Forming the Bridge Between Assessment and Intervention with PLS 4 and CELF 4

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Agenda
- Review PLS 4 and CELF 4 in terms of decision-making related to eligibility/placement
- Look at ways to use assessment data to develop appropriate IEPs
- Talk about ways to implement IEPs and monitor student response to intervention
- Discuss the use of a consultation model with emphasis on early literacy
- Investigate how a 3-tier model of assessment for intervention can direct decision-making related to new IDEA and NCLB

PLS 4 Review
- Used to identify receptive and/or expressive language delay or disorder
- Ages: Birth through 6.11
- Norms based on 2000 US Census
- Separate Spanish Edition with normative data
Two PLS 4 Subscales

- **Auditory Comprehension (AC)** evaluates how much language a child understands.
- **Expressive Communication (EC)** determines how well a child communicates to others.

Supplemental Assessments

- **Supplemental Articulation Screener**
  - yields age-appropriate cut scores for children ages 2:6 to 6:11 to determine if further articulation testing is warranted.
  - Table 4.1 in the manual shows the scores that indicate further evaluation is indicated (score is at or between the 2nd and 6th percentile) or is strongly suggested (score is below the 2nd percentile).
  - Note that a child may pass the Articulation Screener but earn a rating of poor on the Speech Intelligibility section of the Language Sample Checklist which would indicate that further testing is appropriate.

Supplemental Assessments

- **Language Sample Checklist**
  - can be used with any child who speaks in connected utterances and provides an overview of the content and structure of a child’s spontaneous utterances.
  - provides an evaluation of
    - morphology and syntax development
    - semantic development
    - social language development
    - the intelligibility of his or her connected speech
  - compares the child’s language in spontaneous speech to his performance on the EC subscale by using the PLS—4 Checklist (page 19 of record form).
Supplemental Assessments

- Calculate Mean Length of Utterance

| Total number of morphemes | _____ | = |
| Total number of utterances | _____ | = |

Mean Length of Utterance =

Table 4.2 in the manual estimates the child’s approximate linguistic age based on the MLU.

Remember the MLU is a general indicator of a child’s development of linguistic structure, it is not necessarily a good indicator of overall communicative competence.

Supplemental Assessments

- Caregiver Questionnaire

  - Provides you with specific questions to ask the caregiver of a child below age 3 to help elicit specific examples of behaviors to supplement the information obtained during the test session.
  - Can also be used for children functioning at a level typical of children from birth to age 2.
  - Information can be used to help you design a framework for intervention based on the child’s and the family’s needs.
  - Form is reproducible and should take no more than 15-20 minutes.
  - Note whether the information supports or differs with PLS—4 results.
  - Use the reproducible Clinician’s Worksheet in the manual (Appendix B) to summarize questionnaire results.

Supplemental Assessments

- Use with Special Populations

  - Clinical Studies
    - Children with autism, hearing impairment, developmental delay, and a language disorder.
  - Testing Older Children
    - Can use as a criterion-referenced measure.
  - Modifying Administration for Special Populations
    - Manual provides list of accommodations that can be made and still use norm-referenced scores and modifications that will require the use of criterion-referenced information.
Areas Assessed with PLS 4

<table>
<thead>
<tr>
<th></th>
<th>Auditory Comprehension</th>
<th>Expressive Communication</th>
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</thead>
<tbody>
<tr>
<td>Language Precursors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attention</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Play</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Gesture</td>
<td>Yes/Yes</td>
<td></td>
</tr>
<tr>
<td>Vocal Development</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Social Communication</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Semantics (Content)</td>
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<td></td>
</tr>
<tr>
<td>Vocabulary Concepts</td>
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<td></td>
</tr>
<tr>
<td>Quantity</td>
<td>Yes/Yes</td>
<td></td>
</tr>
<tr>
<td>Spatial</td>
<td>Yes/Yes</td>
<td></td>
</tr>
<tr>
<td>Time/Sequence</td>
<td>Yes/Yes</td>
<td></td>
</tr>
</tbody>
</table>

Spanish Edition of PLS 4

- Customized for Spanish speakers. This is not a translation edition of PLS 4 English.
- Items/tasks selected were those most appropriate for children who speak Spanish.
- Includes the same Supplemental Assessments.
- Reports normative data (standard scores, percentile ranks and age equivalents) based on data collected from more than 1,200 Spanish-speaking children throughout the US.
- Manual includes administration and scoring issues related to dialectal variations for children from Mexico, Puerto Rico, Cuba, and other Spanish-speaking countries.
If you are testing a child new to the US and/or living in a completely Spanish-speaking home, you may choose to compare the child’s score to the means and standard deviations reported for children living in a Spanish-speaking country (Table 6.19 pg 183 in manual).

