



Auditory Verbal Therapy and Consultation Services

Comprehensive Spoken Language Assessment

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Reasons for Assessment

- Initial evaluation
 - What is child's baseline functioning?
 - Is a student eligible for services?
- Documenting progress
 - Where is the child currently functioning?
 - Is the child still eligible for services?
- Planning instruction
 - What are appropriate targets?
 - To what extent have maturity and instruction interacted to account for progress?

Assessment Measures

- A comprehensive assessment will include a battery of measures to evaluate a range of skills
- Assessment instruments will allow us to determine capabilities only at a given point in time
- It is only when we look at rate of progress from time to time that we can make inferences about the nature of the child's development

Types of Tests

- Simple Scoring
- Criterion Referenced
- Norm Referenced

Simple Scoring

- Percentages
 - The percent correct out of a total number of items/opportunities
 - The closer to 100%, the better the score
 - Typical scoring method for speech perception measures

Criterion Referenced

- These measures compare a child's performance to a pre-defined set of criteria or a particular standard
- In language development, tests indicate particular skills that would be expected for a child at a given age or stage of development
- Skills may be reported as
 - Present or absent
 - Emerging or generalized
 - Observed or reported

Norm Referenced

- “Normative Sample” refers to the characteristics of the participants included in the scoring sample
 - Age of children
 - Cultural and regional backgrounds
- Tests are designed to be given in a prescribed manner so as to ensure consistency in presentation
 - Scripted language
 - Specific instruction for repetitions, discontinuing testing, etc.
- Norm-referenced tests that are standardized on children with normal hearing are typically used to allow a comparison of a child with an implant to the general population of children

Understanding Standard Scores

- Standard Score
 - Typically MEAN = 100; SD=15
 - Therefore “average range” = 85 to 115
- Percentile Rank
 - Tells student’s position relative to the normative sample
 - 15th percentile to 85th percentile corresponds to average range

Understanding Standard Scores

- Age-Equivalent Scores
 - Values set to equal the AVERAGE score of children at particular ages
 - Do not inform instruction
- Grade Equivalent Scores
 - Values set to equal the AVERAGE score of pupils at a corresponding grade placement
 - Do not inform instruction
- Standard Scores are typically used as reference points to qualify children for services

Examining the Results

- Because the tests used are not typically designed for children with hearing loss, careful interpretation of the scores is critical
- A child's performance on a given day can give information regarding his skill in a particular area, but only given the language used, the context of the testing environment, etc.

Examining the Results

- It may be necessary to look at all levels of scoring to interpret a child's performance on a given day as well as to assess his progress over time
 - For a high performer, a Total Language Score in the average range may hide the fact that a particular subtest and therefore a particular area of comprehension or expression was of relative difficulty for the child
 - For low performers, scoring far below the normal range, comparing raw scores may be the only way to note progress in a particular area

Supplementary Subtests and Index Scores

- On many standardized language measures, scores from a small group of subtests derive the “Core” or “Composite” scores and are meant to be representative of a child’s overall function
- Supplementary subtests though are available to more closely assess particular areas.
- “Index scores” are then derived by grouping scores from subtests that look at common areas through different means
- By looking at these supplementary subtests, particular strengths and weaknesses may be identified that do not show up with Composite scores

Index Scores

- For example, on the CASL, for a child 8 yrs
 - The “Core Composite” is derived from scores on
 - Antonyms
 - Syntax Construction
 - Paragraph Comprehension
 - Nonliteral Language
 - Pragmatic Judgment
 - The “Lexical/Semantic Index” pulls scores from
 - Antonyms
 - Synonyms (Supplementary)
 - Sentence Completion (Supplementary)
 - The Syntactic Index” pulls score from
 - Syntax Construction
 - Grammatical Morphemes (Supplementary)
 - Grammaticality Judgment (Supplementary)

Comprehensive Assessment

- Comprehensive Assessment for a school aged child with a cochlear implant includes
 - Language comprehension
 - Language expression
 - Speech production
 - *Reading skill*
 - *Narrative discourse*
 - *Writing skill*
 - Auditory skills

- When using formal assessment measures for documentation of progress or for eligibility determination, it is important to consider performance on a battery of measures
- Consider, for example, the means of testing expressive vocabulary via
 - Picture naming tasks
 - Synonym tasks
 - Word classes tasks
 - Sentence writing tasks

Auditory Skills

- Very often, CI centers assess auditory skills at regular intervals to track progress and monitor device function
- Areas assessed include
 - Word level identification in closed and open set
 - Sentence level identification and comprehension in closed and open sets
 - Sound level discrimination/identification (i.e. minimal pairs testing)
 - This testing is sufficient for recording progress, but should be supplemented by functional assessment in the school/therapy environment for goal setting purposes

