Overview

- Provide an overview of PLS-5 and CELF Preschool-2 development to assist clinicians to better understand the test items, research samples, and test results.

- Guidelines for interpreting test results will be provided so that clinicians can make appropriate programming recommendations for the children they are assessing.
Speech-language assessment is a complex process.

Assessing, describing, and interpreting an individual’s communication ability requires the integration of a variety of information gathered in the evaluation process.

(ASHA, 2004)

PLS-5 can be used to . . .

- Determine presence of a language delay/disorder.
- Ages birth to 7:11
  - Determine whether child has receptive or expressive language delay/disorder, or combination of both
- Determine eligibility for early intervention or speech/language services.
What skills does PLS-5 target?

Assess a wide range of developmental communication skills

- Preverbal skills
  - Attention to environment and people
  - Play
  - Vocal development
  - Social communication
  - Gesture

- Language content and structure
  - Understanding and using concepts
  - Understanding and using morphosyntactic forms

- Integrative language skills (thinking using language)
  - Analogies
  - Similes
  - Categories
  - Semantic absurdities
  - Theory of Mind

- Emergent literacy
  - Book handling
  - Phonological awareness
  - Letter identification

PLS-5 can be used to...

- Identify both receptive and expressive language skills in the areas of:
  - Attention, gesture, play, vocal development, social communication, vocabulary, concepts, language structure, integrative language, and emergent literacy.

- Identify a child’s language strengths and weaknesses to develop appropriate interventions.
Progress Monitoring

Track Progress
- Measure efficacy of Speech-language treatment and interventions
- Use Growth Scale Value (GSV) to track progress of child’s skills on the same instrument
  - Can be given at each time child transitions to new developmental period

Developmentally and Culturally Sensitive Methods of Assessment
- PLS-5 allows multiple assessment methods for giving credit (Birth – 2:11)
  - Caregiver Report
  - Observation
  - Elicitation
- Allows for observation of naturally occurring behaviours and spontaneous language in unstructured format.
- Dialectical Variations
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Organisation of the Test

Norm-referenced Scales
- Auditory Comprehension Scale
- Expressive Communication Scale

Supplemental Measures
- Language Sample Checklist
- Articulation Screener
- Home Communication Questionnaire

Item Criteria for PLS-5 is Developmentally Sensitive

- **Birth – 11 months old**
  - Items represent behaviours that are precursors to language
    - Caregiver involvement to maximise performance and caregiver reporting to ensure credit for skills.
- **1 – 2 years old**
  - Use of manipulatives and play for more authentic assessment
    - Scoring of spontaneous interactions
- **3 – 4 years old**
  - Engagement in interactive behaviours
    - Practice items level field for children without school or testing experience
- **5 – 7 years old**
  - Integration of knowledge and language skills
  - Evaluation of emergent literacy and academic skills
### Dialectal Variations

#### EC34. Uses present progressive (verb + -ing)

<table>
<thead>
<tr>
<th>Item and Target Response</th>
<th>African American English</th>
<th>Appalachian English</th>
<th>English Influenced by Chinese</th>
<th>English Influenced by Spanish</th>
<th>Southern English</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Tell me about this girl. She is ___</td>
<td>eating</td>
<td>eating</td>
<td>eating</td>
<td>eating</td>
<td>eating</td>
</tr>
<tr>
<td></td>
<td>eat</td>
<td>a-eatin'</td>
<td>a-eat</td>
<td>a-eating</td>
<td>a-eat</td>
</tr>
<tr>
<td></td>
<td>eat'</td>
<td>eat</td>
<td>eat</td>
<td>eating</td>
<td>eating</td>
</tr>
<tr>
<td>b. Tell me about this girl. She is ___</td>
<td>sleeping</td>
<td>sleeping</td>
<td>sleeping</td>
<td>sleeping</td>
<td>sleeping</td>
</tr>
<tr>
<td></td>
<td>sleep</td>
<td>a-sleepin'</td>
<td>sleep</td>
<td>a-sleepin'</td>
<td>sleep</td>
</tr>
<tr>
<td></td>
<td>sleepin'</td>
<td>sleep</td>
<td>sleepin'</td>
<td>sleep</td>
<td>sleepin'</td>
</tr>
</tbody>
</table>

### Technical Information

- **Demographic Information**
  - Over 1800 children were tested for standardisation and related reliability and validity studies from December 2009 through August 2010.
  - The standardisation data were collected by 189 clinicians in 42 states in the United States.

- **Validity**
  - Clinical studies
    - Ages 1-2:11 - language delay study
    - Ages 3:0-7:11 - language disorder study
  - Sensitivity/specificity
  - Changes in PLS-5 that affect scores
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Sample mirrors March 2008 Update of the U.S. Census: Region

Where Children in the PLS-5 Sample Spend the Majority of their Day

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Are children with disabilities included in the PLS-5 sample?

