Using a Pattern of Strengths and Weaknesses (PSW) for Specific Learning Disability (SLD) Identification

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Outline for Today’s Workshop

• Brief overview of SLD identification
• Review of foundational sources of information necessary for making informed decisions about PSW method for SLD identification, with an introduction to the assessment – intervention connection
• Description of the PSW method and conceptual similarities among PSW methods; description of the Dual Discrepancy/Consistency (DD/C) operational definition of SLD – a PSW method; and
• The PSW-A Component of the Cross-Battery Assessment Software System (X-BASS)
• Summary and conclusions

OVERVIEW OF SLD IDENTIFICATION

The Cross-Battery Assessment Approach
U.S. (IDEIA) – Federal Definition of SLD

“A disorder in one or more of the basic psychological processes involved in understanding or using language, spoken or written, which manifests itself in the imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations. Such terms include such conditions as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia.”


- Ability-Achievement Discrepancy (AAD)
  - May allow
  - Cannot mandate
- Response-to-Intervention (RTI)
  - Must allow
  - “as part of” a comprehensive evaluation
- Alternative Research-based Approach (PSW)
All Methods of SLD Identification Are...

WTF
Methods

Ability-Achievement Discrepancy

WAIT TO FAIL

Response to Intervention

WATCH THEM FAIL
Pattern of Strengths and Weaknesses

WHY THEY FAIL

Third Option is PSW
Federal Regulations Permit the Use of a PSW Model
(34 CFR 300.311(a)(5)), (34 CFR 300.309(a)(2(ii))

• Evaluation documentation must consider whether the student exhibits a pattern of strengths and weaknesses
  – In performance, achievement or both
  – Relative to age, State approved grade levels standards, or intellectual development
  – That is determined by the group to be relevant to the identification of SLD using appropriate instruments

RTI and Cognitive Assessment Data – Important for SLD Identification
Why Do Some Not Understand the Value of A Comprehensive Evaluation?
• Psychologist to Parent:
  – It’s been six months and your son is still not as far along as we anticipated based on the interventions we’ve been trying. At this time, we have two options.
  • One, we can try another intervention that is supported by research and, therefore, is expected to work (like the other interventions we tried).
  • Or two, we can take a more comprehensive look at how your son approaches tasks, how he learns, how he is smart, and what difficulties he may have when faced with new problems. That means that we can do a comprehensive evaluation of your son and get a better understanding of his strengths and weaknesses in cognitive areas that are important for learning and achievement. We believe this additional information can help us understand why your son did not respond well to intervention and what we can do differently as we continue to plan and develop educational interventions for him.

Source:

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RTI and Cognitive Assessment are Not Mutually Exclusive

• There will undoubtedly be countless arguments on each side, but none will be strong enough to convince people that one approach is clearly better than the other.

• An increasingly widespread view will likely emerge that embraces each approach as different but **complementary** in the identification, diagnosis, and treatment of specific learning disability.

D. P. Flanagan, 2008

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Some Housekeeping

• Clarification of terms
  – XBA v. PSW
XBA ≠ PSW

- Flanagan and colleagues’ operational definition was often called by others “XBA,” rather than being conceived of as a method that was separate from yet compatible with XBA.
- To assist with clarification, Flanagan and colleagues (2013) gave it a name—the Dual Discrepancy/Consistency operational definition of SLD.

XBA

- XBA is a method for combining tests from different batteries and predates DD/C by several years (Flanagan & McGrew, 1997; Flanagan & Ortiz, 2001).
- Unlike other “flexible battery” practices, rigorous procedures and methods accompany XBA to insure that any assessment that expands beyond the confines of a single battery is psychometrically and theoretically defensible.

XBA

- To assist in XBA and in interpretation of cross-battery data, X-BASS was developed (Ortiz, et al., 2015). X-BASS is an integration and substantial revision of the software programs that accompanied the second and third editions of Essentials of Cross-Battery Assessment (Flanagan et al., 2007, 2013).
- Although XBA can be used in the context of SLD identification, it has many other applications.
SLD Cannot be Diagnosed with a Formula

- Diagnosis of SLD can be made based on a systematic, theory- and research-based approach to examining results of a comprehensive evaluation.
- A diagnosis of SLD is a clinical judgment that is made by a private independent psychologist or a multi-disciplinary team based on a convergence of data sources that appear to be consistent with the SLD construct.
- Due to federal statutory and regulatory requirements, a classification of SLD is made in the schools following one of three methods – methods that necessitate quantification for purposes of consistency in identification and accountability – The third option (i.e., PSW) is one such method.

![Utility of KTEA-3 Error Analysis for the Diagnosis of Specific Learning Disabilities](image)

Prior to Developing Quantitative Method (PSW-A) - Clinical Judgment (Flanagan and colleagues 2002-2006)

What’s Next?

