COMPONENTS OF COMPREHENSIVE PRESCHOOL EVALUATIONS

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Overview

- This presentation describes components of a comprehensive preschool evaluation for the purpose of disorder identification. It lists standardized and clinical assessments, SLPs can utilize in assessment of preschool children with suspected speech, language, and literacy deficits.

Learning Objectives

- At the end of this presentation learners will be able to:
  1. Discuss useful standardized tests SLPs can utilize in assessment of preschool children with suspected speech, language, and literacy deficits
  2. List useful clinical tasks SLPs can utilize in assessment of preschool children with suspected speech, language, and literacy deficits

Assessment

- Parental Interview
  - Get the facts
  - Review risk factors
- Standardized Instruments
  - Comprehensive language tests
  - Targeted tests
- Clinical Assessments
  - Language sample
  - Play Skills
  - Narrative Assessment
- Social pragmatic checklist

Preparing for Assessment: Parental Interview

- Socio Economic Status (SES)
- Maternal Education
- Maternal Stress
- Is the father present/absent?
- Family instability?
- Exposure to violence?
- Is there a history of mental illness in the family?
- Is there a family history of substance abuse?
- Was the mother taking any substances prior to finding out she was pregnant?
  - Drugs
  - Alcohol
    - Greatest Teratogen
  - If yes, how many months along was the mother when she found out she was pregnant?
    - *Important to rule out Fetal Alcohol Spectrum Disorders, which are typically accompanied by significant concomitant behavior deficits

Select useful language tests for ages 3-5

- **Preschool Language Assessment Instrument -2 (PLAI-2) (2003)**
- **Clinical Evaluation of Language Fundamentals Preschool -3 (CELF-P3) (2020)**
- **Language Use Inventory LUI (2009)**
- **Children's Communication Checklist-2 (CCC-2) (2006)**

PLAI-2 *(3:0 – 5:11)*

- Normed referenced for the purposes of determining how effectively a child integrates cognitive, linguistic and pragmatic components to deal with the full range of adult-child exchange in the classroom
- Six Subtests: four assessing levels of abstraction; two assessing modes of response.
  - Matching- label or find the same one you just saw (What is this? or Find me the. . .)
  - Analysis- (e.g., How are these different?, What is happening in this picture?)
  - Reordering- (e.g., Which one is NOT a . . . ?, How are these objects [different/same?)
  - Reasoning-(e.g. What will happen if . . .? How do you know that . . .?)
- Receptive Mode-nonverbal responses (pointing/showing)
- Expressive Mode-verbal responses
- Discourse Ability Score: overall estimate of performance
- **No sensitivity and specificity measures**

CELF-P3 (3:0-6:0)

- Subtests with scaled scores:
  - Sentence Comprehension
  - **Word Structure**
  - Expressive Vocabulary
  - **Following Directions**
  - **Recalling Sentences**
  - Basic Concepts
  - **Word Classes* (now lacks expressive component)**
  - Phonological Awareness
  - Descriptive Pragmatics Profile
  - Emerging Literacy Rating Scale
- Phonological awareness (ages 4-6)
- Pre-literacy rating scale (ages 3-6)

- **Sensitivity**
  - **1 SD, cut score 85: 96%**
  - **-1.3 SD, cut score 80: 93%**
  - **-1.5 SD, cut score 77: 89%**
  - **-2 SD, cut score 70: 74%**
- **Specificity**
  - **-1 SD, cut score 85: 70%**
  - **-1.3 SD, cut score 80: 81%**
  - **-1.5 SD, cut score 77: 84%**
  - **-2 SD, cut score 70: 96%**

Assessment Tasks and What They Measure

- Following directions tasks correlate with working memory functioning and are sensitive to reading deficits (Lahey & Bloom, 1994; Cowan, 1996; Baddeley, 2003)
- Grammatical structure deficits particularly in the area of tense-marking & agreement incl. past tense '-ed', third person singular '-s', 'be' and 'do' etc., is sensitive to language deficits (Rice & Wexler, 1996; Loeb and Leonard, 1991; Rice and Wexler, 1996; Oetting and Horohov, 1997; van der Lely and Ullman, 2001))
- Sentence recall and nonword repetition tasks are sensitive to both language and literacy deficits (Dollaghan & Campbell, 1998, Alloway & Gathercole,2005)
  - Sentence recall has been increasingly recognized as a useful indicator of learning difficulties including specific language impairment or SLI (relabeled Developmental Language Disorder, DLD), dyslexia, phonological short-term memory deficits, as well as reading comprehension deficits (Alloway & Gathercole,2005)
- Phonemic awareness and alphabetic knowledge have been identified in a number of studies as key indicators of emergent reading mastery during the early elementary school years (Anderson, Hiebert, Scott, & Wilkerson, 1985; Adams, 1990; Snow, Burns, & Griffin, 1998; Wood & Mclemore, 2001)