<table>
<thead>
<tr>
<th>Educational Classification/Diagnosis</th>
<th>PLS-5 Sample</th>
<th>U.S. Pop. a</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Attention-Deficit/Hyperactivity Disorder</td>
<td>3</td>
<td>0.2</td>
</tr>
<tr>
<td>Developmental Delay</td>
<td>16</td>
<td>1.1</td>
</tr>
<tr>
<td>Gifted/Talented</td>
<td>5</td>
<td>0.4</td>
</tr>
<tr>
<td>Intellectual Disability</td>
<td>2</td>
<td>0.1</td>
</tr>
<tr>
<td>Orthopedic/Motor Impairment</td>
<td>1</td>
<td>0.1</td>
</tr>
<tr>
<td>Other c</td>
<td>13</td>
<td>0.9</td>
</tr>
<tr>
<td>Speech-Language Disorder</td>
<td>55</td>
<td>3.9</td>
</tr>
</tbody>
</table>


b U.S. population data available for combined ages 6–18 only. The PLS-5 normative sample could not be accurately compared to the U.S. population data due to the unique age groupings.

c Includes hearing impairments, other health impairments, visual impairments, multiple disabilities, deaf blindness, and traumatic brain injury.

### Clinical Study: Developmental Language Delay

<table>
<thead>
<tr>
<th>Scales and Total</th>
<th>N</th>
<th>Mean Dev. Lang. Delay</th>
<th>Mean Nonclinical Matched Sample</th>
<th>Diff.</th>
<th>t</th>
<th>Standard Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auditory Comprehension</td>
<td>23</td>
<td>74.0</td>
<td>96.4</td>
<td>22.4</td>
<td>5.45**</td>
<td>1.70</td>
</tr>
<tr>
<td>Expressive Communication</td>
<td>23</td>
<td>79.3</td>
<td>97.9</td>
<td>18.6</td>
<td>4.37**</td>
<td>1.35</td>
</tr>
<tr>
<td>Total Language</td>
<td>23</td>
<td>75.3</td>
<td>97.0</td>
<td>21.7</td>
<td>4.98**</td>
<td>1.57</td>
</tr>
</tbody>
</table>

**p<.01
### Clinical Study: Receptive/Expressive Disorder

<table>
<thead>
<tr>
<th>Scales and Total</th>
<th>N</th>
<th>Mean Rec./Exp. Disorder</th>
<th>Mean Nonclinical Matched Sample</th>
<th>Diff.</th>
<th>t</th>
<th>Standard Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auditory Comprehension</td>
<td>66</td>
<td>74.8</td>
<td>101.0</td>
<td>26.2</td>
<td>11.52**</td>
<td>1.93</td>
</tr>
<tr>
<td>Expressive Communication</td>
<td>66</td>
<td>71.6</td>
<td>97.9</td>
<td>26.2</td>
<td>11.20**</td>
<td>1.91</td>
</tr>
<tr>
<td>Total Language</td>
<td>66</td>
<td>71.6</td>
<td>99.3</td>
<td>27.7</td>
<td>11.83**</td>
<td>2.03</td>
</tr>
</tbody>
</table>

**p < .01

---

### Diagnostic Accuracy and Clinical Use

- **Sensitivity**
  - in classification of disorders, the cases in which a disorder is detected, when it is, in fact, present

- **Specificity**
  - in classification of disorders, the cases for which a diagnosis of disorder is rejected when rejection is warranted.*

*Standards for Educational & Psychological Testing (1999)
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Sensitivity/Specificity/Predictive Power

<table>
<thead>
<tr>
<th>Cut Score SD and Predictive Power</th>
<th>AC Matched Sample 50%</th>
<th>EC Matched Sample 50%</th>
<th>Total Matched Sample 50%</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1 SD</td>
<td>PPP: .83</td>
<td>PPP: .86</td>
<td>PPP: .81</td>
</tr>
<tr>
<td>NPP: .77</td>
<td>PPP: .85</td>
<td>PPP: .83</td>
<td></td>
</tr>
<tr>
<td>-1.5 SD</td>
<td>PPP: .93</td>
<td>PPP: .94</td>
<td>PPP: .92</td>
</tr>
<tr>
<td>NPP: .66</td>
<td>PPP: .75</td>
<td>PPP: .74</td>
<td></td>
</tr>
<tr>
<td>-2 SD</td>
<td>PPP: .96</td>
<td>PPP: .95</td>
<td>PPP: .94</td>
</tr>
<tr>
<td>NPP: .60</td>
<td>PPP: .63</td>
<td>PPP: .63</td>
<td></td>
</tr>
</tbody>
</table>

PPP: Positive Predictive Power
NPP: Negative Predictive Power

“Start Points” and “Developmental Tasks”
**“Start Points” and “Developmental Tasks”**

### Auditory Comprehension

**Developmental Tasks for Ages 0.0-0.2**

1. **Start/Ages 0.0-0.2 and 0.3-0.5**
   - **1.** Glances momentarily at a person who talks to him or her.
     - **CQ:** Does your baby look at a person who is talking to him or her? If yes, who and for how long?
     - **Materials:** none
     - **Procedure:** Talk to the caregiver and ask the child to look at the caregiver’s face. Have the caregiver speak to the child softly, with a slightly elevated pitch.
     - **Notes:**
       - The child glances at the speaker for one second.
   - **2.** Seeks caregiver’s attention.
     - **CQ:** Does your baby look or sound happy when you hold, play with, or pay attention to him or her?
     - **Are there specific people your baby likes to receive attention from?**
     - **Typical times when the caregiver may do this behavior are: after a bath or after the child has been fed.
     - **Materials:** none
     - **Procedure:** Ask the caregiver to pick up and草莓 the child. If the child does not seem to enjoy being held or picked up, have the caregiver place the child at the edge of the crib or in a infant carrier. Have the caregiver talk to the child, or play with the child in the way that he or she normally does at home.
     - **Notes:**
       - The infant shows interest, uses, smiles, shows increased activity (e.g., more arm movement or increased physical activity (e.g., pulling, throwing, or shows some other form of interaction).
       - The child shows agitation by whimpering, resting, crying, grunting, or exhibiting other behaviors of discomfort.