- Review of foundational sources of information necessary for making informed decisions about PSW method for SLD identification, with emphasis on the assessment – intervention connection.
Interpretation of PSW

- Requires an understanding of contemporary theory
- Requires an understanding of the theoretical constructs that are measured by cognitive batteries
- Requires understanding of cognitive processes and abilities related to achievement
- May require cross-battery assessment to assess all the abilities and processes considered important based on referral and to follow up on aberrant test performances

D. P. Flanagan, 2017

Current and Expanded Cattell-Horn-Carroll (CHC) Model of Cognitive Abilities
(adapted from Schneider & McGrew, 2012) - Reviewed in Unit I

Sixteen broad and approximately 80 narrow abilities; approximately 9 broad and 35 narrow abilities represented on current batteries
Over Two Decades of Revisions and Refinements to Gf-Gc/CHC Theory

Chapter by McGrew: First attempt at integrating Cattell-Horn Gf-Gc theory and John Carroll's Three-Stratum Theory
Chapter by McGrew: Documentation of how the integrated model presented in 1997 and again in 2000 became known as CHC theory
Chapter by Schneider and McGrew: Careful review of the literature led to some substantial modifications
Chapter by Schneider and McGrew: Most significant revisions to CHC theory to date and criteria for revisions to the CHC taxonomy


Fluid Reasoning (Gf): Gf refers to a type of thinking or reasoning that individuals use when faced with a relatively new or novel task that cannot be performed automatically. It requires the use of inductive, deductive, and quantitative reasoning when solving unfamiliar problems that are minimally dependent on prior knowledge.

Fluid reasoning

Induction (I): The ability to observe a phenomenon and discover the underlying principles or rules that determine its behavior. This ability is also known as rule inference.

General Sequential Reasoning (RG): The ability to reason logically using known premises and principles. This ability also is known as deductive reasoning or rule application.

Quantitative reasoning (RQ): The ability to reason with quantities, mathematical relations, and operators.
Comprehension-Knowledge (Gc). Gc refers to the breadth and depth of knowledge and skills (e.g., words, general information) that are acquired as a result of exposure to language, culture, general life experiences, and formal schooling. It represents the ability to comprehend and communicate culturally-valued knowledge.

Working memory capacity

The ability to maintain and manipulate information in active attention. The mind’s mental “scratchpad” or “workbench.”

- A limited capacity system
- Mental scratch pad or workspace
- Loses information quickly through decay of memory traces, unless individual activates other cognitive resources to maintain the information in immediate awareness

Working Memory Capacity (Gwm). The ability to encode and maintain verbal or visual information in immediate awareness and then manipulate or transform it in some way within a few seconds, which is dependent in part on focus of attention. It also includes the ability to focus attention on task-relevant stimuli and ignore task-irrelevant stimuli.
Long-term Storage and Retrieval Has Been Separated Because it has been Shown that it Encompasses Two Relatively Distinct Abilities

Glr

Gl  Gr
Learning Efficiency  Retrieval Fluency

Learning efficiency
The ability to learn, store, and consolidate new information over periods of time measured in minutes, hours, days, and years.

Associative memory (MA): The ability to form a link between two previously unrelated stimuli such that the subsequent presentation of one of the stimuli serves to activate the recall of the other stimuli.

Meaningful memory (MM): The ability to remember narratives and other forms of semantically related information.
Retrieval fluency

The rate and fluency at which individuals can access information stored in long-term memory.

Facets in Gr

- Naming facility (NA): The ability to rapidly name objects by their names.
- Word fluency (WF): The ability to rapidly retrieve words that share a phonological base (e.g., fluency of retrieval of words in a phonologically similar semantic domain, e.g., retrieval of words that share a phonological base).
- Ideational fluency (IF): The ability to rapidly generate a series of ideas, words, or phrases related to a specific concept or object.
- Experiential fluency (EF): The ability to mentally think of different uses of expressing an idea.

The oral language composite made up of Rapid Picture Naming and Retrieval Fluency is called “Speed of Lexical Access” (LA) – it is broader than LA.

Facets in Gr

- Speed of lexical access (LA): The ability to rapidly retrieve words from an individual’s lexicon. Verbal efficiency or automatization of lexical access is an individual’s overall level ability.
- Figural fluency (FF): The ability to rapidly draw or sketch as many things (or elaborations) as possible when presented with a nonmeaningful visual stimulus (e.g., a set of unique visual elements).
- Figural flexibility (FX): The ability to rapidly draw different solutions to figural problems.
Schneider and McGrew's CHC-based Conceptualization of Gsm and Glr with WISC-V Subtests and Corresponding Memory Construct Highlighted


Schneider and McGrew's CHC-based Conceptualization of Gsm and Glr with WJ IV COG, OL, ACH Subtests and Corresponding Memory Construct Highlighted


Supplement WISC-V with Ga tests from another battery (e.g., CTOPP-2; FAR; WJ IV OL)

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Phonological Processing Test May Be Influenced by Gr and Gwm

Test 5A. Phonological Processing – Word Access
Tell me a word that starts/middle/ends with the /h/ sound. /h/

Test 5B. Phonological Processing – Word Fluency
Item 1: words that begin with /m/ sound as in milk (in one minute)
Item 2: words that begin with /d/ sound as in dog (in one minute)

Ga: Phonetic Coding (PC) – the ability to hear phonemes distinctly
Gr: Word Fluency (FW) – fluency of retrieval of words via a phonological cue

Test 5C. Phonological Processing – Word Substitution
If I say “Penny” and then change pen to sun, the new word would be…what?