LUI (18-47 mos.)

- Parental questionnaire applicable to preschool children 36-47 months of age
- +/-20 minutes to complete
- Automated Score Calculator

- Aimed at identifying children with delay/impairment in expressive and pragmatic language development
- 180 questions; 3 parts; 14 subscales
  - Communication w/t gestures
  - Communication w/t words
  - Longer sentences


- Discriminant accuracy: sensitivity and specificity levels over 95% (O'Neill, 2007)

CCC-2 (4+)

-
  - Ages 4+
  - 70 items
  - Norm referenced parent rating instrument
  - 10 scales out of which
  - 4 (E, F, G & H) address pragmatic aspects of communication
  - 2 (I & J) assess behaviors commonly impaired in children with Autism Spectrum Disorders (Bishop, 2006)

- Sensitivity
  - -1 SD: 89%
- Specificity
  - -1 SD: 97%
- Limitations: unlike the LUI which is intended for younger ages and is relatively straightforward to fill out, when it comes to interpretation, the questions on CCC-2 are often misinterpreted by parents, which can result in score overinflation of student's abilities

Select Useful Preschool Literacy Tests

• Assessment of Literacy and Language (ALL) (2020)	Ages: Pre-K-1st Grade
• The Phonological Awareness Test -2: Normative Update (PAT-2: NU) (2018)	Ages 5+
• Comprehensive Test of Phonological Processing-2 (CTOPP-2) (2013)	Ages 4+
• Rapid Automatized Naming/Rapid Alternating Stimulus Test (RAN/RAS) (2005)	Ages 5+
• Language Processing Skills Assessment (TAPS-4) (2018)	Ages 5+
• Test of Early Reading Ability-4 (TERA-4) (2018)	Ages 4+
• Test of Early Written Language-3 (TEWL-3) (2012)	Ages 4+

ALL (Pre-K -1st Grade)

- Administration time: ~60 min
- 3 levels
  - Initial indicator subtests (10-15 min)
  - Diagnostic subtests (specific) (<45 min)
  - Criterion-referenced subtests (1-5 min)
    - Not all subtests are administered to all children
- Assessment areas:
  - Listening comprehension
  - Spoken language
  - Phonological awareness
  - Alphabetic knowledge
  - Print awareness
  - Fluency

Diagnostic Accuracy

The diagnostic accuracy of ALL was evaluated using two diagnostic validity statistics that describe how a test performs: sensitivity and specificity. Sensitivity indicates the probability that someone who has a language disorder will test positive for it, and specificity indicates the probability that someone who does not have a language disorder will test negative. The table that follows shows the percentage of children classified as having a specific language impairment (sensitivity) and the percentage of children without specific language impairment (specificity) by the ALL Language Index Score at 1, 1.5, and 2 standard deviations below the mean.

Classification of Specific Language Impairment by Language Index Score

Language	Index Score? SD Sensitivity	Specificity
–1 *SD*	.98	.89
–1.5 *SD*	.86	.96

ALL (Cont.)

ALL provides three levels of assessment: Initial Indicator (screening), Diagnostic, and Criterion-Referenced (extension testing determined by clinical judgment).