To administer PLS 4 Spanish, you either must be proficient in understanding, speaking, reading, and writing Spanish, or have trained someone who has these skills to assist you in test administration. You should also have experience and training in testing young children from a Hispanic background.

Spanish speakers in US often use vocabulary words that are influenced by and have elements of both English and Spanish (anglicisms). A child who uses a word that is commonly used by the Spanish speakers in your area is not penalized.

Code-switching is not necessarily a sign of a language disorder. In fact, for a bilingual family, code-switching is often a typical language pattern. This also may occur when a young child has learned a word in one language and not the other.

Comparison of English PLS 4 Edition to Spanish PLS 4 Edition

**Similarities**
- Same age range (Birth – 6.11)
- Same subscales
- Same supplemental assessments
- Same areas tested
- Same components
- Same Birth—12 month items
- Same formats for testing the same skills
- Same types of scores
- Same research process
Comparison of English PLS 4 Edition to Spanish PLS 4 Edition

Differences
- Examiner's Manual is edition specific
- Minor differences in placement/order of items especially after age 3:6
- Minor scoring differences
- Separate standardization sample based on demographics reflecting US census figures for Hispanic children
- PLS 4 Spanish sample is comprised of bilingual children

PLS 4 Dialect Filter

- Dialect Filter
  - Considered 4 dialect patterns that have grammatical rule systems that differ from that of Standard American English: African American English, Southern English, Appalachian English, and English influenced by another language
  - To ensure that normally developing children who speak a dialect are not penalized on test tasks that tap grammatical skills, separate scoring rules were developed for dialects with different grammatical rule systems.

Items with Dialect Filter

- EC 31. Uses plurals
- EC 40. Uses possessives
- EC 54. Uses past tense forms
- EC 62. Repairs grammatical errors
- EC 67. Uses irregular plurals
Data-driven Decision-making

- Use of standard scores and percentile ranks to determine the severity of the delay
- Evaluating differences between AC and EC
- Using confidence bands
- Using base rate (Table 3.3)

To be meaningful, the confidence intervals for AC and EC should not overlap, and the prevalence of the difference in scores in the standardization sample must be 10% or less.

Use of Base Rate

<table>
<thead>
<tr>
<th>Difference Between RC and EC</th>
<th>Percentage of Sample with Difference</th>
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</thead>
<tbody>
<tr>
<td>330</td>
<td>1%</td>
</tr>
<tr>
<td>321</td>
<td>5%</td>
</tr>
<tr>
<td>316</td>
<td>10%</td>
</tr>
<tr>
<td>315</td>
<td>15%</td>
</tr>
<tr>
<td>312</td>
<td>20%</td>
</tr>
</tbody>
</table>

Table 3.3

<table>
<thead>
<tr>
<th>Difference Between RC and EC</th>
<th>Percentage of Sample with Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>330</td>
<td>2%</td>
</tr>
<tr>
<td>321</td>
<td>9%</td>
</tr>
<tr>
<td>318</td>
<td>15%</td>
</tr>
<tr>
<td>315</td>
<td>23%</td>
</tr>
<tr>
<td>312</td>
<td>34%</td>
</tr>
</tbody>
</table>

Table 3.3

Developing the IEP

- Use of Task Analysis Checklist (Appendix B and reproducible) to evaluate the child's strengths, emerging skills, and deficits
  Task analysis does not determine if a child has a language disorder—you must use the norm-referenced standard scores or percentiles for that purpose.
- Use of Profile (pg 18 of Record Form) to identify those skills (grouped by type of language skill assessed) that a child has mastered and those in need of remediation
Important to Remember

- The PLS 4 is not an exhaustive inventory of all important developmental communication behaviors that indicate whether or not a child is developing language normally. The language behaviors on PLS 4 are behaviors in which there are significant differences in performance between children developing language normally and children who have a language disorder.
- Tasks on the test are not necessarily high-priority language behaviors that you would target in therapy.