### Developmental Tasks for Ages 2.0-2.5

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>20.</td>
<td>Engages in symbolic play</td>
<td></td>
</tr>
<tr>
<td>30.</td>
<td>Recognizes action in pictures</td>
<td>Materials: Picture Manual p. 4-5</td>
</tr>
<tr>
<td>40.</td>
<td>Understands use of objects</td>
<td>Materials: Picture Manual p. 5</td>
</tr>
</tbody>
</table>

**Start: Ages 2.6-3.11**

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>50.</td>
<td>Understands spatial concepts (in, on, off, up, down) without gestural cues</td>
<td></td>
</tr>
<tr>
<td>60.</td>
<td>Names a variety of pictured objects</td>
<td>Materials: Picture Manual p. 5-10</td>
</tr>
</tbody>
</table>

**Start: Ages 3.6-3.11**

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>70.</td>
<td>Names a variety of pictured objects</td>
<td>Materials: Picture Manual p. 5-10</td>
</tr>
<tr>
<td>80.</td>
<td>Understands concepts of over, under, in, on, and near</td>
<td></td>
</tr>
</tbody>
</table>

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PLS-5 Scores

- Auditory Comprehension | Expressive Communication | Total Communication
  - Standard scores
  - Percentile ranks
  - Growth Scale Values
  - Age equivalents

- Articulation Screener
  - Research-based criterion scores by age

Figure 2.1 The Normal Curve and Its Relationship to Standard Scores and Percentile Ranks on PLS-5
Qualifying a Child For Services

- You can **qualify a child for services** using standard scores and percentile ranks for each of these scores:
  - Auditory Comprehension
  - Expressive Communication
  - Total Language

- You **should not use age equivalents** to qualify a child for services
  - Age equivalents do not provide information about “percent delay” or a child’s relative rank or standing within a group of age peers
  - Age equivalents do not provide the information you need to determine if a child has a language disorder

Growth Scale Values

- Based on an equal interval scale
- Measure of development on a continuum
- Compare a **single** test across multiple administrations (not across tests)
- Ideal for making comparisons across administrations covering multiple developmental milestones and ages
- Measure growth and track the progress of individuals.
  - To evaluate the efficacy of speech-language related interventions and programs
What are Growth Scale Values

- GSVs enable you to compare a child’s performance across multiple PLS-5 administrations over time
- Normed scores that provide an equal interval scale that you can use to quantify small improvements in language skills
- Have a theoretical range of 100-900, with a mean of 500 and a standard deviation of 100
- PLS-5 growth scale values range from ≤138 to ≥562
- Use GSVs to
  - track a child’s progress on PLS-5 from birth to 7:11
  - compare performance to performance on previous PLS-5 administrations
  - measure treatment efficacy

Interpreting Growth Scale Values

- Patterns of GSV changes
  - Scores increase
    - refinement or mastery of new skills
    - depressed performance on initial test
    - guessing
  - Scores about the same
    - child tested before developmental changes or effects of intervention have occurred
    - Plateau in certain language skills (e.g. increase in morphological skills, but no additional morphological skills targeted in tasks at the child’s age level)
  - Scores decrease
    - may reflect characteristics of the disorder (e.g. autism, hearing impairment)
    - depressed performance on second test
    - progressive or degenerative condition; additional trauma
Evaluating GSVs relative to Standard Scores Over Time

- Changes in SS
  - indicate how the child is performing relative to same-age peers

- Changes in GSV
  - shows gains the child has made since the previous assessment(s)

Scoring and Interpretation

<table>
<thead>
<tr>
<th>Raw Score Calculation</th>
<th>Norm-Referenced Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Auditory Comprehension</strong></td>
<td></td>
</tr>
<tr>
<td>Last AC item administered</td>
<td>51</td>
</tr>
<tr>
<td>Minus (-) number of errors</td>
<td>- 7</td>
</tr>
<tr>
<td>AC Raw Score</td>
<td>44</td>
</tr>
<tr>
<td>70</td>
<td>66 to 79</td>
</tr>
<tr>
<td><strong>Expressive Communication</strong></td>
<td></td>
</tr>
<tr>
<td>Last EC item administered</td>
<td>49</td>
</tr>
<tr>
<td>Minus (-) number of errors</td>
<td>- 8</td>
</tr>
<tr>
<td>EC Raw Score</td>
<td>41</td>
</tr>
<tr>
<td>67</td>
<td>63 to 75</td>
</tr>
<tr>
<td><strong>Total Language Score</strong></td>
<td></td>
</tr>
<tr>
<td>AC Standard Score</td>
<td>70</td>
</tr>
<tr>
<td>Plus (+) EC Standard Score</td>
<td>67</td>
</tr>
<tr>
<td>Standard Score Total</td>
<td>137</td>
</tr>
<tr>
<td>67</td>
<td>63 to 74</td>
</tr>
<tr>
<td>AC Raw Score + EC Raw Score</td>
<td>85</td>
</tr>
</tbody>
</table>

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Confidence Intervals

It is a misuse of the test scores to:
- Base eligibility solely on a single score from a standardised test

It is best practice to:
- Use multiple measures
- Calculate confidence intervals around a standardised score.
  - This enables you to state the degree of confidence you have in a classification, eligibility, or placement decision based on test results.

