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Evidence-Based Practices in Selecting and Using Standardized Tests: Psychometric Adequacy

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Learner Outcomes

1. Describe the 10 psychometric criteria
2. Describe an adequate norming sample
3. Define reliability and validity

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Advance Organizer

- How to pick tests
 - Psychometric Characteristics
 - Diagnostic Accuracy
 - Test Content
 - Considerations for Dialect and ELL
 - Cultural/Linguistic Load

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SLP Goals for Assessment

1. Children with *Speech-Language Impairment* correctly identified as SLI
2. Children with *Speech-Language Impairment* inappropriately found “not impaired”
3. Children inappropriately identified as *Speech-Language Impairment*
4. Children without impairment found “not impaired”

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Test Considerations

Psychometric Considerations

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What is a “good” test?

- Psychometrically Adequate
- Diagnostically Accurate
- Appropriate for your client and purpose of testing
 - Purpose of the test
 - Culturally/Linguistically Appropriate
 - Norming Sample

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Psychometric Adequacy

- *Standardization Sample*
- *Sample Size*
- *Systematic Item Analysis*
- *Mean and Standard Deviation of Test Scores*
- *Concurrent Validity*

McCauley & Swisher (1984)

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Psychometric Adequacy

- *Predictive Validity*
- *Test-Retest Reliability*
- *Inter-Examiner Reliability*
- *Test Administration Procedures*
- *Special Qualifications*

McCauley & Swisher (1984)

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Standardization Sample

- Description of the number of sample participants
 - geographic residence
 - socioeconomic status
- information regarding the “normalcy” of the participants, including any participants who were excluded because they exhibited nonnormal development or language.

McCauley & Swisher (1984)

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Standardization Sample Size

- at least 100 participants
 - for each age or grade.

McCauley & Swisher (1984)

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Systematic Item Analysis

- evidence of quantitative methods to study and control
 - item difficulty
 - item validity

▪ McCauley & Swisher (1984)

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Mean and Standard Deviation of Test Scores

- means and standard deviations
 - total raw scores of all relevant subgroups

▪ McCauley & Swisher (1984)

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Reliability

the degree to which an **assessment** tool produces stable and consistent results.

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Validity

A test is **valid** if it measures what it is supposed to measure.

Reliability and validity are independent of each other. A measurement maybe **valid** but not **reliable**, or **reliable** but not **valid**.

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Concurrent Validity

categorization of children as impaired or normal agreed closely with other valid methods such scores on other validated tests

- McCauley & Swisher (1984)

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Predictive Validity

Evidence that it could be used to predict later performance of the same language or literacy behavior.

- McCauley & Swisher (1984)

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Test-Retest Reliability

Test-retest reliability coefficient of 0.90 or higher.

- McCauley & Swisher (1984)

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Inter-Examiner Reliability

Inter-examiner reliability coefficient of 0.90 or higher.

- McCauley & Swisher (1984)

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Administration Procedures

Sufficient detail to allow the user to duplicate the administration and scoring procedures used during standardization.

- McCauley & Swisher (1984)

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Qualifications

The manual described any special qualifications required of the test administrator or scorer.

- McCauley & Swisher (1984)

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Improvements in Reliability & Validity?

McCauley & Swisher (1984)

- 30 Tests of Language and Articulation

Number of Criteria Met	Number of Tests
5	3
6	1
7	1
8	1
9	0
10	0

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Improvements in Reliability & Validity?

McCauley & Strand (2008)

- 6 Tests of Motor Speech Disorders in Children

Number of Criteria Met	Number of Tests
1	0
2	1
3 or more	0

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Improvements in Reliability & Validity?

Kirk & Vigeland (2014)

- 6 Tests of Phonological Error Patterns

Number of Criteria Met	Number of Tests
1	0
2	5
3	1
4 or more	0

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By becoming more aware of
the strengths and limitations
of these tests, clinicians will
be able to select the
instrument that is most
appropriate for their specific
needs

Kirk & Vigeland (2014)

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Resources

- Kirk, C., & Vigeland, L. (2014). A psychometric review of norm-referenced tests used to assess phonological error patterns. *Language, Speech, and Hearing Services in Schools, 45*, 365-377.
- McCauley, R., & Swisher, L. (1984). Psychometric review of language and articulation tests for preschool children. *Journal of Speech and Hearing Disorders, 49*, 34-42.
- McCauley, R., & Strand, E. (2008). A review of standardized tests of nonverbal oral and speech motor performance in children. *American Journal of Speech Language Pathology, 17*, 81-91.

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What's Next?

The Science...Diagnostic Accuracy

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