Disclosures

Financial
• Royalty Income from Sale of Tests
  - Especially CELF Products
  - And Other Tests & Books
• Professional Consultation
• Speaking Engagements

Non-Financial
• University Promotions
• Reputation & Influence

Part 1

• Measurement & Assessment
  - Traditional View of Diagnosis and Appraisal
  - Some Assessment Sins
  - The “Ideal Test”
  - Stages of Test Development

• Evolution of CELF-5 (Changing Schemas)
  - From CELF to CELF-R – CELF-3 – CELF-4 – CELF-5

• Test Overview
  - What’s New & Great
  - Test Changes & Fine Tunings
  - Test Deletions
  - Some Administration & Scoring Changes

• The Assessment Process & Perspectives
• Research Overview

TRADITIONAL VIEW OF ASSESSMENT & DIAGNOSIS

• Diagnostic Classification & Severity
• Etiological and Behavioral Factors
• Factors That May Influence Intervention
• Make Recommendations
• Determine Prognosis

TRADITIONAL VIEW

1. Diagnostic Classification and Severity Statements
   * Classification Statements usually relate little information
   * Better to talk about exactly what is the problem or what is deficient
   * Severity statements may enlarge our understanding about the disorder
   * Severity statements are a baseline for what and how much intervention

2. Etiology and/or Behavioral Factors
   * Predisposing
   * Precipitating
   * Perpetuating

3. Factors that may Influence Intervention
   * Historical
   * Examination Factors – maturity, motivation, attention
   * Developmental
   * Educational
   * Social
TRADITIONAL VIEW

4. Make Recommendations
   * Regarding client management
   * Concern for treatment
   * Amount of treatment
   * Family involvement
   * Coordination of SLP services with that of other disciplines

5. Determine Prognosis
   * Influenced by effects of treatment
   * Typically includes information about expected time of treatment
   * Candid professional opinions
   * Based upon diagnostic considerations
   * Usually not too optimistic or pessimistic
     - Provides expectations
       - Places you in accountability position

TRADITIONAL VIEW OF STANDARDIZED TESTING IN SCHOOLS

- DIAGNOSTIC CLASSIFICATION & SEVERITY
- Statistical Comparison
- Establish Eligibility for Categorization Purposes
- IDENTIFYING INTRAPERSONAL WEAKNESSES
- PRETEST - POST-TEST

HIGHLY INFLUENCED BY PUBLIC LAWS

Measurement & Assessment Process

The Impact of Public Laws

- 94-142 • IDEA • NCLB
  TRICKLE DOWN
  STATE DEPARTMENTS
  FLOW OF PUBLIC MONEY
  ENTRY AND EXIT CRITERIA
  IMPACT ON TESTING AND TEST DEVELOPMENT

Precursors for the Development of the CELF Language Assessments

- Education For All Handicapped Children Act (PL 94-142) 1975.
  Mandated Nondiscriminatory Identification and Evaluation:
  (a) in child’s primary language,
  (b) by qualified personnel,
  (c) tailored to specific areas of need,
  (d) using more than one procedure,
  (e) selected not to discriminate against the child’s disability,
  (f) administered by a multidisciplinary team.


The Orange Book!

Individuals with Disabilities Education Act (IDEA)

The 1997 Individuals with Disabilities Education Act (IDEA) (Public Law 105-17) initiated significant changes in language assessment and intervention in the United States.

Selected Mandates:
Among IDEA mandates are to:
- Use the primary language of the child - not necessarily that of the parents
- Provide alternative assessments for children, who cannot participate in state or district-wide assessments
- Give a child access to assistive technology as needed

THE NORMAL CURVE DISTRIBUTION

IMPACT ON THE ASSESSMENT PROCESS
The Traditional Assessment Process

Screening Tests
Diagnostic Tests
Extension Tests
Informal Tests
IEP

Some Assessment Sins

Dangers in Testing
• A test is only a systematic way of obtaining, describing and comparing a sample of behavior under rather structured conditions. It is the calibration of the diagnostician.