Different ability levels | Different SES environments

Figure 2.1 above shows how the PLS-5 AC/EC and Total Language scores are distributed for the large, representative PLS-5 standardisation sample.
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Different ability levels | Different SES environments

- You might be working with a group of children with a wide range of ability (some low - some high - most in between). PLS-5 scores will identify children who are in that magic 7-10% at whatever cutoff you use for eligibility (e.g. -1.5 SD). Your organisation will be happy because you won’t identify too many children or too few for services.

- Or you might be working in an area where children who are of high ability. Their mean performance is at 110. A 5- or 6-year old child may be struggling in his/her classroom relative to his/her high achieving peers, but his/her PLS-5 scores may look high to you (e.g. 83, 85). Remember the PLS-5 is a norm referenced test of developmental language skills, with scores based on performance of children in the US. It provides scores that indicate how a child’s performance matches up to a national sample, not how s/he matches up to his/her high performing peers.

What do you do? Some choices:

1. Select tests that focuses on more academic language skills rather than developmental communication skills (e.g. CELF-P2 or CELF-4) which may better match the skill set required in the classroom.

2. Use a portfolio approach to assess the child’s skills or implement dynamic assessment procedures to evaluate the child’s ability to learn new skills.

3. Use a different criterion (some schools use -1 SD as their cut off for services rather than -1.5)

4. Implement a Response to Intervention approach to address the child’s difficulties in the classroom, rather than identify the child as having a disorder when his skills are compared to high-achieving peers.

Different ability levels | Different SES environments

- Maybe your program is comprised of children with more limited experiences than the average child in Australia/NZ. Their mean performance is at 85. If you use a -1.5 SD cut off for eligibility for services, you may have 25% of the children in the classroom identified for speech and language services.

What can you do? Some choices:

1. Use a portfolio approach to assess the child’s skills or implement dynamic assessment procedures to evaluate the child’s ability to learn new skills.

2. Use a different criterion (some schools use -2 SD as their cut off for services rather than -1.5)

3. Implement a Response to Intervention approach to address the child’s difficulties in the classroom, rather than identify the child as having a disorder when his skills are compared to high-achieving peers.

4. So, the scores on a norm-referenced test enable you to compare a child’s skills to those of a diverse, national sample of children, not to age-level peers in his or her classroom.

5. Although you always need to have information gathered from a number of assessment tools to provide a complete picture of a child’s skills in order to make a placement decision, this is particularly important when the children in your program cluster at either the high or low end of the normal curve.
Evaluating AC/EC score differences

- It is intuitive to think that a child’s comprehension skills should be higher than expressive skills.

- “The comprehension-production relationship is a dynamic one that changes with a child’s developmental level and with each aspect of language. For example, it’s different for syntax and phonology. In other words, the relationship between comprehension and production changes because of different rates of development and different linguistic demands.”


Receptive/Expressive Differences in the PLS-5 Sample

- In the PLS-5 Sample
  - No difference: 3.7%
  - Higher AC score: 47.2%
  - Higher EC score: 49.1%
  - Point difference of at least one: 48%
  - Point difference of at least five: 31%
AC/EC Differences

- Examine two indicators:
  1. Discrepancy comparison
  2. Prevalence in the population

1. Is the difference in scores statistically significant?
   - Calculate the difference
   - If the difference is greater than the “Critical Value” then the difference is statistically significant
   - Look up the difference in scores (by age) in Table D. 1
   - Choose the level of significance (.05 is more stringent)

AC/EC discrepancy comparison: What is statistically significant?

- Score point differences of less than 7 points generally not significant at .15 level of significance
- Score point differences of less than 10-13 points generally not significant at .05 level.
  - *Exception: age 6:6-6:11 (5, 7 pts., respectively)
- 9 point differences occur in 20% of the population
Prevalence: Does the difference in AC/EC scores occur frequently in the normative population?

1. Look up the prevalence of the score difference in Table D.2
2. Differences between scores that occur in less than 10% of the population should be considered significant

Evaluating differences between the AC and EC Scales

Child's Name: [Child A]  Address:
Age:  Sex: F  Grade/Year:  School:
Examiner:  Teacher:

<table>
<thead>
<tr>
<th>Raw Score Calculation</th>
<th>Norm-Referenced Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Auditory Comprehension</strong></td>
<td></td>
</tr>
<tr>
<td>Last AC item administered</td>
<td></td>
</tr>
<tr>
<td>Minus (−) number of 0 scores</td>
<td></td>
</tr>
<tr>
<td>AC Raw Score</td>
<td></td>
</tr>
<tr>
<td><strong>Expressive Communication</strong></td>
<td></td>
</tr>
<tr>
<td>Last EC item administered</td>
<td></td>
</tr>
<tr>
<td>Minus (−) number of 0 scores</td>
<td></td>
</tr>
<tr>
<td>EC Raw Score</td>
<td></td>
</tr>
<tr>
<td><strong>Total Language Score</strong></td>
<td></td>
</tr>
<tr>
<td>AC Standard Score</td>
<td></td>
</tr>
<tr>
<td>Plus (+) EC Standard Score</td>
<td></td>
</tr>
<tr>
<td>Standard Score Total</td>
<td></td>
</tr>
<tr>
<td>AC Raw Score + EC Raw Score</td>
<td></td>
</tr>
</tbody>
</table>
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Discrepancy comparison

<table>
<thead>
<tr>
<th>AC Standard Score</th>
<th>EC Standard Score</th>
<th>Difference</th>
<th>Critical Value</th>
<th>Significant Difference (F or N)*</th>
<th>Prevalence in the Normative Sample**</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>78</td>
<td>92</td>
<td>-14</td>
<td>10</td>
<td>8.8%</td>
<td>.05</td>
<td>.15</td>
</tr>
</tbody>
</table>

STEP 1: Critical Values

Prevalence in the Normative Sample

STEP 2: Prevalence in the Normative Sample
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Is it clinically meaningful?