Level 1: Initial Indicator — 10–15 minutes

Determining if diagnostic evaluation is needed—Qualification Level A (bachelor's)/B (master's)

Pre-K	Kindergarten (fall)	Kindergarten (spring)	First Grade
Basic Concepts Rhyme Knowledge	Basic Concepts Letter Knowledge	Basic Concepts Letter Knowledge	Basic Concepts Phonics Knowledge

Level 2: Diagnostic — 45 minutes

Diagnosing and Describing the Disorder—Qualification Level B

EMERGENT LITERACY

Pre-K	Kindergarten (fall)	Kindergarten (spring)	First Grade
Basic Concepts Rhyme Knowledge	Basic Concepts Letter Knowledge	Basic Concepts Letter Knowledge	Basic Concepts Phonics Knowledge

LANGUAGE

Pre-K	Kindergarten (fall)	Kindergarten (spring)	First Grade
Basic Concepts Receptive Vocabulary Parallel Sentence Production Listening Comprehension	Basic Concepts Receptive Vocabulary Parallel Sentence Production Word Relationships Listening Comprehension	Basic Concepts Receptive Vocabulary Parallel Sentence Production Word Relationships Listening Comprehension	Basic Concepts Receptive Vocabulary Parallel Sentence Production Word Relationships Listening Comprehension

Level 3: Criterion-Referenced — 1–5 minutes/subtest

Evaluating related clinical behaviors—Qualification Level B

Pre-K	Kindergarten (fall)	Kindergarten (spring)	First Grade
Book Handling Matching Symbols Word Retrieval Rapid Automatic Naming	Book Handling Matching Symbols Word Retrieval Rapid Automatic Naming	Book Handling Matching Symbols Word Retrieval Rapid Automatic Naming	Book Handling Concept of Word Matching Symbols Word Retrieval Rapid Automatic Naming Invented Spelling Letter Knowledge

Early Reading First and Reading First Components and ALL Subtests and Tasks

Early Reading First and Reading First Components	ALL Subtest	The Child's Task
Language	Basic Concepts	The child points to a picture that best represents the target concept.
	Receptive Vocabulary	The child points to a picture that best represents the word the examiner says.
	Parallel Sentence Production	The child completes a phrase or sentence (cloze procedure) that contains the targeted structure(s).
	Word Relationships	The child describes the relationship between two stimulus words.
Phonological Awareness	Rhyme Knowledge	Task 1: The child tells if pairs of words rhyme. Task 2: The child identifies the one word out of a set of words that does not rhyme. Task 3: The child produces a word that rhymes with a stimulus word. Task 4: The child produces a word that rhymes with the stimulus word in a given sentence
	Sound Categorization	The child identifies which word does not start with the same sound as the others when given a set of 3 or 4 words
	Elision	Task 1: The child deletes syllables or sounds in stimulus words to form new target words. Pictures are used as stimuli. Task 2: Administered like Task 1, but stimulus pictures are not used.
Alphabetic Knowledge	Letter Knowledge	Task 1: The child points to letters on the stimulus page as they are named by the examiner. Task 2: The child names letters that the examiner points to. Task 3: The child writes letters that the examiner names.
	Phonics Knowledge	Task 1: The child produces the sounds of the letters. Task 2: The child produces the sounds of the letter combinations. Task 3: The child reads nonsense words.
	Invented Spelling	The child writes words dictated by the examiner.
Print Awareness	Book Handling	The child identifies parts of a book and demonstrates how to use a book.
	Concept of Word	The child identifies groups of letters as words.
	Matching Symbols	The child points to the symbol that matches the target symbol presented by the examiner.
Fluency	Sight Word Recognition	The child reads words.
Comprehension	Listening Comprehension	The child retells a story and answers questions about that story.

PAT-2: NU (5:00-9:11)

- A standardized assessment of phonological awareness, phoneme-grapheme correspondence, and phonemic decoding skills
  - **Rhyming**: Discrimination and Production-identify rhyming pairs and provide a rhyming word
  - **Segmentation**: Sentences, Syllables, and Phonemes-divide by words, syllables, and phonemes
  - **Isolation**: Initial, Final, and Medial-identity sound position in words
  - **Deletion**: Compound Words, Syllables, and Phonemes-manipulate root words, syllables, and phonemes in words
  - **Substitution with Manipulatives**: isolate a phoneme in a word, then change in to another phoneme to form a new word
  - **Blending**: Syllables and Phonemes blend units of sound to form new words
  - ***Phoneme-Grapheme Correspondence**: assesses knowledge of sound/symbol correspondence for consonants, vowels, consonant blends, consonant digraphs, r-controlled vowels, vowel diagraphs, and diphthongs
  - ***Phonemic Decoding**: assesses general knowledge of sound/symbol correspondence to blend sounds into nonsense words

PAT-2: NU (cont.)