Over-Testing:
• Fragments client as clinical artifact, loses personal wholeness
1. Test score - estimate of performance under certain conditions
2. Don’t overlook the person for the percentiles
3. Too much emphasis on testing reduces contextual perspectives
4. Delays treatment
5. Client may feel his problem will be handled equally impersonally

Under-Testing
1. Lack of sufficient information
2. Example of child with “simple” frontal lisp
   Later testing revealed:
   a. Sensory problems
   b. Mild motor difficulties
   c. Psychological problems
3. Need information to make a referral
4. Good screening and work with prognostic factors

Some Assessment Sins

Additional Dangers
1. View results a la client’s attitudes, moods, background
2. Importance of examiner competence
3. The “Magic of tests” (sometimes a negative)
4. Mean scores = Averages for many children; not 1 child.
5. The Hypothetically Average Child - not the 1 in front of you
6. Presumption of the test
7. Looking where the light is (a favorite or “pet” test)
8. Following the fads -- be flexible
9. “Hardening of the Categories” The Danger of Labels
   - Rigid Classification leads to Rigid Perceptions

Formal vs. Informal Testing (Why prefer the latter?)

The Ideal Test

1. Takes no longer than 30 minutes to administer
2. Includes a screening component
3. Simple, fun, and easy to administer and score
4. Requires no addition, subtraction or multiplication
5. Comes in full color
6. Gives you permission to xerox the record forms
7. Costs no more than $19.95
The Ideal Test

Test Development
(4 Stages)

STAGE 1: Conceptualization and Initial Design
STAGE 2: Creation of Pilot Study - Version 1
STAGE 3: Field Testing and Revisions
STAGE 4: Standardization and Publication

Typical Development Time = 3 Years

STAGE 1: Conceptualization and Initial Design
• Specification of Purpose
• Research and Development Patterns
• Specification of Subtest Objectives
• Specification of Item Format(s)
• Specification of Item Content, Scope and Sequence

STAGE 2: Creation of Pilot Study - Version 1
• Design of Subtests and Items to Specifications
• Development of Administrative Directions
• Production of Pilot-Test Version
• Pilot Testing to evaluate directions, subtests, items, and appropriate age ranges
• Revision for Field-Test Version

STAGE 3: Field Testing and Revisions
• Testing Regular ED Students (Intervals-Ranges)
• Testing SP ED Students (Critical Age Levels)
• Analysis of Field Test Data (Means, SD's, etc.)
• Selection of Subtest & Items for Standardization
• Production of the Standardization Version

STAGE 4: Standardization and Publication

Typical Development Time = 3 Years
Test Development (Stage 4)

STAGE 4: Standardization and Publication
• Testing a Large National Sample
• Testing Special Needs Groups for Validity
• Test-Retest for Reliability
• Data Analysis (factors, correlations, etc.)
• Creation of Norms (all relevant test scores)
• Preparation for Publication

Don’t You Just Love This Stuff!

CELF5
Clinical Evaluation of Language Fundamentals
Elisabeth H. Wiig, Ph.D
Wayne A. Secord, Ph.D.

Test Structure Changes
35 Years
• What it Takes
• Where It Started
• Some Test Models

TEST SCHEMA

TOTAL SCORE

TRADITIONAL MODEL

Intelligence

Full Scale IQ

Wechsler
PREMISES AND ASSUMPTIONS:
• No test, however reliable, yields a “true” score
• Measurement error (ME), like Chicken Man (is everywhere)
• ME arises from EVERYWHERE (internal and external factors)
• The Standard Error of Measurement (SEM) clarifies ME

DEFINITIONS:
• Confidence intervals provide a range for the “true” score
• Confidence intervals: 68%, 90%, 95% (in Norms Tables)
• Provides a powerful lens to view strengths and weaknesses
• Importance for Significant Differences Between Composite Scores