Getting more comfortable with your CELF

Review of CELF 4

- Used to identify language delay or disorder and to direct intervention planning
- Ages: 5 to 21 years
- Norms based on October 2000 US Census
- Will have a separate Spanish Edition with normative data
Unique Features of CELF 4

- 4-step assessment process model
- Includes the assessment of clinical behaviors that are frequently related to language disorders
- Evaluates the relationship between working memory and language
- Manual provides guidance in conducting "extension testing" or "testing the limits"
- Provides authentic, descriptive measures to evaluate a child’s performance in the classroom and other social situations
- Computerized scoring assistant with an optional report writer is available
- Includes tools that can be used for progress monitoring

CELF–4 Assessment Process

<table>
<thead>
<tr>
<th>Is there a language disorder?</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the nature of the disorder?</td>
</tr>
<tr>
<td>- Receptive and Expressive (modalities)</td>
</tr>
<tr>
<td>- Language Strengths and Weaknesses</td>
</tr>
<tr>
<td>- Syntax (structure), Morphology, Semantics</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>What critical clinical skills underline the disorder?</th>
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</thead>
<tbody>
<tr>
<td>How does the disorder affect classroom performance?</td>
</tr>
</tbody>
</table>

Level 1: Core Language Score

Subtests are age specific
- Ages 5-8
  - Concepts & Following Directions
  - Word Structure
  - Recalling Sentences
  - Formulated Sentences
- Ages 9-12
  - Concepts & Following Directions
  - Recalling Sentences
  - Formulated Sentences
  - Word Classes 2–Total
- Ages 13-21
  - Recalling Sentences
  - Formulated Sentences
  - Word Classes 2–Total
  - Word Definitions
Level 1: Decision Making

Identify the problem and determine eligibility

Step 1: Administer age-specific subtests and convert raw scores into scaled scores using Appendix C
- Use confidence interval to identify range of score (bottom of each Subtest to Scaled Score table)

Step 2: Derive the Core Language Score by summing the scaled scores of the subtests using Appendix D
- Score can be expressed as a Standard Score and as a Percentile Rank
- Use confidence interval to identify range of score

Evidence of a Language Disorder

- The Core Language score is the score that best discriminates language performance observed in children with language disorders.
- If the CLS is 85 or above, you need not test further UNLESS there is other evidence of a language disorder
  - Other test results
  - Language sample analysis
  - Parent reports
  - Your clinical judgment

Level 2: Decision Making

If a student shows evidence of a language disorder, you need more information about how language modalities and language content are affected.

Step 1: Administer the subtests necessary to investigate:
  - Receptive and expressive language (RLI and ELI)
  - Language content (LCI), language structure (LSI), language memory (LMI; note only ages 9-21)
  - Related clinical behaviors (phonological awareness, automaticity of verbal production/naming, and working memory (WMI))

Step 2: Administer the Observational Rating Scale and Pragmatics Profile to learn about a student’s language and communication skills in the classroom and in other social contexts
Interpreting Differences in Index Scores

Discrepancy analysis helps to
- Identify if a language deficit is generalized across receptive and expressive skills
- Identify a pattern of strengths and weaknesses

In order for a difference between 2 scores to be a discrepancy, 2 conditions must be met:

1. The difference must be statistically significant or real. (use Table 3.5)
2. The difference must be rare. (use Table 3.6)

Prevalence of RLI and ELI Score Differences

Between RLI and ELI (See Table 7.10)
- 4.5% of standardization sample showed no difference
- 47.2% earned higher ELI
- 48.3% earned higher RLI
- Large differences (20 pts or more) were uncommon and occurred in only 5.5% of the sample
- However, in the sample of students with language-learning disorders, about 14% had discrepancies of 20 or more pts

Prevalence of LCI and LSI Score Differences

Between LCI and LSI (See Table 7.11)
- Less than 5% of standardization sample showed no difference
- 45.9% earned higher LSI
- 49.5% earned higher LCI
- Large differences (18 pts or more) were uncommon and occurred in only 5.7% of the sample
- However, in the sample of students with language-learning disorders, about 17% had discrepancies of 18 or more pts
Prevalence of LCI and LMI Score Differences

Between LCI and LMI (See Table 7.12)
- Less than 7% of standardization sample showed no difference
- 47.9% earned higher LMI
- 46.5% earned higher LCI
- Large differences (23 pts or more) were uncommon and occurred in only 5% of the sample
- However, in the sample of students with language disorders, about 11% had discrepancies of 23 or more pts
- In the language-learning disordered group 74.8% had higher LCI than LMI

CELF–4 Assessment Process

Is there a language disorder?
What is the nature of the disorder?
◆ Receptive and Expressive (modalities)
◆ Language Strengths and Weaknesses
◆ Syntax (structure), Morphology, Semantics
What critical clinical skills underline the disorder?
How does the disorder affect classroom performance?