Language Testing

- Language measures assess a child's comprehension or understanding (*receptive language*) as well as use or expression (*expressive language*) of the following features
 - vocabulary
 - morphology
 - syntax
 - pragmatics
- Ideally, language samples supplement standardized testing through observation of a child communicating naturally with a parent, sibling, or the examiner

Language Measures

- PLS-4 Preschool Language Scale-4 (Ages 0 to 6:11)
- CELF P2 Clinical Evaluation of Language Fundamentals (Ages 3 to 6)
- CELF-IV (Ages 5 to 21 years)
- CASL Comprehensive Assessment of Spoken Language - CASL (Ages 3 to 21)
- OWLS Oral Written Language Scales (Ages 3 to 21, Written Scales 5 to 21)

Vocabulary

- **PPVT 4** Peabody Picture Vocabulary Test (Ages 2;6 to 90+)
- **EVT 2** Expressive Vocabulary Test (Ages 2;6 to 90+)
- **ROWPVT** Receptive One Word Picture Vocabulary Test (Ages 2 to 18;11)
- **EOWPVT** Expressive One Word Picture Vocabulary Test (Ages 2 to 18;11)

Reading and Writing

- The higher level uses of our receptive and expressive language abilities
- Testing these areas may identify additional areas of strength and weakness that will be helpful for goal setting or qualifying for services

Reading Assessment

- **GORT 4** Gray Oral Reading Test (Ages 6 to 11)
 - Rate
 - Accuracy
 - Fluency (Rate + Accuracy)
 - Comprehension
 - Overall Reading Ability (Fluency + Comprehension)
- **WRMT R/NU** Woodcock Reading Mastery Battery (Ages 5 to 75)
 - Word Identification
 - Word Attack
 - Word Comprehension
 - Passage Comprehension

Writing Assessment

- **TOWL** Test of Written Language (Ages 9 to 17;11)
 - Contrived Writing (Vocabulary, Spelling, Punctuation, Logical Sentences, Sentence Combining)
 - Spontaneous Writing (Contextual Conventions, Story Composition)
 - Overall Writing
- **TEWL** Test of Early Written Language (4 to 10)
 - Basic writing
 - Contextual writing skill
 - Global writing (combination of basic and contextual writing skill)

Narrative Discourse

- Narrative language requires the *synthesis* of morphologic, syntactic, semantic and pragmatic skills
- **TNL** Test of Narrative Language (Ages 5 to 11)
 - Designed as a comprehensive measure of a child's ability to comprehend and produce narratives
 - Uses three formats (No picture, sequenced picture, Single Picture) to test
 - Narrative Comprehension
 - Oral Narration

Case Example

BH – CA: 10;5

- Mainstreamed in 5th grade in a private religious school
- Received speech language and Itinerant services 3 hours per week in last school year to pre-expose vocabulary and curriculum concepts
- IEE requested due to school district's findings that student no longer qualified for special ed services

Assessment Results

- CELF-IV
 - Core Language Score 106
 - Receptive Language Index 99
 - Expressive Language Index 106
 - Language Content Index 94
 - Language Memory Index 108
 - Selected Subtest Scores
 - Formulated Sentences 13
 - Understanding Spoken Paragraphs 10
 - Expressive Vocabulary 7

Assessment Results

- PPVT 80
- EVT 97
- CASL
 - Core Composite 106
 - Lexical/Semantic 85
 - Selected Subtests
 - Paragraph Comprehension 125
 - Antonyms 84
 - Synonyms 93
 - Sentence Completion 86

Assessment Results

- TOWL 4
 - Contrived Writing 94
 - Spontaneous Writing 85
 - Selected Subtest Scores
 - Vocabulary 6
 - Spelling 10
 - Sentence Combining 15
- TNL
 - Narrative Comprehension 14
 - Oral Narration 9
 - Narrative Language Ability Index 109

Interpretation/Findings

- The district focused on only the Composite Scores to show that BH functions WNL when compared to children of his age
- IEE results showed that while BH is scoring well in most areas, vocabulary is a particular area of concern, across tests and contexts

- This atypical pattern of language development was suggested as justification for continuation of services
- Unfortunately, educationally based assessments were not completed so Standard Scores were the only criterion considered and district continues to recommend taking child off his IEP

Educational Assessment

Premises that Drive Assessment in Educational Settings

- Assessment is the first step in an intervention plan
- Assessment protocol must be followed in order to yield valid results
- Inherent in the assessment process is reaching a point at which the child is no longer successful

- Assessment designed for use in educational or rehabilitative settings will inform instruction for an individual child in a more transparent fashion than do most measures chosen for eligibility and for tracking progress clinically
 - What does that mean?