ACCOUNTING FOR MEASUREMENT ERROR

CELF-3 (6-8)
Total Score
Receptive
Sentence Structure (SS)
Word Classes (WC)
Concepts & Directions (C&D)
Formulated Sentences (FS)
Recalling Sentences (RS)
Expressive

CELF-3 (9+)
Total Score
Receptive
Semantic Relationships (SR)
Word Classes (WC)
Concepts & Directions (C&D)
Sentence Assembly (SA)
Formulated Sentences (FS)
Recalling Sentences (RS)
Expressive

ORS
Observational Rating Scales (ORS)
• Guide Book on Use and Interpretation (data)
• Teacher, Parent & Student Rating Forms
• Used to Describe a Students’ Problems in:
  Reading, Writing, Listening & Speaking
• Includes a Summary Form
### CELF-4 Sample 9-21

**Sample 9-21**

<table>
<thead>
<tr>
<th>Language Domain</th>
<th>Core Language</th>
<th>Expressive Language</th>
<th>Language Comprehension</th>
<th>Language Production</th>
<th>Word Classes Total (WCT)</th>
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<td>FS</td>
<td>FS</td>
<td>C &amp; FD</td>
<td>WCT</td>
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<tr>
<td>Recalling Sentences (RS)</td>
<td>RS</td>
<td>FS</td>
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<td>C &amp; FD</td>
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<tr>
<td>Formulated Sentences (FS)</td>
<td>RS</td>
<td>FS</td>
<td>FS</td>
<td>C &amp; FD</td>
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<tr>
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<td>C &amp; FD</td>
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<td>Expressive Language</td>
<td>RS</td>
<td>FS</td>
<td>FS</td>
<td>C &amp; FD</td>
<td>WCT</td>
</tr>
</tbody>
</table>

#### CELF-4 Ages 9-12

- **Receptive Language**
  - Word Classes Total (WCT)
  - Recalling Sentences (RS)
  - Formulated Sentences (FS)
  - Concepts & Following Directions (C & FD)

- **Expressive Language**
  - Word Classes Total (WCT)
  - Recalling Sentences (RS)
  - Formulated Sentences (FS)
  - Concepts & Following Directions (C & FD)
**Brief Summary**

- Battery of tests to assess language comprehension and expression
- Age range: 5:0 through 21:11
- Administration time: Core Language Score 30-45 minutes
- Scores
  - Norm-Referenced (most of the tests)
  - Criterion-Referenced (a few tests)
**Ages 5-8**

**CORE Language Score**

**Expressive Language**

- SC
- WS
- RS
- FS

**Receptive Language**

- SC
- RS
- FS
- Word Classes (WC)

**Ages 5-8**

**CORE Language Score**

**Expressive Language**

- SC
- WS
- RS
- FS

**Receptive Language**

- SC
- RS
- FS
- Word Classes (WC)

**Ages 5-8**

**CORE Language Score**

**Language Structure**

- SC
- WS
- RS
- FS

**Language Content**

- SC
- WS
- RS
- FS

**Ages 5-8**

**CORE Language Score**

**Language Structure**

- SC
- WS
- RS
- FS

**Language Content**

- SC
- WS
- RS
- FS

**Ages 9-12**

**CORE Language Score**

**Expressive Language**

- SC
- RS
- FS
- WC

**Receptive Language**

- RS
- FS
- WC

**Recalling Sentences (RS)**

**Formulated Sentences (FS)**

**Semantic Relationships (SR)**

**Word Classes (WC)**
TEST OVERVIEW

Summary of Changes

Some Assessment Trends

- **Social Language**
  - Increasing numbers of students identified with autism or Asperger’s Syndrome ages 5-21 with social language issues in both mainstream and special classroom settings.
  - Increased focus on social language skills for the mainstream classroom population (e.g., core curriculum often includes social/behavioral targets, anti-bullying initiatives).
- **RTI**
  - SLPs collaborating with classroom teachers, psychologists and other specialists to identify supports for students having difficulty meeting curriculum objectives.
  - Examining the link between oral language and literacy.
  - Increased SLP involvement in RTI activities.
  - Requirements for more screening.

