality of Life

• Educational, vocational, social consequences
• Ability to communicate
• Adherence and health outcomes
• Impacts across the lifespan
Special challenges that we faced on the Audition Team

- Brevity of administration
- Low expense
- Administration by non-experts (i.e., non-audiologists)
- Ambient noise in test environment
- Measurement across a wide age range
Audition includes the ability to:

- *detect* sounds
- *recognize* and *discriminate* among sounds, *comprehend* the meaning of acoustic events
- *localize* sound sources
- *determine* the direction and presence of sound movement
Construct: Ability to perceive language under challenging listening conditions

Task: Identify a series of words presented to each ear (random order) with increasing noise in background (7 signal-to-babble ratios)

Stimuli: Monosyllabic, high-frequency words (e.g., gun, soap). Reduces memory demands. Multi-talker babble.

Language: Norms for ages 6+ in English and Spanish
• **Total trials:** varies with performance; generally 25-35 words per ear

• **Technical characteristics:** well established
  - High test-retest reliability
  - Good validity – correlates well with pure-tone thresholds and other criteria

• **Total time:** varies with performance; typically 6 minutes total to test both ears

• **Scoring:** Algorithm provides thresholds for each ear: 50% correct (dB/SN)
Supplemental Tests

Construct:
Pure-tone sensitivity: NIH Toolbox Hearing Threshold Test

Construct:
Self-assessment: NIH Toolbox Hearing Handicap Inventory

Recommended:
Middle-ear functioning: tympanometry
An important supplement to threshold test whenever possible
Construct: Sensitivity to pure tone frequencies across the audible spectrum

Task: Did you hear the tone? (presented via headphones)

Stimuli:

- .5k, 1k, 2k, 4k, 6k and 8kHz
- Both left and right ears tested separately
- Catch trials to ensure data integrity

Scoring: Pure tone average (PTA: 1, 2, 4 kHz) used, but any desired audiometric configuration can be analyzed (e.g., 4-freq PTA: .5, 1, 2, 4 kHz)
Hearing Handicap Inventory – Screening Versions

**Construct:** Self assessment of functional hearing for adults 18+. A slightly modified version is used for the elderly ages 65+

**Task:** Answer 10 questions using a 3-point scale

**Stimuli:** Yes (4); Sometimes (2); No (0)

“Does a hearing problem cause you to be embarrassed when you meet new people?”

**Time needed:** 2-3 minutes
For more information visit www.nihtoolbox.org

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