Tools that Inform Instruction

- Auditory
 - CASLLS
 - AuSpLan
 - APT/HI Auditory Perception Test for Hearing Impaired (Ages 3+)
- Language
 - **Language Sampling**
 - **CASLLS**
 - SPELT 3 Structured Photographic Expressive Language Test (Ages 4 to 9:11)
- Reading: Qualitative Reading Index
- Concept measures
 - BBCS Bracken Basic Concept Scale (Ages 3 to 6;11)
 - Boehm 3 Boehm Test of Basic Concepts (5 to 7;11)

What is Language Sampling?

- Observational record of a child's communication in a naturalistic context
 - Examiner records child's utterances as he or she communicates with a partner
- Language Sample Analysis (LSA) is the scrutiny of that sample and its comparison to developmental expectations in order to make judgments about a child's level of skill or progress

Historically

- Historically in the field of deafness, language sampling has been used widely because of the dearth of standardized language assessment measures normed on children with hearing loss (Marschark and Clark, 1998).
- Abraham & Stoker (1998) ranked LSA 3rd in frequency of use in assessing children with hearing loss
- LS affords opportunity to describe what the child is doing vs. what they are not.

Now

- Now, with current technologies and better spoken language outcomes we can make much more reliable use of standardized language assessment measures
- However, the importance of including language sampling in our procedures has not decreased
- Continues to be one critical *component* in a comprehensive communication assessment



What can we learn?

- Gain information for all age ranges, communication modes
 - Spoken language usage
 - Signed or gestured communication
 - Communicative intent and pragmatic skills
- Communication within context
 - Initiations, responses, questions
 - Conversational turns
 - Tendencies toward imitations vs spontaneous communication

When?

- When should we include language sampling as part of our assessment?
 - Some research has suggested that language sampling may in fact give a more complete picture of language development than standardized testing alone (*Dunn, et al. 1996*)
 - so, to term an evaluation as “comprehensive” it *must* be included
 - And, arguably, a running sample will assist in monitoring progress on a regular basis

Methods – Type of Sample

- Play
 - Toy props used to stimulate description and conversation
- Spontaneous Conversation
 - Southwood & Russell (2004) found play to yield *more* utterances, but conversation to yield more *complex* utterances

- Narrative Discourse

- Wordless books are a good stimulus for this sample type
- For older children, has been found to yield a sample more representative of a child's most advanced utterances (Miller & Leadholm, 1992)
- Wagner et. al (2000) found similar results for preschool children
 - higher MLU, greater phrasal expansions and more grammatical morphemes as compared to

- Interview

- Examiner asks questions of child and records their answers
- Open ended questions should lead into expanded utterances
- More reticent children may not take that bait, answers to direct questions sometimes impose limitations on the structures used

- Higher level eliciting techniques
 - Expository or persuasive samples
 - asking an older child to give directions to a task or to give information about a particular topic
 - may yield information with regards to formulation and organization of thoughts as well as to use of language structures

- For all ages, collecting samples from a variety of contexts would be preferable
- Different conversational partners may influence the complexity of expression used
 - Parent and child vs. therapist and child vs. child and sibling
- Certain types of toys/games may limit the vocabulary or even sentence structures used
 - Ex. “Go Fish” requires very scripted language patterns

Collecting a Sample

- Challenges
 - It is difficult to transcribe complete utterances quickly and accurately
 - Contextual information is often missed in transcription
 - Overlapping speakers can confuse transcription, particularly in a classroom environment
- Solutions
 - Record! Audio or audio/visual recordings can be reviewed after the fact to combat the above

Length of Sample

- Many studies have concluded that the preferred sample length is at least 50 utterances
- Heilman, Nockerts, & Miller (2010) reported findings that indicated the relative reliability of shorter language samples (3minutes) in some cases (e.g. use in ongoing monitoring of progress)
- However, their conclusions seem to suggest that the 50 utterance sample would continue to be preferred
 - when analyzing for use of particular language structures
 - and when LSA is the primary means of reporting skill

Language Sample Analysis (LSA)

Tools for Analysis

- SALT – Systematic Analysis of Language Transcripts
- Assigning Structural Stages (Miller, 1981)
- LARSP – Language Assessment and Remediation Screening Procedure (Crystal, Fletcher & Garmen, 1976)
- CASLLS – Cottage Acquisition Scales of Listening, Language, and Speech (Wilkins, 2000)

SALT

- Systematic Analysis of Language Transcripts
 - Computer program analysis
 - Allows comparison of sample to one from same child at earlier interval
 - Allows for comparison to children of same age or grade
- Information available includes
 - MLU
 - Brown's stages
 - Morpheme analysis
 - Length of conversational turns
 - Utterance categories
 - Imitations
 - Response to questions

Assigning Structural Stages

- A procedure designed to provide detailed description of child's structural use of simple sentences
 - Specific phrase elements examined (e.g. use of possessives, negatives, etc.)
- Overall stage assignment then compared to MLU and Morpheme Analysis to make a determination of whether syntax is showing a particular delay
- Complex sentences can also be analyzed in a similar fashion and assigned a structural stage based on comparison to developmental charts