Revision Goals

- Align tests to current education models & assessment trends.
- Streamline the test.
- Enhance clinical utility.
- Improve and maintain psychometric properties.
- Increase user friendliness.
- Assess social language skills in authentic, interactive situations.
- Create an optional literacy component by adding one reading comprehension and one written language test that allows you to make oral-written language comparisons and begin collaboration with classroom teachers and reading specialists.

Enhance Already Robust Psychometric Properties

- Update normative information
- Extend subtest floors & ceilings
- Improve item difficulty gradients
- Evaluate item bias
  - Iterative psychometric analyses
  - Qualitative reviews by assessment and bias experts
  - Feedback from clinicians in the field testing over 2000 field test participants
- Test structure changes

What’s New and Great?

- More robust assessment of pragmatics
  - Norm-referenced scores for Pragmatics Profile
  - New Pragmatics Activities Checklist
- Targeted assessment of written language
  - Reading Comprehension
  - Structured Writing
- New digital options
  - Digital Kit: All manuals on flash drive; use paper record forms
  - Coming in 2014: Q: interactive platform offers digital administration & scoring using two i-Pads
- Current normative data reflecting today’s diverse population
Overview of Test Changes

- Each test is a stand-alone assessment
- Revised retained tests
  - New items include modifications to administration directions, basal and ceilings, test stimuli, and art
- New tests
  - Pragmatics Activities Checklist
  - Reading Comprehension
  - Structured Writing
- Tests deleted from paper and digital kits
  - Expressive Vocabulary
  - Word Associations
  - Rapid Automatic Naming
  - Number Repetition
  - Familiar Sequences
  - Phonological Awareness

Usability Improvements

- All verbal stimuli and item analyses are in the Record Form
- Modifications to test stimuli and art based on clinician feedback
- Fewer items needed > basal and ceiling reduces testing time

Sentence Comprehension

- This test was titled “Sentence Structure” in CELF-4.
- The new name change is a more accurate description of the student’s task in responding to the items.
- Both semantic and morphosyntactic aspects of comprehension are required to respond, and the word comprehension in the test title reflects that more accurately.

Linguistic Concepts

- This test was previously combined with “following directions” on CELF-4.
- Having both concepts and directions combined in one test resulted in multiple sets of items on the test and multiple start points for the following directions section.
- This task now has a stronger floor for younger children.

Following Directions

- This test was previously part of CELF-4’s Concepts & Following Directions test
- Highly sensitive measure of receptive language
- Comprehension, recall, and ability to execute spoken directions are essential skills needed to perform well in the classroom.
- Separating assessment of concepts and directions enables you to examine comprehension of concepts separately from ability to comprehend multiple step commands
Word Structure

- A few new test items were added (now with 35 items rather than 32).
- The slight increase in the number of test items resulted in improved reliability.

Formulated Sentences

- Administration and scoring is quite similar to CELF-4.
- One change to scoring: the student has to use the target word as intended. For example, if the target word is an adjective, the target word has to be used as adjective or the student does not earn credit.

Understanding Spoken Paragraphs

- 5 test items added for this test for every age group.
- Reliabilities are significantly improved.

Word Classes

- No expressive component (this saves administration time).
- Now there is one continuous set of items rather than one younger set and one older (so there is no disconnect in scores for children at ages 8 and 9).
- Students up to age 10 start with pictures support. Ages 12 and above: no pictures stimuli (if a student is functioning at a very low level, he or she will need to start the test with the picture stimuli).

Formulated Sentences

- Administration and scoring is quite similar to CELF-4.
- One change to scoring: the student has to use the target word as intended. For example, if the target word is an adjective, the target word has to be used as adjective or the student does not earn credit.