Levels 3-4: Decision Making

Sometimes it makes sense to go from Level 1 to Level 3 and/or Level 4 to get additional information and to answer clinical questions such as:
- Are similar difficulties evident in natural settings and in everyday life?
- Are there underlying behaviors affecting the student’s language?
- How does the student perform in classroom and/or social language situations?
Evaluating Related Clinical Behaviors

- **Phonological Awareness**
  - Administer to students who obtain an RLI ≤ 79 and to students who score below average on the Sentence Structure and Word Structure subtests (SS ≤ 6).
  - Administer to students who exhibit delays in literacy related to decoding and spelling
  - Administer to all primary grade students with histories of speech or language delays
  - High school students are out of the range for the criterion scores (5:0-12:11), but results can provide useful information to guide instruction

- **Criterion scores** are determined using Table G.2

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Evaluating Related Clinical Behaviors

- **Word Associations (Verbal Fluency)**
  - Administer to students who obtain an ELI ≤ 79 and to students who score below average on the Formulated Sentences subtests (SS ≤ 6).
  - Administer to students who exhibit delays in literacy related to vocabulary and fluency

- **Compare performance to Expressive Vocabulary and Word Definitions subtests to help determine if poor performance is related to executive functions or to the stored lexicon**

- **Use Table G.2 to identify criterion score**

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Evaluating Related Clinical Behaviors

- **Working Memory**
  - Administer to students who have attention problems, have identified learning disabilities, have sustained a head trauma or brain injury, who have had an acute illness with an extended high fever, or who have cognitive deficits

- **Poor performance indicates the need for more in-depth assessment in the area of memory and executive functions**
Evaluating Related Clinical Behaviors

- Rapid Automatic Naming
  - Administer to students who obtain an ELI ≤ 79 and to students who score below average on the Formulated Sentences of Expressive Vocabulary subtests (SS ≤ 6).
  - Administer to students who exhibit delays in literacy related to fluency
- Use Table G.3 (speed) and G.4 (errors) to determine whether a student’s RAN score is normal, slower/more-than-normal, or non-normal

Use of Criterion-Referenced Subtest Scores

- Use of cut scores or cut points that identify typical performance and relatively infrequent and unusual performance within the standardization group
- The raw scores used to determine criterion-referenced scores are not normally distributed and are not fit to a bell curve
- Word Associations and Phonological Awareness have 2 score ranges by age: meets criterion for age or does not meet
- Rapid Automatic Naming has 3 score ranges

Linking Phonological Awareness Performance to Intervention

- Consider possible reasons for delays (e.g., chronic ear infections, hearing loss, severe articulation problems, lack of instruction/exposure, dyslexia)
- Consider possible double deficit by looking at RAN performance
- Use subtest items to identify potential deficit areas, verify with the student’s teacher, and incorporate into therapy plan
- Remember that phonological awareness typically follows a developmental model of word-to-syllable-phoneme awareness.
Level of Difficulty

Based on the findings of Schatschneider, Francis, Foorman, Fletcher, and Mehta (1999), the following phoneme awareness tasks are ordered by level of difficulty:

1. First-sound comparison. Identify the names of pictures beginning with the same sound.
2. Blending onset-rime units into real words.
3. Blending phonemes into real words.
4. Deleting a phoneme and saying the word that remains.
5. Segmenting words into phonemes.
6. Blending phonemes into non-words.

Linking Word Associations Performance to Intervention

- Consider the task requirements: the student must be efficient at searching the stored lexicon and retrieving appropriate class members. Performance reflects the efficiency of his or her executive functions mediated by the prefrontal lobes.
- When low score is paired with low scores on Expressive Vocabulary and/or Word Definitions, intervention should focus on vocabulary development.

Linking RAN Performance to Intervention

- Slower-than-normal time on RAN identifies a primary grade child at risk and should be followed-up with more in-depth reading assessment. Appropriate accommodations in class might include providing extra time.
- Time scores in the non-normal range indicate the need for further psycho-educational testing and authentic language assessment to determine a potential LD and the child's needs for accommodation.
- High error scores are indicative of poor self-monitoring (an executive function). Students can benefit from learning strategies related to checking their work, considering if an answer "makes sense", and working with a partner.
Linking Working Memory Performance to Intervention

- Number Repetition 1 and 2 assess the ability to sustain and direct attention over time, processing speed, and working memory. Poor performance could indicate the need for more comprehensive memory and/or executive function assessment.
- Familiar Sequences and clinical populations

IDEA and Level 4 Decision Making

- Law provides for meaningful access for all students to general ed curriculum—SLPs must now focus attention on how students actually perform in the school curriculum and relate language skills to content-area learning.
- Authentic performance assessment is important so as to design appropriate instruction/intervention.
- ORS and PP enable you to observe precisely defined language behaviors in settings where natural communication takes place.

