



Habilitation Outreach for  
Professionals in Education

# HOPE Note

## Assessment Measures



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Each professional involved in cochlear implantation uses tests specific to his/her own area of study to assess the progress of a particular child. The following HOPE Note outlines and compares the range of evaluation measures that are used to assess progress for children with cochlear implants.

### Speech Perception Measures

Audiologists may use a series of tests designed to quantify the ways in which a child's perception of speech has changed, both to determine the child's candidacy for an implant and to assess progress with the device. These tests examine the following parameters:

- **Detection/Awareness**  
The child's ability to determine the presence of sound
- **Pattern Perception**  
The child's ability to notice changes in pitch, duration (long/short) or intensity (quiet/soft) of a series of sounds
- **Discrimination**  
The child's ability to determine if two auditory stimuli are the same or different
- **Identification/Recognition**  
The child's ability to identify the auditory stimuli by naming or pointing to a corresponding picture/toy
- **Comprehension**  
The child's understanding of auditory information

Identification and Comprehension tasks can be performed in a variety of ways that change the difficulty of the task:

- **Closed Set tasks:** a limited number of choices is provided
- **Open Set tasks:** no limit is given to the field of information from which the stimulus is pulled
- **Live voice:** the examiner gives the test using his/her own voice
- **Recorded voice:** taped or recorded speech is used to deliver the stimuli

Speech perception tests are scored on a percentage basis: the number of correct responses divided by the total number of responses. These tests are not normed on populations of children, therefore do not allow for comparison of a child's score to scores achieved by particular groups. The tests are used to compare a child's performance to his/her past performance on the same measure, thereby giving an indication of progress.

It is important to note that auditory skills are only the building blocks for spoken language communication. Increasing skill noted by speech perception measures, while encouraging, does not give the full picture of a child's communication ability. Language measures will add important information to that composite.

## Language Measures

Speech-language pathologists use a variety of different assessment tools to evaluate a child's comprehension of various aspects of language and his or her use of language skills to communicate. The following areas of language may be tested individually or in conjunction with other skills:

- Vocabulary – a child's knowledge store of words and their meanings
- Syntax – the formation of sentences (grammar)
- Morphology – the formation of word endings to create meaning (grammar)
- Pragmatics – the use of language to convey social meaning or intention

For each of the above parameters, a child's comprehension or understanding (receptive language) will be assessed as well as use or expression (expressive language) of those same features. Language tests will often be highly structured in administration, although observation of a child communicating naturally (language sampling) will be included in the most comprehensive of assessments.

Most language measures for children above the age of 3 are norm-referenced tests – those that have been standardized on a group of children with certain characteristics. When these tests are used, a given child's performance can be compared to that of the tested population. For children using cochlear implants, for example, a particular child's test performance could be compared to that of hearing children of the same age. Additionally, scores from a particular test repeated over time can be compared to determine both the child's own progress and his progress compared to that of the group.

## Speech Production Measures

Speech language pathologists also use a variety of tests to assess speech productions skills. These are typically tasks that require a child to name a given picture with pictures chosen to stimulate production of the various sounds in English. The professional then assesses each response as to the clarity of the sound production. Speech production measures have various scoring procedures, all based on the comparison of a child's production of sounds to the developmental expectation for sound acquisition. A child's audiogram and his/her hearing age must be considered in order to determine appropriate expectations for correct sound production. In addition, overall clarity of speech may be assessed through measures of speech intelligibility.

## Using Test Scores

Making functional use of test scores on reports provided by other professionals can often be challenging for the school-based professional. Test scores are best used when the context of each test is understood, therefore requesting a specific description of each test administered is recommended. In general, speech perception scores can be very useful in determining a starting point on an auditory skills curriculum used in the therapeutic setting. Additionally, speech-language testing will drive goal planning for the language structures that can be integrated into auditory work as well as expectations for speech production.

## Related Resources

Eisenberg, L.S., et al. (2005). *Clinical Assessment of Speech Perception for Infants and Toddlers*. Audiology Online Articles. [www.audiologyonline.com/articles/pf\\_arc\\_disp.asp?article\\_id=1443](http://www.audiologyonline.com/articles/pf_arc_disp.asp?article_id=1443).

Moog, J.S. (2006). *Assessing Spoken Language: Its Role in Teaching More Effectively*. HOPE Online Library. Available at [www.cochlear.com/HOPE](http://www.cochlear.com/HOPE).

Tobey, E. (2003). *Spoken Language Development in Young Children with Cochlear Implants*. ASHA Continuing Education Self Study Videotape. [www.asha.org/about/continuing-ed/ASHA-courses/JSS/JSS6640.htm](http://www.asha.org/about/continuing-ed/ASHA-courses/JSS/JSS6640.htm).

Wilkes, E. (2000). *Cottage Acquisition Scales for Listening Language and Speech*. Sunshine Cottage School for Deaf Children, San Antonio, TX. Available at [www.agbell.org](http://www.agbell.org).

Zwolan, T., & Heavner, K. (2005). *Measuring and Monitoring Progress with Cochlear Implants: Audiologists and Speech-Language Pathologists Working Together*. ASHA Leader. [www.asha.org/about/publications/leader-online/archives/2005/050503/f050503b.htm](http://www.asha.org/about/publications/leader-online/archives/2005/050503/f050503b.htm).

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