Ga: Phonetic Coding (PC) – the ability to segment words into parts (also requires working memory)
Gr: Working Memory (WM) – the ability to hold information in mind for a short period of time

Areas of Processing Deficit and Their Link to Areas of Academic Achievement

Phonological Processing Model

Three Kind of Phonological Processing

Phonological Awareness: Phonological awareness refers to an individual’s awareness of and access to the sound structure of his/her oral language. This awareness proceeds from word-length phonological units in compound words (e.g., cowboy) to syllables within words, to stress-nodes units within syllables to individual phonemes within stressed clusters.

Phonological Memory: Phonological memory refers to coding information phonologically for temporary storage in working memory. A deficient phonological memory does not appear to impact either reading or listening to a noticeable extent, provided the words involved are already in the individual’s vocabulary. However, phonological memory impairments can constrain the ability to learn new written or spoken vocabulary.

Rapid Naming: Rapid naming of objects, colors, digits, or letters requires efficient retrieval of phonological information from long-term memory. The efficiency with which individuals are able to retrieve phonological codes associated with individual phonemes, word segments, or entire words should influence the degree to which phonological information is useful in decoding printed words. Measures of rapid naming require speed and processing of information as well as phonological information.

Memory for Sound Patterns/Phonological Memory and Reading

Storage of phonological information during reading involves creating a sound-based representation of written words in working memory. Deficits in storage of phonological information result in faulty representations in memory, which lead to inaccurate application of sound rules during reading tasks. A deficit in phonological memory does not inevitably lead to poor reading of familiar material, but it is more likely to impact decoding of new words, particularly words that are long enough to deserve to be set as a means of storing intermediate sounds. A deficit in phonological memory may impair reading comprehension for more complex sentences.
**Visual Processing (Gs)**

Gs refers to the ability to generate visual images and perceive and analyze visual patterns and visual information. It also involves the ability to mentally simulate how complex visual patterns might look when transformed in some way (e.g., rotated).

**Processing Speed (Gs)**

- The ability to control attention to automatically perform simple and repetitive clerical-type tasks quickly. It may be thought of as mental speed or the fluency with which simple, over-learned tasks are performed.
Interpretation of PSW

- Requires an understanding of contemporary theory
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CHC Factors on the WJ IV COG

WJ IV COG includes 18 tests; 14 comprise seven CHC factors
Number Series Analysis-Synthesis

Narrow Ability an Other Clinical Clusters on the WJ IV COG

Number Facility (Gs:N) – The speed at which basic arithmetic operations are performed accurately

CHC Extended Factors on the WJ IV COG

Composition of the WISC-V Full Scale IQ

Allowable Substitutions for Core FSIQ Subtests (Only 1 Permitted)
### A Comparison of WISC-V Family and WJ IV Family of Batteries by CHC Construct: When To Supplement Via XBA

<table>
<thead>
<tr>
<th>Subtest</th>
<th>WISC-V</th>
<th>WJ IV</th>
<th>XBA</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Matrix Reasoning</td>
<td>Figure Weights</td>
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<td>Digit Span</td>
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**Notes:**
- Based on 5-factor hierarchical CFA of primary and secondary subtests.
- No Substitutions are Permitted.
- Based on construct validation literature; Extant factor analyses; CHC classifications.

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Summary of Relations between CHC Abilities and Neuropsychological Processes and Math Achievement and the Etiology of Math Functions

- Summary of Relations between CHC Abilities and Neuropsychological Processes and Writing Achievement and the Etiology of Writing Functions

**General and Specific Manifestations of Broad Ability Weaknesses and Recommendations That May Facilitate Learning and Aid in Bypassing or Minimizing the Effects of Broad Ability Weaknesses**
Rapid Reference 1.5 General and Specific Manifestations of Fluid Reasoning (Gf) Weaknesses

<table>
<thead>
<tr>
<th>Fluid Reasoning (Gf)</th>
<th>General Manifestations of Cognitive Neuropsychological Weaknesses</th>
<th>Specific Manifestations of Cognitive Neuropsychological Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor reasoning and problem solving ability to solve problems that are unfamiliar. Processes are minimally dependent on prior learning.</td>
<td>Difficulty with deductive reasoning, identifying relational relationships.</td>
<td>Reading Difficulties: Difficulty identifying text. Writing Difficulties: Difficulty generating grammar.</td>
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<tr>
<td>Tests that require a broad base of knowledge and experience.</td>
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<tr>
<td>Difficulty with retaining information.</td>
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See Chapter 4 in Essentials of Cross-Battery Assessment (Flanagan, Ortiz, & Alfonso, 2013)
See Chapter 1 in Essentials of Planning, Selecting, and Tailoring Interventions for Unique Learners (Mascolo, Alfonso, & Flanagan, 2014)