- Sensitivity and Specificity are NOT reported in the manual BUT:
- 15% of children in the normative sample presented with a disability (Manual, pg. 21)
  - 3% language impairment
  - 12% special education
  - Why does this matter?
  - According to Peña, Spaulding and Plante (2006),"by including such children [with disabilities] in the normative sample, we may be "shooting ourselves in the foot" in terms of testing for the purpose of identifying disorders." (pg. 248)
    - Adversely impacts discriminant accuracy (differentiation between typical and disordered)
    - Lowers the mean score or essentially normalizes the disorder (e.g., children with mild disabilities will not be flagged)

CTOPP-2 (4:00-24:11)

- Phonological Segmentation
- Blending Words
- Sound Matching
  - Initial, Medial and Final Phoneme Isolatic
- **Blending Nonwords**
- **Segmenting Nonwords**
- Memory for Digits
- **Nonword Repetition**
- **Rapid Digit Naming**
- **Rapid Letter Naming**
- **Rapid Color Naming**
- **Rapid Object Naming**

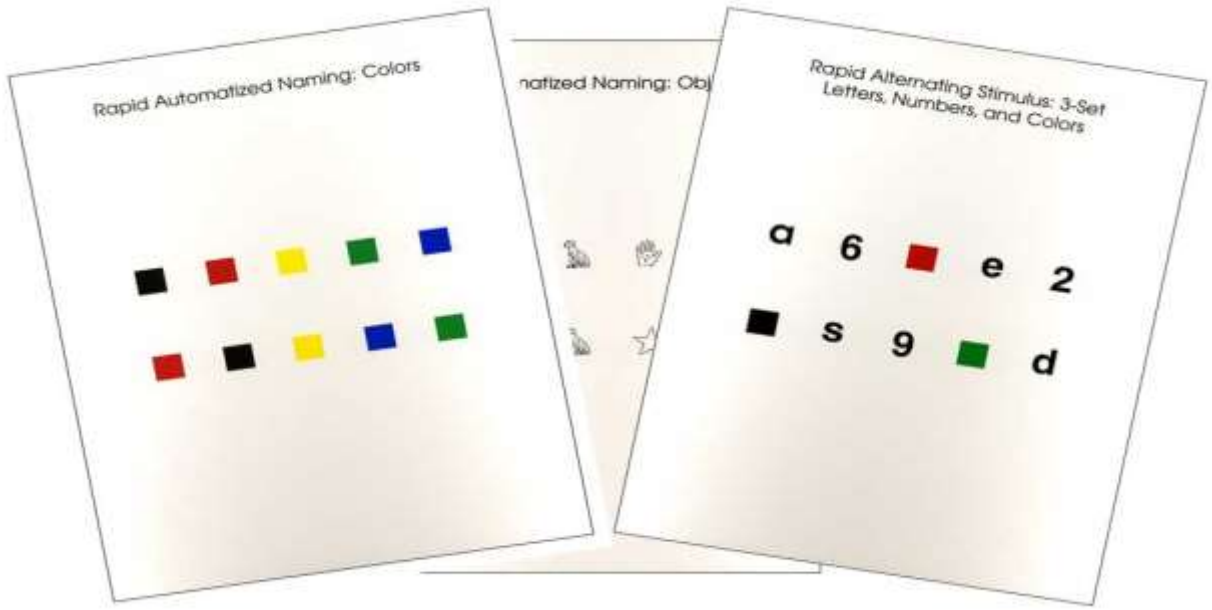
CTOPP-2 Subtests

1. Elision measures the ability to remove phonological segments from spoken words to form other words.
2. Blending Words measures the ability to synthesize sounds to form words.
3. Sound Matching measures the ability to select words with the same initial and final sounds.
4. Phoneme Isolation measures the ability to isolate individual sounds within words.
5. Blending Nonwords measures the ability to synthesize sounds to form nonwords.
6. Segmenting Nonwords measures the ability to segment nonwords into phonemes.
7. Memory for Digits measures the ability to repeat numbers accurately.
8. Nonword Repetition measures the ability to repeat nonwords accurately.
9. Rapid Digit Naming measures the ability to rapidly name numbers.
10. Rapid Letter Naming measures the ability to rapidly name letters.
11. Rapid Color Naming measures the ability to rapidly name colors.
12. Rapid Object Naming measures the ability to rapidly name objects.