<table>
<thead>
<tr>
<th>AC Standard Score</th>
<th>EC Standard Score</th>
<th>Difference</th>
<th>Critical Value</th>
<th>Significant Difference (%) or N*</th>
<th>Prevalence in the Normative Sample**</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>78</td>
<td>92</td>
<td>-14</td>
<td>10</td>
<td>I or N</td>
<td>8.8%</td>
<td>15% or 25%</td>
</tr>
</tbody>
</table>

Differences between scores that occur in less than 10% of the population should be considered significant.

Interpreting the PLS-5 results when....

<table>
<thead>
<tr>
<th>Assessment Tool</th>
<th>Evidence Provided</th>
<th>Evidence Supports Normal Language Acquisition</th>
<th>Evidence Supports Speech-Language Disability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developmental History</td>
<td>Is there evidence of developmental delay across domains? Hospitalisations?</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Parent Interview</td>
<td>How does the child communicate at home? How do different members of the family communicate with the child? What are facilitating contexts?</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Home/Preschool Observations</td>
<td>What does the child do at home and at preschool to initiate and maintain communication?</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Developmental checklist</td>
<td>How does the child’s skills look across a wide range of developmentally appropriate behaviors in a variety of contexts?</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Language Sampling</td>
<td>How does the child communicate in less formal, interactive contexts? What forms of communication (verbal and nonverbal) does the child use?</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>PLS-5 Test Results</td>
<td>How do the child’s language skills compare to age-level peers?</td>
<td>borderline</td>
<td></td>
</tr>
<tr>
<td>Dynamic Assessment</td>
<td>How easily does the child learn new skills?</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

PLS-5 Scores are Borderline
Accurately Interpreting Test Results When Assessing Young Preschoolers

Presented by: Angela Kinsella-Ritter
Consultant Speech Pathologist, Pearson Clinical Assessment
21st October 2016

Technical Information

- A total of **342 children** were assessed on the CELF P 2 Australian and New Zealand Standardised Edition
- **Age:** The sample was divided into 8 age groups: 3:0-3:5; 3:6-3:11; 4:0-4:5; 4:6-4:11; 5:0-5:5; 5:6-5:11; 6:0-6:5 and 6:6-6:11.
- **Gender:** The sample included 171 male and 171 female participants.
- Further information about the characteristics of the normative sample for each demographic variable are outlined in Tables 2.2 to 2.4 (CELF P 2 Examiner’s Manual, pp. 9-10)
Accurately Interpreting Test Results When Assessing Young Preschoolers  
Presented by: Angela Kinsella-Ritter  
Consultant Speech Pathologist, Pearson Clinical Assessment  
21st October 2016

### CELF Preschool 2 Australian Assessment Process

| Level 1 - Identify whether or not there is a language disorder (norm-referenced Core Language score) |
| Level 2 - Describe the nature of the disorder (norm-referenced index scores) |
| Level 3 - Evaluate early classroom and literacy fundamentals (supplementary norm-referenced measures) |
| Level 4 - Evaluate language and communication in context (descriptive measure of pragmatic skills) |

---

**Level 1 Referral Question: Is there a language disorder?**

- **Identifying the Problem: Core Language Score**
  - It is a measure of general language ability that quantifies the child’s overall language performance.
  - Used to help make decision about the presence or absence of a language disorder.
  - Derived from summing the scaled scores from the three subtests:
    - Sentence Structure
    - Word Structure
    - Expressive Vocabulary

---

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Level 2 - Describe the nature of the disorder

- Describing the nature of the problem: Index scores
  - Provide information about strengths and needs across
    - receptive and expressive modalities
    - language content
    - language structure
  - The index scores are formed from the scores of three subtests
  - Derived from summing the scaled scores that measure similar features of language
Language Content Index Score

3 - 4 YEARS
- Expressive Vocabulary
- Concepts & Following Directions
- Basic Concepts

5 - 6 YEARS
- Expressive Vocabulary
- Concepts & Following Directions
- Word Classes - Total

Language Structure Index Score

Sentence Structure
Word Structure
Recalling Sentences
Subtest Score Summary

- Record the subtest raw scores
- Convert the subtest raw scores to a scaled score as well as the scaled score points for building confidence intervals using Appendix B
- Convert subtest scaled score (and composite standard scores) into Percentile Ranks using Appendix E
- Percentile Rank Confidence Intervals can also be derived using the subtest scaled score confidence interval scores
- Age Equivalents can be derived using Appendix D

### Subtest Scaled Scores Severity Ratings

<table>
<thead>
<tr>
<th>Standard Score</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS 16+</td>
<td>Significantly above average</td>
</tr>
<tr>
<td>SS 14 to 16</td>
<td>Above average</td>
</tr>
<tr>
<td>SS 12 to 13</td>
<td>High average</td>
</tr>
<tr>
<td>SS 8 to 11</td>
<td>Average</td>
</tr>
<tr>
<td>SS 7</td>
<td>Low average</td>
</tr>
<tr>
<td>SS 4 to 6</td>
<td>Below average</td>
</tr>
<tr>
<td>SS 3 and below</td>
<td>Significantly below average</td>
</tr>
</tbody>
</table>
Accurately Interpreting Test Results When Assessing Young Preschoolers
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CELF Preschool 2 Australian Assessment Process

Level 1 - Identify whether or not there is a language disorder
norm-referenced Core Language score

Level 2 - Describe the nature of the disorder
norm-referenced index scores

Level 3 - Evaluate early classroom and literacy fundamentals
supplementary norm-referenced measures

Level 4 - Evaluate language and communication in context
descriptive measure of pragmatic skills

Level 3: Are early classroom and literacy fundamentals on track?