Rapid Reference 1.4 Recommendations That May Facilitate Learning and Aid in Bypassing or Minimizing the Effects of a Fluid Reasoning (Gf) Deficit

<table>
<thead>
<tr>
<th>Instructional Approach</th>
<th>Instructional Strategies</th>
<th>Environment Strategies</th>
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Rapid Reference 1.6 General and Specific Manifestations of Crystallized Intelligence (Gc) Weaknesses

<table>
<thead>
<tr>
<th>Crystallized Intelligence (Gc)</th>
<th>General Manifestations of Cognitive Neuropsychological Weaknesses</th>
<th>Specific Manifestations of Cognitive Neuropsychological Weaknesses</th>
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Most Intelligence and Cognitive Batteries do not Measure Ga
Assessing Phonological Processing Related to Reading

Examples of assessments of phonological processing directly related to reading:

- PAL-II Rhyming, Syllables, Phonemes, Rimes
- KTEA-II Phonological Awareness Subtest
- NEPSY-II Phonological Processing Subtest
- WJ IV Phonological Processing Test
- DAS-II Phonological Processing Subtest
- CTOPP-II Blending and Segmenting Subtests
- FAR – Feifer Assessment of Reading
Relations between Gv Abilities and Reading Achievement

- **Gv – Orthographic processing**

![Orthography Diagram](image)

**Orthography (Wagner & Barker, 1994)**

- The system of marks that make up the English language, including upper and lower case letters, numbers, and punctuation marks

![Orthography Chart](image)
Assessing Visual Processing Related to Reading

- Visual processing must be assessed using orthography (letters, words and numbers) rather than abstract designs or familiar pictures
Rapid Reference 1.19 Factors That May Facilitate Learning and Aid in Bypassing or Minimizing the Effects of a Visual Processing (Co) Deficit

<table>
<thead>
<tr>
<th>Classroom Instructional Factors</th>
<th>Instructional Materials</th>
<th>Environmental Factors</th>
<th>Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide visual materials when appropriate</td>
<td>Visual aids</td>
<td>Color-coded information</td>
<td>Use graphic organizers for reviewing information, shape of words, color codes, concept mapping, etc. (e.g., Home, School, Place)</td>
</tr>
<tr>
<td>Use spatial concept and spatial orientations through visual materials, manipulatives, and manipulatives (e.g., blocks)</td>
<td>Visual aids</td>
<td>Color-coded information</td>
<td>Use graphic organizers for reviewing information, shape of words, color codes, concept mapping, etc. (e.g., Home, School, Place)</td>
</tr>
<tr>
<td>Provide visual materials in meaningful ways (e.g., The Embodiment of Visual Processing)</td>
<td>Visual aids</td>
<td>Color-coded information</td>
<td>Use graphic organizers for reviewing information, shape of words, color codes, concept mapping, etc. (e.g., Home, School, Place)</td>
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Rapid Reference 1.19 General and Specific Manifestations of Processing Speed (Co) Weaknesses

<table>
<thead>
<tr>
<th>Time (s)</th>
<th>General Processing Performance</th>
<th>Specific Manifestations of Cognitive/Neuropsychological Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processing Speed</td>
<td>Speed of processing (e.g., word recognition, fluent speech)</td>
<td>Specific manifestations of cognitive/ neuropsychological weaknesses</td>
</tr>
<tr>
<td>Reading Difficulties</td>
<td>Difficulty with understanding complex texts and processing information in written form</td>
<td>Specific manifestations of cognitive/ neuropsychological weaknesses</td>
</tr>
</tbody>
</table>

See Chapter 4 in Essentials of Cross-Battery Assessment (Flanagan, D., & Ortiz, 2013)

You May Consider Using a Parent/Teacher Form to Assist in Documenting General and Specific Manifestations of Cognitive Weaknesses

General and Specific Manifestations of Cognitive Ability Weaknesses in SLD Identification

A specific learning disability (SLD) involves the presence of a cognitive processing weakness in one or more areas that is significantly below expectations, related to a documented academic weakness. While the primary forms of SLD are identified through cognitive ability weaknesses in standardized test scores, establishing diagnostic validity for a cognitive deficit involves the organization and analysis of additional data. For example, additional data that may be valuable to support the presence of specific learning disability weaknesses include information from different testing scales, parent and teacher interviews, classroom observations, prior evaluations, work samples, etc. Special educators and past teachers, counselors, and other professionals who have worked with the student. Below is a list of general and specific ways in which cognitive ability deficits manifest in academic performance, specifically academic performance.