CTOPP-2 (cont.)

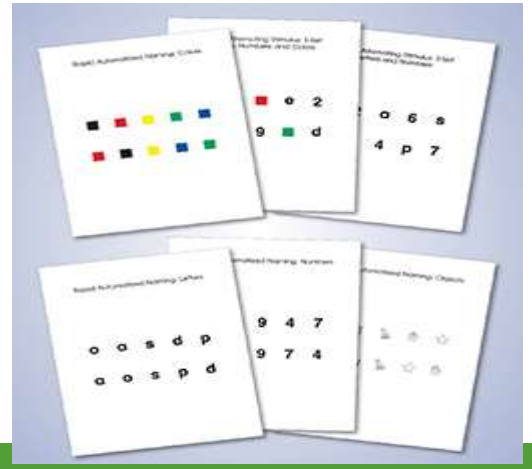
- **Sensitivity and Specificity are NOT reported in the manual BUT:**
- <7% of children in the normative sample presented with a disability (Manual, pg. 44)
  - SLI
  - ID (formerly MR)
  - HI
  - OHI
  - ADHD
  - Other

RAN/RAS (5:00-18:11)



On all tests the participants are asked to name visual symbols (letters, numbers, objects, and colors) as quickly and accurately as possible (scores are time based).

- The main tests are made up of five high-frequency stimuli that are repeated randomly 10 times in an array of five rows for a total of fifty stimulus items.
- Additionally there are two rapid alternating stimulus tests (2-Set Letters and Numbers; 3-Set Letters, Numbers, and Colors) which are made up of 10 and 15, respectively, high-frequency stimuli that are randomly repeated in an array of five rows for a total of 50 stimulus items.



RAN/RAS (cont.)

- Normative data provided by Wolf, Bally, and Morris (1986) were used for the computation of standard scores for latency within each category. Raw scores were used for the number of errors within each category.
- **Sensitivity and Specificity are NOT reported in the manual**

Rapid Naming: CTOPP-2 vs. RAN/RAS

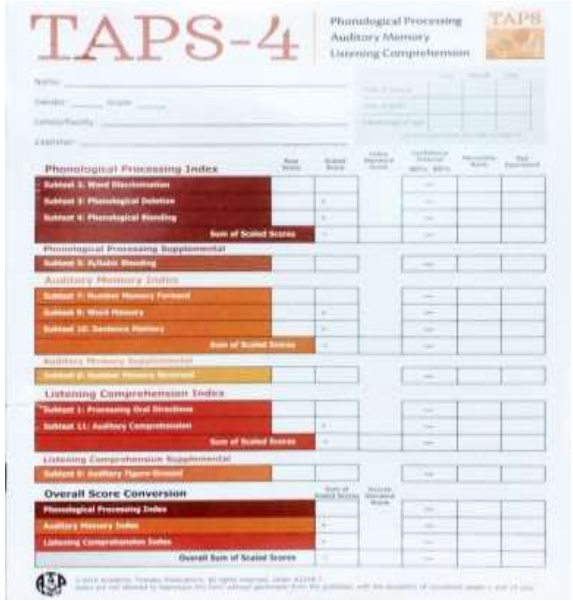
- RAN-RAS Tests and CTOPP rapid naming subtests share similarities, but the two measures differ in format, reflecting different theoretical viewpoints… The RAN-RAS tests treat rapid naming as a cognitive ability that includes phonology but also other linguistic and visual processes… The CTOPP was designed on the basis of a model of overall phonological processing that includes phonological awareness, phonological memory, and rapid naming as related subcomponents." (Norton & Wolf, 2012, p. 435)
- Controversy exists regarding whether rapid naming should be considered a subskill related to phonological processing or whether RAN is a separate process (Norton & Wolf, 2012, p. 4357-438)
- RAN and phonological processing are not strongly correlated
- Regression and structural equation models consistently report that RAN and PA account for unique variance in reading ability (e.g., Cutting & Denckla 2001, Katzir et al. 2006)
  - Different underlying factors support RAN and PA (Powell et al. 2007)
- Genetic and neuroimaging studies find different biological bases for RAN and PA abilities

TAPS-4 (5:0-21)