Understanding Spoken Paragraphs

- 5 test items added for this test for every age group.
- Reliabilities are significantly improved.

Word Definitions

- Now much easier to score with 1,000 scoring options.
- Record Form lists examples of responses listing the concepts that must be expressed and those that are optional.

Recalling Sentences

- A sensitive measure with consistently high reliability (all values above .94).
**Sentence Assembly**
- This test is similar to CELF-4
- Wider range of scaled scores (ceiling extended)

**Semantic Relationships**
- Added more difficult items
- Ceiling was strengthened.

**Summary of Fine Tunings**
1. Sentence Comprehension
   - Called Sentence Structure in CELF-4
   - Now both semantic & morpho-syntactic aspects included
2. Linguistic Concepts
   - Previously combined with “Following Directions”
   - Combination confusing with multiple sets of items
   - Task now has a stronger floor for younger children
3. Following Directions
   - Previously “Concepts and Following Directions”
   - Separation now enables much clearer assessment of both
4. Word Structure
   - Some additional test items
   - Improved reliability

**Graphic Summary of All Tests**

---

1. Sentence Assembly
   - Similar to CELF-4
   - Wider range of scaled scores (ceiling extended)
2. Semantic Relationships
   - More difficult items were added
   - Ceiling was strengthened
Again: Some Major Changes to Tests

- The CELF-4 Concepts and Following Directions subtest was split into two tests to examine concept development and ability to follow increasingly complex directions separately
- Scoring Word Definitions (Now 1, 0 instead of 2, 1, 0)
- Pragmatics Profile: now offers standard scores
- Again! Subtest Deletions Include:
  - Expressive Vocabulary
  - Number Repetition
  - Familiar Sequences
  - Phonological Awareness
  - Word Associations
  - Rapid Automatic Naming

Information about each test... can be found in the Examiner’s Manual

- Test objective
- Relationship to the curriculum
- Relationship to classroom activities
- New! Implications for intervention
- This information answers questions you may have about:
  - What language skills are being targeted in this test?
  - How do the language skill relate to the curriculum objectives the student is expected to master?
  - What activities are used in the classroom to teach and assess progress on curriculum objectives? What is the student actually required to do in the classroom to demonstrate mastery?
  - How can you use these test results to design intervention strategies?

The Assessment Process

CELF-5 Assessment Process

- Test Scores
  - Core Language and Index standard scores
  - Pragmatics Profile, Reading Comprehension, and Structured Writing scaled scores
  - Percentile ranks
  - Growth Scale Values
  - Age equivalents
- Index Scores: 4 per age group
  - Receptive
  - Expressive
  - Structure
  - Content
  - Language Memory

Severity Range

- Above Educational Average
  Standard score 115 and above (+1 SD above the mean)
- Average Educational Range
  Standard score 86 to 114 (within +/-1 SD of the mean)
- Mild Severity Range or Level
  Standard score 79 to 85 (within -1 to -1.5 SD of the mean)
- Moderate Severity Range or Level
  Standard score 71 to 78 (within -1.5 to -2 SD of the mean)
- Severe Severity Range or Level
  Standard score 70 and below (-2 SD below the mean)

Educational Range

- Above Educational Average
  Standard score 115 and above (+1 SD above the mean)
- Average Educational Range
  Standard score 86 to 114 (within +/-1 SD of the mean)
- Marginal Educational Range
  Standard score 79 to 85 (within -1 to -1.5 SD of the mean)
- Low Educational Range
  Standard score 71 to 78 (within -1.5 to -2 SD of the mean)
- Very Low Educational Range
  Standard score 70 and below (-2 SD below the mean)
Back to the Normal Curve

Standard Deviations

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“Severity” Ratings & Confidence Intervals

The Normal Curve, Percentiles, Subtest and Composite Scales

Celf Subtest Scale

Celf Composite Scale

Celf-5 Assessment Process
Confidence Intervals

Definitions:
• Confidence intervals provide a range for the “true” score
• Confidence intervals: 68%, 90%, 95% (In Norms Tables)
• Provides a powerful lens to view strengths and weaknesses
• Importance for Significant Differences Between Composite Scores
Some Major Diagnostic Questions
Language Assessment Perspectives
Clinical, Educational, Social Cognitive

1. Is there a language disorder?
2. What is the nature of the disorder?
   Receptive and Expressive
   Content vs. Structure
   Language and Memory
   Reading and Writing
3. What are the language strengths and weaknesses?