Directions: Complete the checklist below for any area identified as a cognitive ability weakness via standardized testing. Use the following codes next to a check-marked item to denote documentation source (S) = Standardized; (P) = Parent; (T) = Teacher; (O) = Observation; (R) = Direct Test; More than one code may be used for a check-marked item.

<table>
<thead>
<tr>
<th>Domain</th>
<th>Cognitive Ability Weakness</th>
<th>Source (S/T/P/O/R)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading</td>
<td>Difficulty in understanding written material</td>
<td></td>
</tr>
<tr>
<td>Spelling</td>
<td>Errors</td>
<td></td>
</tr>
<tr>
<td>Writing</td>
<td>Difficulty in writing</td>
<td></td>
</tr>
<tr>
<td>Math</td>
<td>Difficulty in math calculations</td>
<td></td>
</tr>
<tr>
<td>Memory</td>
<td>Difficulty in retaining information</td>
<td></td>
</tr>
<tr>
<td>Attention</td>
<td>Difficulty in sustaining attention</td>
<td></td>
</tr>
<tr>
<td>Processing</td>
<td>Difficulty in processing information</td>
<td></td>
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</table>

Notes: (optional comments)
You are figuring out the “WHY”

When you know why, “HOW” is made easier
CHC QUIZ

The Person Who Made This Shirt Had Difficulty in What CHC Domain?

Gc

The Person Who Hung the Clock Had Difficulty in What CHC Domain?

Gv

The Person Who Placed Numbers on the Pole Had a Strength in What CHC Domain?

Gf
These Jobs/Careers Involve High Ability in What Primary CHC Domain?

- Librarian
- Short order cook
- Day Trader
- Receptionist, operator

These Jobs/Careers Involve High Ability in What Primary CHC Domain?

- Teaching English, language arts, drama, and debate at k-12 or postsecondary institutions
- professional writer; creative writer
- News correspondent

These Jobs/Careers Involve High Ability in What Primary CHC Domain?

- Musician
- Conductor
- Music Teacher – fundamentals of pitch and rhythm
- Taking oral dictation

Based on logical deductions given demands of the job; see also McGrew and Flanagan (1998) for research support.
These Jobs/Careers Involve High Ability in What Primary CHC Domain?

- Air Traffic Controllers
- Detectives/FBI Agents
- Researchers

Based on logical deductions given demands of the job.

These Jobs/Careers Involve High Ability in What Primary CHC Domain?

- Architecture and engineering
- Mathematician
- Auto mechanics and machine maintenance
- Welding and plumbing

Based on logical deductions given demands of the job; see also McGrew and Flanagan (1998) for research support.

The Person Who Created this Maze Had Difficulty in What CHC Domain?

Based on logical deductions given demands of the job.
Someone has difficulty with what CHC ability?

- Requires an understanding of contemporary theory
- Requires an understanding of the theoretical constructs that are measured by cognitive batteries
- Requires understanding of cognitive processes and abilities related to achievement
- May require cross-battery assessment to assess all the abilities and processes considered important based on referral and to follow up on aberrant test performances

D. P. Flanagan, 2017

Interpretation of PSW

- Important for
  - Testing hypotheses
  - Following up on aberrant score performance
  - Measuring constructs not found on the core battery but considered important based on referral information

Cross-Battery Assessment

<table>
<thead>
<tr>
<th>Visual Memory (MV)</th>
<th>Raw Range</th>
</tr>
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<tbody>
<tr>
<td>Memory for a 10-Item List</td>
<td>60-90</td>
</tr>
<tr>
<td>Memory for a 40-Item List</td>
<td>60-90</td>
</tr>
<tr>
<td>Memory for a 80-Item List</td>
<td>60-90</td>
</tr>
</tbody>
</table>

98 76

Gv Visualization

Picture Recognition

X-BASS v2.0 (Flanagan, Ortiz, & Alfonso, 2017)
HISTORY AND DEFINITION

The Cross-Battery Assessment Approach

Findings of Woodcock’s (1990) Joint Factor Analysis of Cognitive Batteries

• The WJ-R measured eight broad Gf-Gc cognitive abilities, while the other intelligence tests measured between three and five.
• When not using the WJ-R, it was suggested that clinicians “cross” batteries to obtain the information necessary for a particular evaluation.

The Need for Cross-Battery Assessment

A WISC-III detective strives to use ingenuity, clinical sense, a thorough grounding in psychological theory and research, and a willingness to administer supplementary cognitive tests to reveal the dynamics of a child’s scaled-score profile

(Kaufman, 1994)
Definition of Cross-Battery Assessment

- A time-efficient method of organizing and interpreting cognitive and academic abilities and neuropsychological processes using more than one instrument in a manner that is psychometrically and theoretically defensible.
- Allows practitioners to measure reliably a wider (and/or more in-depth) range of cognitive, academic, and neuropsychological constructs than that represented by any given stand alone assessment battery.
Construct Representation on the WISC