Basic Concepts (ages 5-6)

Pre-Literacy Rating Scale

Recalling Sentences in Context

Phonological Awareness
Basic Concepts

- Basic concepts are an important part of overall language development and the foundation of a child’s education.
- Children are expected to understand and use them from an early age.
- They are words that a child needs to understand in order to perform everyday tasks like following directions, participating in classroom routines, and engaging in conversation.
- Knowledge of basic concepts is closely related to academic achievement and therefore it is important for a child’s school performance.
- Children that have poor knowledge of their basic concepts and vocabulary may struggle to follow classroom directions.
- The understanding and use of basic concepts for attributes, locations and time relationships are essential for success in kindergarten and early primary school activities.
- Children with language disorders often have difficulty acquiring the basic concepts needed for early learning (and some children might just miss out for whatever reason) on acquiring this knowledge.
- The CELF P 2 BC subtest provides valuable information about what types of concepts need to be taught for children aged 5 to 6 years.

Recalling Sentences in Context

**Diagnostic Purpose**
To measure of the ability to repeat sentences in a story context without changing word meanings, inflections, derivations or comparisons, or sentence structure

No Juice!

We’re going to read a story together. No Juice. Demo Mum and the children were getting ready for lunch. Mum and Amy were making sandwiches and salad. Mark was setting the table, and Billy was looking for honey and apple juice. Billy looked in the refrigerator – no honey! – no juice! He said, “I can’t find them!” What did Billy say?
Accurately Interpreting Test Results When Assessing Young Preschoolers
Presented by: Angela Kinsella-Ritter
Consultant Speech Pathologist, Pearson Clinical Assessment
21st October 2016

Phonological Awareness

Diagnostic Purpose: to screen phonological awareness skills across different tasks

### Phonological Awareness (PA, Ages 4–6)

<table>
<thead>
<tr>
<th>Scores</th>
<th>Supplementary (Ages 4–6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>African-American English Standardized Book 1</td>
<td></td>
</tr>
<tr>
<td>Repetitions</td>
<td>Allow 2 demonstrations tapping or shaping if necessary</td>
</tr>
<tr>
<td>Discontinuous Rule</td>
<td>Allow 2 errors on non-continuous items</td>
</tr>
</tbody>
</table>

#### A. Compound Words

<table>
<thead>
<tr>
<th>DEMONstration</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. bad man</td>
<td>0/6</td>
</tr>
<tr>
<td>2. in side</td>
<td>0/6</td>
</tr>
<tr>
<td>3. my glasses</td>
<td>0/6</td>
</tr>
<tr>
<td>4. three(ple)</td>
<td>0/6</td>
</tr>
</tbody>
</table>

#### B. Affixable Blending

<table>
<thead>
<tr>
<th>DEMONstration</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. pas per</td>
<td>0/6</td>
</tr>
<tr>
<td>2. six py</td>
<td>0/6</td>
</tr>
<tr>
<td>3. need py per</td>
<td>0/6</td>
</tr>
<tr>
<td>4. rneck lye</td>
<td>0/6</td>
</tr>
</tbody>
</table>

#### C. Sentence Segmentation

<table>
<thead>
<tr>
<th>DEMONstration</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I didn’t run</td>
<td>0/6</td>
</tr>
<tr>
<td>2. I ate the pie</td>
<td>0/6</td>
</tr>
<tr>
<td>3. He played games</td>
<td>0/6</td>
</tr>
<tr>
<td>4. I said you will</td>
<td>0/6</td>
</tr>
</tbody>
</table>

#### Pre-Literacy Rating Scale

Diagnostic Purpose: to quickly develop a profile of the child’s emerging literacy skills
Accurately Interpreting Test Results When Assessing Young Preschoolers
Presented by: Angela Kinsella-Ritter
Consultant Speech Pathologist, Pearson Clinical Assessment
21st October 2016

Level 1 - Identify whether or not there is a language disorder
- norm-referenced Core Language score

Level 2 - Describe the nature of the disorder
- norm-referenced index scores

Level 3 - Evaluate early classroom and literacy fundamentals
- supplementary norm-referenced measures

Level 4 - Evaluate language and communication in context
- descriptive measure of pragmatic skills

Descriptive Pragmatics Profile

Diagnostic Purpose: to quickly develop a profile of the child’s overall pragmatic skills

Asking for, Giving, and Responding to Information

The child appropriately:

- asks for help/more assistance (seeks others/responds to other expressions of affection)

20. she asks for help/more assistance

21. offers to help/more assistance

22. stops a behavior, e.g., putting a toy into her mouth

23. asks for permission to play with a friend or before leaving the room or when leaving