LARSP

- Analyzes a child's sentence, clause, phrase and word types
- Requires 8 scans of the elicited sample to complete the analysis
- Utilizes a worksheet to tally examples of particular structures
- An overall stage assignment is made at the completion of analysis
- Along with ASS, was presented within one model of suggested CI evaluation protocols (Bradham, et al. 2009)

CASLLS

- Cottage Acquisition Scales of Listening, Language and Speech
 - Developed at Sunshine Cottage School for Deaf Children
- Based on a skills hierarchy derived from the milestones of typically developing youngsters, birth to age 8
- Results can be used to supplement standardized testing at diagnostic intervals or to follow a child's development of language skills over time

CASLLS Levels

- Four hierarchically organized rating forms inventory language structures at
 - PreVerbal Level (~0-12mo)
 - PreSentence Level (~12-24mo)
 - Simple Sentence Level (~24-36mo)
 - Complex Sentence Level (~36+mo)
- Rates behaviors as:
 - E=Emerging (observed at least once)
 - M=Mastered in Some Conditions
 - G=Generalized to Many Contexts

Additionally

- All 4 language forms include items pertaining to:
 - Language based cognitive skills
 - Social interactions and discourse skills
- Program includes a fifth form to be used in conjunction with any of the others
 - Sounds and Speech
 - Monitors phonetic sound awareness, listening discrimination, sound production, etc.

Classroom Strategies for Collecting Samples

- Enlist classroom aides or para-professionals in the task
- Sample on a regular basis
 - Focus on one child at a time over a period of several days
 - Build sample collection into lesson plans
 - Observe and record language every other Friday
 - Record samples on a weekly rotation through activities (e.g. Monday – circle time, Tuesday snack, Wednesday free play etc.)

Noted

- Provides information on specific usage of particular language structures; critical to an evaluative picture of a child with hearing loss
- To fully analyze a sample for diagnostic purposes, multiple passes over a sample will be required
- Excellent, therefore, for use within schools or clinical programs in which a child is enrolled over a span of time

Interpreting CASLLS Results

- Once a child's capacity for producing language structures has been ascertained, specific targets for intervention can be identified
 - The teacher/therapist will want to build a child's receptive and expressive capability within and across grammatical categories consider the setting in which any particular language target is observed

A Word About LENA

- LENA – Language Environment Analysis
- A body worn DLP (Digital Language Processor) records up to 16 hours of audio
- Captures and analyzes conversations between adult and child
- Reports
 - Adult word count
 - Child vocalizations/utterances
 - Environmental noise

LENA and LSA

- Able to capture and play back high-quality audio in a .wav format to analyze
 - morphology, phonology, syntax, semantics, and pragmatics
 - language acquisition
 - adult-child and child-child interactions
 - code switching
- Generate a pre-segmented file that can be accessed and transcribed via SALT



Other References

- *Psychological Perspectives in Deafness, Vol II.* (1998). Marschark & Clark, eds. Psychology Press.
- Abraham, S and Stoker, R (1988) “Language assessment of hearing impaired children and youth: Patterns of test use” LSHSS, 19, 160-174.
- Bradham, T., Snell, G. & Haynes, D. (2009). “Current Practices in Pediatric Cochlear Implantation.” *Perspectives on Hearing and Hearing Disorders in Childhood.* 19 (1). 32-42.
- Dunn, M. Flax, J., Sliwinski, M., & Aram, D. (1996). The use of spontaneous language measures as criteria for identifying children with specific language impairment: an attempt to reconcile clinical and research congruence. *Journal of Speech and Hearing Research*, 39, 643-654.

References cont.

- Miller, J., and Leadholm, B. (1992). Language Sample Analysis Guide: The Wisconsin Guide for the Identification and Description of Language Impairment in Children. Wisconsin Department of Public Instruction.
- Southwood, F. , & Russell, A.F. (2004). Comparison of conversation, freeplay and story generation as methods of language sample elicitation. *Journal of Speech, Language and Hearing Research, 47(2)*, 366-376.
- **Wagner, C. R., Nettelbladt, U., Sahlén, B., & Nilholm, C.** (2000). Conversation versus narration in pre-school children with language impairment. *International Journal of Language & Communication Disorders, 35(1)*, 83–93
- Wilkes, E.M. (2001). *Cottage Acquisition Scales for Listening, Language, and Speech*. San Antonio: Sunshine Cottage School for Deaf Children

Summary

- For an assessment of a child with a cochlear implant to be considered comprehensive, speech, language and auditory skills must be evaluated across domains
 - Looking closely at subtests/indexes can prove helpful
- Clinical assessment is most helpful in tracking progress and identifying particular areas of strength and weakness
- Educational based assessments (criterion) are more appropriately used for goal setting