<table>
<thead>
<tr>
<th></th>
<th>WISC-R</th>
<th>WISC-III</th>
<th>WISC-IV</th>
<th>WISC-V</th>
</tr>
</thead>
<tbody>
<tr>
<td>1974</td>
<td>Ga,Gf,Gq</td>
<td>Ga,Gf</td>
<td>Ga,Gf</td>
<td>Ga,Gf</td>
</tr>
<tr>
<td>1991</td>
<td>Ga,Gf,Gm,Gq</td>
<td>Ga,Gf</td>
<td>Ga,Gf</td>
<td>Ga,Gf</td>
</tr>
<tr>
<td>2014</td>
<td>Ga,Gf,Gm,Gq</td>
<td>Ga,Gf</td>
<td>Ga,Gf</td>
<td>Ga,Gf</td>
</tr>
<tr>
<td>2003</td>
<td>Ga,Gf,Gm,Gq</td>
<td>Ga,Gf</td>
<td>Ga,Gf</td>
<td>Ga,Gf</td>
</tr>
</tbody>
</table>

Cross-Battery Assessment Enters the Field

Most Current Contributions of the XBA Approach to Psychological Evaluation

Refinements and Extensions to the Cross-Battery Approach

Significantly improved evidence base
Significantly improved and expanded software programs
- Data Management and Interpretive Assistant
- Pattern of Strengths and Weaknesses Analyzer
- Culture-Language Interpretive Matrix

Most Current Contributions of the XBA Approach to Psychological Evaluation

- Data Management and Interpretive Assistant
- Pattern of Strengths and Weaknesses Analyzer
- Culture-Language Interpretive Matrix
- All three programs have been integrated into one software system that substantially improves upon functionality and psychometrics
The Cattell-Horn-Carroll (CHC) Theory as Defined by Schneider and McGrew (2012) with revisions and refinements underway based on their chapter in...

• Broad ability classifications of tests were necessary to guard against *construct irrelevant variance* in assessment
• Broad ability classifications were based on theory-driven cross-battery factor analyses
• Broad ability classifications also informed by factor analyses reported in current test manuals and expert consensus (Flanagan et al., 2013)

---

• Narrow ability classifications of tests were necessary to guard against *construct underrepresentation* in assessment
• Narrow ability classifications were based largely on the results of content validity (expert consensus) studies
  – McGrew, 1997; Flanagan, Ortiz, & Alfonso, 2013; Flanagan, Ortiz, Alfonso, & Mascolo, 2006
Neuropsychological domain classifications were intended to provide practitioners with more interpretive options and to facilitate the integration of psychometric and neuropsychological theories.
CLASSIFIES ALL TESTS ACCORDING TO NEUROPSYCHOLOGICAL DOMAIN: A KABC-II example

<table>
<thead>
<tr>
<th>Tests</th>
<th>Working Memory</th>
<th>Attention</th>
<th>Long-term Memory</th>
<th>Visual-Spatial</th>
<th>Language</th>
<th>Executive Function</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Narrow (Stratum I)

- Test Classifications

Broad (Stratum II)

- Test Classifications

CHC Theory and Neuropsychological Domains

- Foundation Classification of Tests by Neuropsychological Domain

- Relations Among Abilities, Processes and Academic Skills

- Important for informing diagnosis of specific learning disabilities

- Important for developing educational strategies, and selecting and tailoring interventions

Source: Appendix F in Essentials of Cross-Battery Assessment, Third edition (Flanagan, Ortiz, & Allison, 2013)

SCHOOL NEUROPSYCHOLOGY CONSULTATION IN NEURODEVELOPMENTAL DISORDERS

Scott D. Becker

Georgia State University
Perceptual speed (P) abilities are important during all school years, especially the elementary school years. Naming facility (NA) or “rapid automatic naming” (also called speed of lexical access) is very important during the elementary school years for the development of basic reading rate and fluency. Phonetic coding (PC) or “phonological awareness/processing” is very important during the elementary school years for the development of basic reading rate and fluency. Orthographic Processing (often measured by tests of perceptual speed that use orthographic units as stimuli) – important primarily for higher level (e.g., geometry, calculus) and math problem solving. Memory span (MS) and working memory capacity (WM) or WM for verbal and sound-based information may also be important. These abilities become increasingly important with age. Executive functions, such as planning, organization, and self-monitoring are also important. These abilities become increasingly important with age.

**GUIDING PRINCIPLES – VERY BRIEF REVIEW**

The Cross-Battery Assessment Approach

---

**XBA Guiding Principles**

I. Select a battery that best addresses the referral concerns and that is the best fit for the student
   - Consider co-normed tests first

II. Use clusters based on actual norms when they are available
   - Clusters yielded from the actual test battery rather than formulae based on subtest reliabilities and intercorrelations (although differences between actual norm-based clusters and those generated via formulae are negligible).
A Comparison of Two-Subtest Clusters Generated Three Different Ways

M1: XBA Mean
M2: WISC-IV Norms
M3: Cluster Generator

EFI = Matrix Reasoning + Figure Weights + Picture Concepts + Arithmetic

XBA Guiding Principle: Use Actual Norms Whenever They Are Available
When differences occur they are negligible (i.e., not significant). X-BASS composites are derived using the most psychometrically defensible procedures.