- Phonological Processing Composite:
  - Word (Pair) Discrimination: Assesses an individual's ability to discriminate whether a given word pair is the same or different
  - Phonological Deletion: Assesses an individual's ability to manipulate phonemes within words
  - Phonological Blending: Assesses an individual's ability to synthesize a word given the individual phonemes
  - Syllabic Blending (Supplemental): Assesses an individual's ability to synthesize a nonsense word given the individual syllables
- Auditory Memory Composite:
  - Number Memory Forward: Assesses an individual's ability to recall an auditory sequence of numbers in the given order
  - Word Memory: Assesses an individual's ability to recall an auditory sequence of words in the given order
  - Sentence Memory: Assesses an individual's ability to recall a spoken sentence
  - Number Memory Reversed (Supplemental): Assesses an individual's ability to recall an auditory sequence of numbers in the reverse order
- Listening Comprehension Composite:
  - Processing Oral Directions (without background noise): Assesses an individuals ability to process and recall oral directions when presented in quiet listening conditions
  - Auditory Comprehension: Assesses an individual's ability to comprehend oral language at the sentence and narrative level, including literal recall, inference, and higher order language tasks, such as idioms and figurative language
  - Auditory Figure–Ground (Processing oral directions with background noise) (Supplemental): Assesses an individual's ability to process and recall oral directions when presented with competing background noise

TAPS-4 (cont.)

- Sensitivity and Specificity are NOT reported in the manual BUT:
- Out of 2,023 children in the normative sample 381 or 18% had a disability (Manual, pg. 55)
  - SLI/Dyslexia (N=45)
  - ADHD (N=38)
  - APD (N=9)
  - SLI (N=64)
  - HI (N=46)
  - "Any Disability (N=179)



TERA-4 (4:0-8:11)

- TERA-4 assesses the emergent reading abilities of children ages 4:0 + and consists of 3 subtests:
  - Alphabet- measures knowledge of the alphabet and its uses
    - 29 items focused on counting phonemes and syllables and recognizing print displayed in various fonts
      - Struggling students may omit or add inaccurate sounds to words showing a deficit in their knowledge of the alphabetic principal as well as mispronounce or confuse letters
  - Conventions- measures knowledge of print conventions
    - 21 items with a focus on student's knowledge of arbitrary aspects of English print
    - Struggling students will find print confusing, may overlook punctuation, and may not be able to navigate easily through a book
  - Meaning-measures the construction of meaning from print
    - 30 items with a focus on comprehension of signs, logos, and words in both figural and situational contexts
    - Struggling students will miss the significance of a reading passage, rely on word retrieval rather than construct meaning, lose their place when reading, have difficulty making connection to the material and correctly answering reading comprehension questions
- No independent discriminant accuracy was determined instead criterion-prediction validity was established by (a) correlating TERA-4 standard scores with commercially available measures of reading ability (i.e., ERA, TOSWRF-2, TOSCRF-2, and TOSREC), (b) comparing means and standard deviations between TERA-4 and criterion tests, and (c) computing sensitivity, specificity, and ROC/AUC statistic.

TEWL-3 (4:0-11:11)

- TEWL-3 assesses the emergent writing abilities of children starting from 4:0 years of age
  - Basic Writing
    - 70 items ordered by difficulty, which are scored as 0, 1, or 2. It measures a child's understanding of language including their metalinguistic knowledge, directionality, organizational structure, awareness of letter features, spelling, capitalization, punctuation, proofing, sentence combining, and logical sentences. It can be administered independently or in conjunction with the Contextual Writing subtest.
  - Contextual Writing
    - 20 items that are scored 0 to 3. Two sets of pictures are provided, one for younger children (ages 5-0 through 6-11) and one for older children (ages 7-0 through 11-11). This subtest measures a child's ability to construct a story given a picture prompt. It measures story format, cohesion, thematic maturity, ideation, and story structure. It can be administered independently or in conjunction with the Basic Writing subtest.
  - Overall Writing.
    - Combines the scores from the Basic Writing and Contextual Writing subtests. It is a measure of the child's overall writing ability; students who score high on this quotient demonstrate strengths in composition, syntax, mechanics, fluency, cohesion, and the text structure of written language. This score can only be computed if the child completes both subtests and is at least 5 years of age.
  - No independent discriminant accuracy was determined instead the developers used the TEWL-3 to predict scores on the Woodcock-Johnson III and the Wechsler Individual Achievement Test- Second Edition resulted in sensitivity indexes of .86 and .91 respectively, specificity indexes of .89 and .88, and ROC/AUC of .96 and .96. Classification accuracy was .88 for both tests.