CELF-5 Assessment Process

Language Assessment Perspectives

1. Clinical Perspective
2. Educational Perspective
3. Cognitive Perspective
4. Social Perspective

CELF-5 Assessment Process

Is a language disorder affecting classroom performance?
Evaluate language and communication in context using the Observational
Rating Scale (ORS) and other authentic and descriptive measures to provide
information about classroom accommodations, adaptation, and enhancements.
If a student does not respond to a variety of classroom interventions, is his or her performance due to language skill
deficits?
Administer tests appropriate to the student’s age to answer referral questions
If a language disorder is identified, what do I need to know to plan for intervention?
Identify the nature of the disorder by answering specific questions
Are there significant differences in comprehension and expression?
Are there weaknesses in the area of morphology, syntax, or semantics?
Are weaknesses related to language and memory?
How does the disorder affect reading and written language?
Does the disorder affect social interactions?
Based on CELF-5 results and additional assessment information collected, what is the best way to address the student’s needs?

CELF-5 Assessment Process

Are there significant differences in comprehension and expression?
Are there weaknesses in the area of morphology, syntax, or semantics?
Are weaknesses related to language and memory?
How does the disorder affect reading and written language?
Does the disorder affect social interactions?
Based on CELF-5 results and additional assessment information collected, what is the best way to address the student’s needs?

CELF-5 Assessment Process

The Clinical Perspective

Question 1. Is there evidence of a language disorder?
Core Language Score or other Total Language Composite
Question 2. What is the nature of the disorder?
Receptive vs. Expressive, Content vs. Structure
Language & Memory – Strengths and Weaknesses
Question 3. How does this student’s performance compare with that of his/her peers?
Norm Reference Performance compared to age & grade
Question 4. Does the student’s clinical performance profile meet criteria for eligibility for speech and language services?
CELF-5 Assessment Process

The Educational Perspective

Question 1. Which aspects of communication in context are compromised?
Pragmatics Profile – Pragmatics Checklist Nonverbal Communication

Question 2. Which aspects of academic performance are compromised?
Listening, Speaking, Reading, Writing, Other Areas

Question 3. Which curriculum objectives are compromised?
English & language arts, social studies, Sciences, arithmetic, algebra, phys. education, arts

Question 4. Which are the student's strengths, weaknesses, and learning adjustments?

ORS: Observational Rating Scales

Content:
- 40 statements describe problems a student may have in listening, speaking, reading, and writing
- Uses negatively stated queries about observable behaviors (e.g., has difficulties)
- Rated on a 4-point frequency of occurrence scale (1=Never, 2=Sometimes, 3=Often, 4=Always)
- Separate ratings by teachers and parents

CELF-5 Assessment Process

The Cognitive Perspective

Cognitive Considerations
Executive Functions
Working Memory

CELF-5 Assessment Process

The Social Perspective

Question 1. What aspects of social communication are compromised?
Pragmatics - Perspective Taking - Nonverbal communication

Question 2. What aspects of peer relations are compromised?
Play or game activities, friendship, interactive sharing or participating in conversations or discussions

Question 3. What aspects of student-adult relationships are compromised?
Respect, following directions for activities, behavioral management, mutual respect, trust etc.