XBA Guiding Principles
III. Select tests classified through an acceptable method
    - Joint or Cross-Battery Factor Analyses and/or Expert Consensus
      • There is more agreement than disagreement in the field on the broad and narrow abilities that are measured by subtests on popular batteries
      • See XBA-CHC Test List on the INDEX tab in X-BASS v2.0
Representation of Broad and Narrow Abilities

**RULES**

- Use two or more qualitatively different narrow ability indicators to represent each broad ability domain
- Use two or more qualitatively similar narrow ability indicators to represent each narrow ability domain
- **Is a single subtest ever enough?**
  - Only when converging data sources exist to support the score – ecological validity
  - Risky with low scores
  - Remember: Single measures make for poor measurement

---

**XBA Guiding Principles**

IV. When broad abilities are underrepresented, go out of battery
- **Two qualitatively different indicators from another battery**
- **Or one qualitatively different indicator and use XBA Analyzer Tab to create a broad ability composite**

---

**XBA Guiding Principles**

V. When crossing batteries use tests developed and normed within a few years of one another
- Flynn effect
- All tests in Cross-Battery book and X-BASS were normed within about 10-12 years of one another

VI. Select tests from the smallest number of batteries
- to minimize error that may be the result of differences in norm sample characteristics

VII. Establish ecological validity for test findings – e.g., manifestation of weaknesses or deficits
What’s Next?

Description of the PSW method and conceptual similarities among PSW methods; description of the Dual Discrepancy/Consistency (DD/C) operational definition of SLD – a PSW method; and understanding of the SLD construct

An Operational Definition of SLD
Flanagan, Ortiz, Alfonso, and Mascolo

- Definition first presented in 2002
- Revised and updated in 2006
- Updated in 2007
An Operational Definition of SLD

- Revised and updated in 2011
- Updated in Essentials of Cross-battery Assessment, 3e (2013) and renamed:
  Dual Discrepancy/Consistency (D/D/C) Method

Operationalized in X-BASS (2017) – most sophisticated and psychometrically defensible PSW model to date


The Dual Discrepancy/Consistency (D/D/C) Operational Definition of SLD

<table>
<thead>
<tr>
<th>Step</th>
<th>Name of SLP</th>
<th>Format Evaluation</th>
<th>Comprehensive Composite Method</th>
<th>Criteria for SLD</th>
<th>Dual Discrepancy/C</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Dual Discrepancy Consistency (D/D/C)</td>
<td>Performance in academic tests</td>
<td>Performance in academic tests</td>
<td>Above the 85th percentile</td>
<td>Consistency in scores</td>
<td>None</td>
</tr>
</tbody>
</table>


The Dual Discrepancy/Consistency (D/D/C) Operational Definition of SLD (Continued)

<table>
<thead>
<tr>
<th>Step</th>
<th>Name of SLP</th>
<th>Format Evaluation</th>
<th>Comprehensive Composite Method</th>
<th>Criteria for SLD</th>
<th>Dual Discrepancy/C</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Academic Performance</td>
<td>Performance in academic tests</td>
<td>Performance in academic tests</td>
<td>Above the 85th percentile</td>
<td>Consistency in scores</td>
<td>None</td>
</tr>
</tbody>
</table>

Alternative Research-Based Approaches to SLD Identification

- **PSW Methods:**
  - Flanagan, Ortiz, Alfonso, & Mascolo (2002-Present)
    - Dual-Discrepancy/Consistency (within the context of an Operational Definition of SLD and a broader approach to "best practices" in CHC-based assessment) – automated in X-BASS
    - Discrepancy/Consistency (PASS Model; CAS-2 battery) – battery specific
    - Concordance-discordance model (based on neuropsych theory within the context of an hypothesis testing approach) – not automated
  - Dehn & Szasz – Psychological Processing Analyzer-5
    - (remarkably similar to the PSW-A component of X-BASS, although not as comprehensive, or psychometrically sophisticated, or theoretically driven)
  - WISC-V
    - two discrepancy comparisons for PSW – automated in WIAT-III, KTEA-III scoring programs

The Focus Here is on the DD/C Model

- **PSW Methods:**
  - Flanagan, Ortiz, Alfonso, & Mascolo (2002-Present)
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  - WISC-V
    - two discrepancy comparisons for PSW – automated in WIAT-III, KTEA-III scoring programs

Conceptual Understanding of the Dual Discrepancy/Consistency (DD/C) Method

- **COGNITIVE STRENGTHS**
  - Aggregate of cognitive strengths suggests at least average general ability
  - May be supported by typically developing academic skills