Criterion Validity Limitations

- Criterion validity was the TERA-4 and TEWL-3 was assessed by statistically testing them against an independent criterion or standard (concurrent validity).
- The developers wanted an estimate of the extent to which each test agreed with purportedly existing gold standards (already existing commonly used tests).
- The major problem in criterion validity testing is the general lack of gold standards.
  - TOSWRF-2 and TOSCRF-2 have sensitivity and specificity measures below 80% which is unacceptable.
  - Woodcock-Johnson III and the Wechsler Individual Achievement Test- Second Edition were developed to rank children within the range of the general population and lack mention of sensitivity and specificity in their respective technical manuals.

Clinical Assessment

- Play Sample (Westby Play Scale, 2000)
- Language Sample
  - How their utterance length?
- Narrative Assessment

Language Sample and Complex Sentences

- As per Paul, 1981
- 3-3.5 year olds
  - 1-10% complex sentences
- 3.5-4.0 year olds
  - 10-20% complex sentences
- 4+ year olds
  - Over 20% complex sentences (Paul, 2001)
- By age 5
  - Typically developing children use 6-8 different conjunctions in a 15-min speech sample
- Lack of or minimal presence of complex sentences in children ages 3-5 is a cause for concern!

Narrative Assessment

Wordless Story Book	**Narrative Levels** (Hedberg & Westby, 1993)	*Microstructure*	*Macrostructure*
• Frog where are you? By Mercer Meyer	• Primitive Narratives (3-4yrs) • Unfocused Chains (4-4 ½ yrs) • Focused Chains (5yrs)	• Vocabulary, syntax, grammar	• Story grammar elements

Narrative Ages and Stages

Ages	Stage	Description
3-4	**Primitive Narratives**	3 story grammar components (Initiating event, Attempt or action, Consequences) Child begins to interpret/predict events (e.g., use inferences) Discusses the character's facial expressions, body postures & feelings (early perspective taking) May use pronominal reference or repeat character's names

Narrative Ages and Stages (Cont.)

4-4 .5	**Unfocused Chains**	**A true sequence of events, linked logically or with a cause-effect relationship but without a central character** **Conjunctions "and," "but," and "because"** **Rarely produced by children (Westby, 1984)** **Once they grasp the concept of cause-effect and event sequencing they begin to tell stories at the** **Focused Chains Level**
5	**Focused Chains**	Four story grammar components Initiating event, attempt or action, and consequence + abrupt ending (listener left to interpret) Contains a central character, a logical sequence of events (use of transitions) Events take the form of "adventures"

What do Narratives Reveal?

- Sequencing Ability
  - Story order
- Working Memory
  - Recall of relevant details
- Grammar
  - Sentence structure errors, limited utterance length, run-on sentences, etc.
  - Use of temporal markers and cohesive ties to connect the story
- Vocabulary
  - Immature vs. age-level
  - Word retrieval issues vs. lexical fluency
- Pragmatics and perspective taking
  - Topic cohesion /coherence
  - Use of anaphoric references
  - Insight into character's feelings, beliefs, thoughts

Conclusion

- Due to the children's young ages there may be instances when testing may reveal "false negative results" (show that there are no deficits when deficits do exist)
  - It is important to carefully monitor the child's subsequent school performance in order to perform a literacy reassessment (if needed) when the child is older and his/her difficulties may be more apparent
- Children presenting with language and literacy deficits **will not outgrow these deficits on their own**
  - While there may be periods of "illusory recovery" when it looks like children with early language disorders have caught up with their peers, such "spurts" are typically followed by a "post-spurt plateau" (Sun & Wallach, 2014). Due to the ongoing challenges and an increase in academic demands "*many children with early language disorders fail to "outgrow" these difficulties or catch up with their typically developing peers" (Sun & Wallach, 2014)*
- It is crucial that we identify language and literacy deficits in children at a very early age in order to ensure their optimal educational outcomes.

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