24. offers to help/more assistance

25. offers to help/more assistance

26. tells the details of an experience or story in the order they occurred

For clinician use only:

Raw Score Subtotal: 20

Pearson: 1

Criterion Score for Age: 2<br>2.0 <br>12<br>6

Please list any other comments or additional observations: She doesn’t talk very much

Please return this form to: Caroline Mendoza

by: 9/24/04
Behavioural Observation Checklist

Used to document observations of a child’s behaviour during testing

Criterion Score Chart

<table>
<thead>
<tr>
<th>Subtests</th>
<th>Raw Score</th>
<th>Criterion Score</th>
<th>Criterion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Concepts (BC; Ages 5–6)</td>
<td>17</td>
<td>≥ 17</td>
<td>Meets</td>
</tr>
<tr>
<td>Phonological Awareness (PA; Ages 4–6)</td>
<td>15</td>
<td>≥ 19</td>
<td>Meets</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Raw Score</th>
<th>Criterion Score</th>
<th>Criterion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Literacy Rating Scale (PLRS)</td>
<td>83</td>
<td>≥ 86</td>
</tr>
<tr>
<td>Descriptive Pragmatics Profile (DPP)</td>
<td>93</td>
<td>≥ 72</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Subtest</th>
<th>Raw Score</th>
<th>Percentile Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recalling Sentences in Context (RSC)</td>
<td>4</td>
<td>&lt;1 to 4</td>
</tr>
</tbody>
</table>
Summary of CELF Preschool-2 Assessment Process

<table>
<thead>
<tr>
<th>Referral Question:</th>
<th>Derive this Score:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there a language disorder?</td>
<td>• Core Language Score</td>
</tr>
<tr>
<td>What is the nature of the disorder?</td>
<td>• Receptive Language Index&lt;br&gt;• Expressive Language Index&lt;br&gt;• Language Structure Index&lt;br&gt;• Language Content Index</td>
</tr>
<tr>
<td>How are early classroom and literacy fundamentals?</td>
<td>• Basic Concepts Criterion Score (Ages 5–6)&lt;br&gt;• Recalling Sentences in Story Context Percentile Range&lt;br&gt;• Phonological Awareness Criterion Score&lt;br&gt;• Pre-Literacy Rating Scale Criterion Score</td>
</tr>
<tr>
<td>How is communication in context?</td>
<td>• Descriptive Pragmatics Profile Criterion Score</td>
</tr>
</tbody>
</table>

Standard Score Summary

<table>
<thead>
<tr>
<th>Subtest Scaled Score</th>
<th>Core Language</th>
<th>Receptive Language</th>
<th>Expressive Language</th>
<th>Language Structure</th>
<th>Language Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sentence Structure</td>
<td>95</td>
<td>95</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Word Structure</td>
<td>95</td>
<td>95</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expressive Vocabulary</td>
<td>95</td>
<td>95</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concepts &amp; Following Directions</td>
<td>1.000</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Recalling Sentences</td>
<td>95</td>
<td>95</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic Concepts</td>
<td>95</td>
<td>95</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Word Concepts-Envelope</td>
<td>95</td>
<td>95</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Word Concepts-Total</td>
<td>95</td>
<td>95</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Core Language Score and Indexes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sum of Subtest Scaled Scores</td>
<td>430</td>
<td>430</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Standard Score</td>
<td>111</td>
<td>111</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Standard Score Range</td>
<td>72 to 124</td>
<td>72 to 124</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Percentile Rank</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Percentile Rank Confidence Intervals</td>
<td>25 to 75</td>
<td>25 to 75</td>
<td>25 to 75</td>
<td>25 to 75</td>
<td>25 to 75</td>
</tr>
</tbody>
</table>

1. Transfer subtest standard scores from page 2 on the record form to the front page.
2. Sum the subtest scaled scores.
3. Use the Core Language and Index Score Tables (Appendix C).
4. Calculate the subtest confidence intervals.
5. Note percentile ranks (Appendix C or E).
6. Note percentile rank confidence intervals.
Guidelines for describing the severity of a language disorder

<table>
<thead>
<tr>
<th>Core Language Score and Index Scores</th>
<th>Classification</th>
<th>Relationship to Mean</th>
<th>Percentile Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>130 and above</td>
<td>Significantly above average</td>
<td>+ 2 SD and above</td>
<td>98 to 99.9</td>
</tr>
<tr>
<td>115 to 129</td>
<td>Above average</td>
<td>+ 1 SD and above</td>
<td>84 to 97</td>
</tr>
<tr>
<td>86 to 114</td>
<td>Average</td>
<td>Within ± 1 SD</td>
<td>17 to 83</td>
</tr>
<tr>
<td>78 to 85</td>
<td>Marginal/Borderline/Mild</td>
<td>Within -1.5 to -1.0 SD</td>
<td>7 to 16</td>
</tr>
<tr>
<td>71 to 77</td>
<td>Low range/Moderate</td>
<td>Within -1.5 to -2 SD</td>
<td>3 to 6</td>
</tr>
<tr>
<td>70 and below</td>
<td>Very low range/Severe</td>
<td>-2 SD and below</td>
<td>&lt;0.1 to 2</td>
</tr>
</tbody>
</table>

Adapted from Table 4.3 (p.79) Distances from the mean of selected standard scores and Table 4.4 (p. 87) Guidelines for describing the severity of a language disorder (CELF P2 Examiner’s Manual, 2006).