Question 4. What areas of social communication represent strengths?
Pragmatics Profile – Pragmatics Checklist

Research Overview
Research Overview

Multiple Research Phases
- Over 4000 students tested in standardization and related reliability and validity studies
- Multiple phases of objective and subjective reviews of administration directions, cues, test items, and test formats
  - Assessment experts examined items for bias related to:
    - Socioeconomic status • Race/Ethnicity
    - Gender • Culture • Region
  - Clinicians in the field provided feedback about students’ responses and engagement in test tasks
  - Statistical analysis of bias verified or refuted subjective bias concerns

MULTIPLE BIAS STUDIES
- Multiple phases of objective and subjective reviews of administration directions, cues, test items, and test formats
  - Assessment/bias experts examined test items for potential bias related to:
    - Socioeconomic status • Race/Ethnicity • Gender
    - Culture • Region
  - Clinicians in the field provided feedback about students’ responses and engagement in test tasks
  - Statistical analysis of bias verified or refuted subjective bias concerns

A Diverse STDZ Sample: Race/Ethnicity

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian</td>
<td>87</td>
<td>3.7%</td>
</tr>
<tr>
<td>Black</td>
<td>328</td>
<td>13.8%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>476</td>
<td>20.0%</td>
</tr>
<tr>
<td>Other</td>
<td>137</td>
<td>5.8%</td>
</tr>
<tr>
<td>White</td>
<td>1352</td>
<td>56.8%</td>
</tr>
<tr>
<td>Total Sample</td>
<td>2380</td>
<td>100%</td>
</tr>
</tbody>
</table>

Diverse Parent Education Level

<table>
<thead>
<tr>
<th>Parent Education Level</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 11 years</td>
<td>292</td>
<td>12.3%</td>
</tr>
<tr>
<td>H.S. Diploma - GED</td>
<td>544</td>
<td>22.9%</td>
</tr>
<tr>
<td>1-3 Years College or Technical School</td>
<td>817</td>
<td>34.3%</td>
</tr>
<tr>
<td>4 or more Years of College</td>
<td>727</td>
<td>30.6%</td>
</tr>
<tr>
<td>Total Sample</td>
<td>2380</td>
<td>100%</td>
</tr>
</tbody>
</table>

Standardization Sample by Region

<table>
<thead>
<tr>
<th>Region of the US</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midwest</td>
<td>567</td>
<td>23.8%</td>
</tr>
<tr>
<td>Northeast</td>
<td>363</td>
<td>15.3%</td>
</tr>
<tr>
<td>South</td>
<td>873</td>
<td>36.7%</td>
</tr>
<tr>
<td>West</td>
<td>577</td>
<td>24.3%</td>
</tr>
<tr>
<td>Total Sample</td>
<td>2380</td>
<td>100%</td>
</tr>
</tbody>
</table>
### Research Overview

#### Other Demographic Variables

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>1190</td>
<td>50%</td>
</tr>
<tr>
<td>Male</td>
<td>1190</td>
<td>50%</td>
</tr>
<tr>
<td>Total Sample</td>
<td>2380</td>
<td>100%</td>
</tr>
</tbody>
</table>

#### CELF-5 Index Scores

<table>
<thead>
<tr>
<th>Index Score</th>
<th>Average Reliability Coefficients (across target ages)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Language Score</td>
<td>.96 Excellent</td>
</tr>
<tr>
<td>Receptive Language Index</td>
<td>.95 Excellent</td>
</tr>
<tr>
<td>Expressive Language Index</td>
<td>.95 Excellent</td>
</tr>
<tr>
<td>Language Content Index</td>
<td>.95 Excellent</td>
</tr>
<tr>
<td>Language Structure Index</td>
<td>.96 Excellent</td>
</tr>
<tr>
<td>Language Memory Index</td>
<td>.95 Excellent</td>
</tr>
</tbody>
</table>