Observational Rating Scale

Identifies how language deficits can directly affect:
- Content-area learning (what students want to learn, the materials and mechanisms through which that is accomplished)
- Learning process (the activities that help students gain key skills and strategies and make sense out of essential ideas and information)
- Classwork and assignments (vehicles through which students demonstrate what they have learned)

Can track how intervention/therapy affects the students' classroom performance through a test-retest process (monitors outcomes).
**Pragmatics Profile**

- Criterion scores are in Table G.4. Cannot get a score if any item is rated NA or more than 1 is rated NO per group, in which case you use the results as a comprehensive list of pragmatic skills and behaviors for intervention planning. Note any items scored 1, 2 or 3.
- If the total score meets criterion, pragmatic development can be considered appropriate for the student's age.
- If the score does not meet criterion, consider more in-depth assessment of pragmatics.

**Pragmatics Profile**

- A score of 1 indicate the skill is a likely target for direct intervention. A score of 2 indicates that either direct or indirect intervention is warranted. Skills targeted in items rated 3 are likely targets for monitoring and rechecking for continued development.
- Can also be used to monitor outcomes or effects of intervention/instruction through a test-retest methodology. Over time, if intervention is effective, frequency ratings should change.

**Consultation Role of SLP**

- New emphasis on emerging literacy required by *No Child Left Behind*
- Benefits of early identification for purposes of early intervention (not just special ed)
- Renewed emphasis on language-based learning disorders
- Helping the classroom teacher understand how language develops, how language is related to academic achievement, and how he/she can address a student's language-needs in the classroom.
Using Brain Literacy Research

Linking Research to Practice

Dr. Virginia Berninger
University of Washington
NICHD Funded Reading/Writing Research Site
Brain Literacy for Educators and Psychologists (Academic Press)

Functional Language Systems

Language by Ear    auditory sense
Language by Mouth  articulatory sense (oral-motor)
Language by Eye    visual sense
Language by Hand   finger movements (grapho-motor)

Language is therefore not a unitary construct. Four functional language systems (language by ear, mouth, eye, and hand) are on their own developmental trajectories and interact with each other, drawing on common as well as unique language processes, and non-language functions as well. (Berninger, 2000; Berninger & Richards, 2002).
Language Systems

Receptive and Expressive Language are not housed in separate, modular centers in brain. Spatially separated, temporally synchronized multidimensional matrices for computing sound-meaning and lexical relationships (Wernicke’s area) or syntactic-articulatory relationships (Broca’s area) interact with each other (Fried, Ojemann, & Fet, 1981; Mesulam, 1990).

Critical Developmental Periods

- Developmental window during which a skill is acquired most easily
- Evidence for critical developmental periods for sensory and motor systems in preschool years
- May be critical developmental period for literacy early in schooling and for higher-order cognition in middle childhood and adolescence

Learning/Teaching Triangle

- Individual differences in teacher’s knowledge and pedagogy
- Variations in curriculum materials
- Individual differences in learners
Learning occurs in a social context (Vygotsky). Home, classroom, school, school district, state, and nation all contribute to literacy learning in a complex social system of interacting influences.

- **Functional systems in brain**: Many interacting components must be orchestrated to achieve a literacy goal.
- **Flexible orchestration**: The same brain structures and functions may participate in more than one brain system (e.g., Language by Ear, Mouth, Eye, and Hand).

### 3 Tier Model of Assessment for Intervention

- **Tier 1**: Screen to identify those at risk
- **Tier 2**: Implement research-based intervention and monitor effects
- **Tier 3**: Referral for comprehensive assessment
Benefits of Model

- Reduces the number and improves the appropriateness of referrals for comprehensive assessment
- Supports early identification with early intervention
- Implements an inclusion model
- Changes the focus of the pre-referral team
- Creates better use of resources
- Results in better outcomes

Intervention Resources

From PsychCorp
- Helping Babies Learn: Developmental Profiles and Activities for Infants and Toddlers. S. Furuno et al.
- Parent Articles for Early Intervention. M. Klein.
- Bracken Concept Development Program. B. Bracken.
- It’s on the Tip of My Tongue. D. German.
- CLIP Worksheets and CLIP Preschool. E. Semel and E. Wiig.
- Categories and Concepts
- Picture Gallery

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