Zero Scores

- Do not compute a composite score if the child obtained “zero” scores on two or more of the subtests that compose the composite score.

- **Note:** Demonstration, Familiarisation, and Trial Items
  - When working with low functioning children who are unable to understand/pass any, if not all, the trial items, the test might be too difficult for their functional performance and an alternative test might be more appropriate (CELF P2 Examiner’s Manual, p. 15)
  - A raw score of 0 must be earned and the discontinue rule applied (p.55)
  - but determine if it’s ‘fair’ to the child to administer the test items in order to meet a discontinue rule if you don’t think they’ll get any items correct, i.e. the test is just too hard for them!.
Comparing Index Scores

- **Compare**
  - Receptive and Expressive Language Index scores
  - Language Content and Language Structure Index scores
- **Refer to**
  - Table 4.5 Critical values for discrepancy comparisons between index scores (CELF P 2 Examiner’s Manual, p. 88)
  - Table 4.6 Cumulative prevalence of differences between index scores in the A&NZ standardisation sample (p. 90)

Discrepancy Comparisons

1. Determine if the difference between two index scores is statistically significant.
2. If statistically significant, evaluate how rare the score difference is in the standardisation sample.
3. If the difference is > the critical value, the difference is considered to be a true difference rather than due to measurement error or random fluctuation.
Accurately Interpreting Test Results When Assessing Young Preschoolers

Presented by: Angela Kinsella-Ritter
Consultant Speech Pathologist, Pearson Clinical Assessment
21st October 2016

Critical Values

<table>
<thead>
<tr>
<th>Level of Significance</th>
<th>.15: broader indicator of differences between index scores</th>
<th>.05: narrower indicator and is therefore more stringent</th>
</tr>
</thead>
</table>

Table 4.5 Critical Values for discrepancy comparisons between index scores

Prevalence of Difference Between Index Scores in the Standardisation Sample, p. 90
Sattler (2001) suggests that differences between composite scores that occur in less than 10% or 15% of the standardisation sample should be considered unusual.

### Table 6.6: Cumulative prevalence of differences between index scores in the Australian and New Zealand standardisation sample

<table>
<thead>
<tr>
<th>Standard Score Difference</th>
<th>Standard Score Difference</th>
<th>Standard Score Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>score 1</td>
<td>score 2</td>
<td>difference</td>
</tr>
<tr>
<td>21</td>
<td>24</td>
<td>3</td>
</tr>
<tr>
<td>22</td>
<td>25</td>
<td>3</td>
</tr>
<tr>
<td>23</td>
<td>26</td>
<td>3</td>
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<td>24</td>
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<td>46</td>
<td>49</td>
<td>3</td>
</tr>
<tr>
<td>47</td>
<td>50</td>
<td>3</td>
</tr>
</tbody>
</table>

**Note:** Discrepancies marked in red indicate differences that occur in less than 10% or 15% of the standardisation sample.
Clinical use of Sensitivity and Specificity

- **Clinical sensitivity** is the proportion of cases that are identified as disordered when, in fact, they are disordered.

- CELF P 2 sensitivity is 85% at –1.0 SD

- **Clinical specificity** is the proportion of cases identified as having normal language when, indeed, they do.

- CELF P 2 specificity is 82% at –1.0 SD

> – An ideal test would find the right thing (specificity)
> – and not miss anything (sensitivity)

Scoring & Report Assistant

Only PC-Compatible

CELF P3: 2020 / 2021
How do I know whether to use PLS-5 or CELF Preschool-2?

- Overview of developmental language skills
- Assesses preverbal children and children with low language ability
- Assesses children functioning in supported classroom environments (such as Early Childhood and classrooms for children with pervasive developmental delays such as autism)
- In-depth assessment of semantics, morphology, syntax
- Ages 3:0 through 6:11
- Assess children who speak in complete sentences
- Assess children functioning in mainstream classrooms

Both assessments target language skills and guide intervention goals

Are there guidelines related to how often CELF-4, CELF P 2 and PLS 5 can be re-administered?

**General Guidelines**
Has enough time elapsed that...
- the child does not remember his or her responses to the test items from the prior administration?
- the child’s chronological age now places him or her in the next normative group?
- the child has made progress?

If the answer to any of these questions is “no”, then it’s recommended that you should not re-administer these assessments
Test-Retest Guidelines: PLS-5, CELF-P2 & CELF-4

- Children from birth to 6 months, test every 1 to 3 months
- Children from 7 to 12 months; test every 3 to 6 months
- Children aged 1 to 3 years; test every 6 to 8 months
- Children aged 4 to 8 years; test every 8 to 12 months
- Children aged 9 years and older; test every 12 to 24 months

A & NZ Standardised Edition
Coming end May 2017
Launch at SPA conference 28-31 May

For more information about the CELF-5, simply visit: http://bit.ly/20UnDrs. The CELF-5 will be available in both print and digital (iPad) versions.
The CELF-5 Metalinguistics is a revision and re-branding of the Test of Language Competence-Expanded (TLC-E) for students aged 9 to 21 years 11 months.

**Diagnostic value**
- Assess higher-level language skills that are embedded in higher-grade curricula and are critical to classroom success.
- Goes beyond assessment of basic skills to assess students with subtle language disorders.
- Ideal for identifying pragmatic and semantic language deficits of students on the autism spectrum.

Administer the four tests individually or as a battery to assess:
- Making Inferences
- Conversation Skills
- Multiple Meanings
- Figurative Language