#### Reliabilities for Clinical Groups

<table>
<thead>
<tr>
<th>Reliability</th>
<th>Test</th>
<th>Average Reliability Coefficient across Clinical Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sentence Comprehension</td>
<td>.94  Excellent</td>
<td></td>
</tr>
<tr>
<td>Linguistic Concepts</td>
<td>.96  Excellent</td>
<td></td>
</tr>
<tr>
<td>Word Structure</td>
<td>.90  Excellent</td>
<td></td>
</tr>
<tr>
<td>Following Directions</td>
<td>.91  Excellent</td>
<td></td>
</tr>
<tr>
<td>Formulated Sentences</td>
<td>.89  Good</td>
<td></td>
</tr>
<tr>
<td>Recalling Sentences</td>
<td>.94  Excellent</td>
<td></td>
</tr>
<tr>
<td>Understanding Spoken Paragraphs</td>
<td>.95  Excellent</td>
<td></td>
</tr>
<tr>
<td>Word Definitions</td>
<td>.87  Good</td>
<td></td>
</tr>
<tr>
<td>Sentence Assembly</td>
<td>.93  Excellent</td>
<td></td>
</tr>
<tr>
<td>Semantic Relationships</td>
<td>.90  Good</td>
<td></td>
</tr>
<tr>
<td>Pragmatics Profile</td>
<td>.91  Excellent</td>
<td></td>
</tr>
<tr>
<td>Reading Comprehension</td>
<td>.97  Excellent</td>
<td></td>
</tr>
<tr>
<td>Structured Writing</td>
<td>.92  Excellent</td>
<td></td>
</tr>
</tbody>
</table>

#### Test-Retest Stability

<table>
<thead>
<tr>
<th>Test-Retest Stability (n=137)</th>
<th>7-46 days</th>
<th>Mean: 19 days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average corrected coefficient for all ages</td>
<td>.83 to .90 Good to Excellent</td>
<td></td>
</tr>
</tbody>
</table>

#### Inter-Scorer Agreement

<table>
<thead>
<tr>
<th>Inter-Scorer Agreement</th>
<th>Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word Structure</td>
<td>.99</td>
</tr>
<tr>
<td>Formulated Sentences</td>
<td>.95</td>
</tr>
<tr>
<td>Word Definitions</td>
<td>.91</td>
</tr>
<tr>
<td>Structured Writing</td>
<td>.96</td>
</tr>
</tbody>
</table>
**Research Overview**

**Sensitivity – Specificity**

- **Sensitivity:** The degree to which a test identifies children who do indeed have the condition or disorder.
  (Proportion of True/False Positives)
- **Specificity:** The degree to which a test identifies those children who do not have a condition or disorder.
  (Proportion of True/False Negatives)

**Sensitivity and Specificity**

<table>
<thead>
<tr>
<th>Core Language, Receptive, or Expressive Language index score</th>
<th>Standard Score Cut</th>
<th>Sensitivity</th>
<th>Specificity</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1 SD</td>
<td>85</td>
<td>1.0</td>
<td>.91</td>
</tr>
<tr>
<td>-1.33 SD</td>
<td>80</td>
<td>0.97</td>
<td>.97</td>
</tr>
<tr>
<td>-1.5 SD</td>
<td>77</td>
<td>0.85</td>
<td>.99</td>
</tr>
<tr>
<td>-2 SD</td>
<td>70</td>
<td>0.57</td>
<td>1.0</td>
</tr>
</tbody>
</table>

**Clinical Utility**

- **Purpose - Identify an optimal cut score**
  Minimize false negatives. Minimize false positives.
- **Reason – Maximize accuracy. Minimize cost.**
- **CELF-5 Clinical Utility (Optimal Cut Scores)**
  Core Language Index 80
  Receptive Language Index 80
  Expressive Language Index 80
  CELF-5 Sensitivity 97%
  CELF-5 Specificity 97%

**A new screening edition**

- Only screening test available for students ages 5:0 through 21:11
- Screening items are a subset of the CELF-5 diagnostic test items
- If you follow up screening with the full CELF-5, you do not need to re-administer the screening items
- New pragmatics screening item
- Can be used as a screening for other diagnostic tests

**Multiple Assessment Perspectives**

But

The Focus is still on Good Test Results!