- **ACADEMIC WEAKNESS/DEFICIT**
  - Academic Skills Weaknesses
    - Actual cognitive area of weakness is significantly lower than expected based on estimated general cognitive ability
    - Cognitive deficit is specific, not general or pervasive. Strengths aggregate at cognitive normative range or better, except in specific area of weakness

  - Academic Deficit(s) is unexpected because aggregate of cognitive strengths is at least average (i.e., 85 or higher) and other factors were ruled out
    - Consistent understanding of the Dual Discrepancy/Consistency (DD/C) Method

Flanagan, Ortiz, and Alfonso (2002 - 2017)
Essential Elements of PSW based on DD/C
Operational Definition of SLD
Flanagan, Ortiz, and Alfonso (2002-2017)

- Level I: Academic weakness (SS < 90; more typically below 85)
  - Must also meet criteria for unexpected underachievement
  - Not all weaknesses are unexpected (to determine unexpected use X-BASS)

- Level II: Exclusionary factors must be ruled out as the primary cause of the academic skill weaknesses
  - It is not unusual to find one or more exclusionary factors that contribute to academic weaknesses
  - Use exclusionary factors form to ensure accountability

Identification of SLD

- Involves more than just examining scores from standardized tests
  - A convergence of data sources is necessary
  - Data should be gathered via different methods
  - Exclusionary factors must be considered and examined systematically

Exclusionary Factors Form
Flanagan et al.’s DD/C Definition of SLD: Level II – Review of Exclusionary Factors

Evaluation and Consideration of Exclusionary Factors for SLD Identification

An evaluation of specific learning disability (SLD) requires an evaluation and consideration of factors, other than a disorder in one or more basic psychological processes that may be the primary cause of a student’s academic skill weaknesses and learning difficulties. These factors include (but are not limited to), vision/ hearing, or motor disabilities, emotional/behavioral disability (BD), social/emotional or psychological disturbance, environmental or economic disadvantage, cultural and linguistic factors (e.g., limited English proficiency), ineffective instruction or an opportunity to learn and physical health factors. These factors may be evaluated via behavioral ratings, parent and teacher interviews, classroom observations, attendance records, social/developmental history, family history, previous testing, medical records, prior evaluations, and interviews with parents and teachers who have worked with the student. Noteworthy in this fact that students who are labeled SLD often have one or more factors listed below that contribute to academic and learning difficulties. However, the practitioner must rule out any of these factors being the primary cause of a student’s academic and learning difficulties to maintain SLD as a viable classification/diagnosis.


Flanagan et al.’s DD/C Definition of SLD: Level II – Review of Exclusionary Factors

Vision (Check all that apply):
- Vision test recent (within 1 year)
- Vision test outdated (> 1 year)
- Passed
- Failed
- Wear Glasses

History of visual disorders/disturbance
Diagnosed visual disorder/disturbance
Name of disorder:
Vision difficulties suspected or observed
(1) Difficulty with fine or near point copying
Intelligent numbers in written math work
Reading or taking notes during visual tasks
(2) Reading, comprehen:

NOTES:

Form downloadable on CD that accompanies Essentials of Cross-Battery Assessment, 3e (Flanagan, Ortiz, & Alfonso, 2013)

Flanagan et al.’s DD/C Definition of SLD: Level II – Review of Exclusionary Factors

Hearing (Check all that apply):
- Hearing test recent (within 1 year)
- Hearing test outdated (> 1 year)
- Passed
- Failed
- Use Hearing Aids

History of auditory disorders/disturbance
Diagnosed auditory disorder/disturbance
Name of disorder:
Hearing difficulties suggested in the referral
(1) Frequent requests for repetition of auditory information, misarticulated words, attempts to self-accommodate by moving close to sound source, obvious attempts to squint and

NOTES:

Form downloadable on CD that accompanies Essentials of Cross-Battery Assessment, 3e (Flanagan, Ortiz, & Alfonso, 2013)
Flanagan et al.'s DD/C Definition of SLD: Level II – Review of Exclusionary Factors

**Instructional Factors of Work**
- Did interrupted schooling (e.g., early entry to school) specify why?
- Did non-traditional curricula (e.g., home school, AP classes) specify why?
- Did change of grades specify why?
- Did change of grade level specify why?

**Notes:**
- Did the availability of data, e.g., test scores (X-BASS), support the DD/C PSW analysis?
- Did the DD/C PSW analysis support the DD/C PSW analysis?

Determination of Primary and Contributory Causes of Academic Weaknesses and Learning Difficulties (Check Only):
- Based on the available data, it is reasonable to conclude that one or more factors primarily responsible for the student’s observed learning difficulties. Specify:
- Based on the available data, it is reasonable to conclude that one or more factors primarily responsible for the student’s observed learning difficulties. Specify:
- No factors listed here appear to be the primary cause of the student’s academic weaknesses and learning difficulties.

Form downloadable on CD that accompanies Essentials of Cross-Battery Assessment, 3e (Flanagan, Ortiz, & Alfonso, 2013)

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**Essential Elements of PSW based on DD/C Operational Definition of SLD**

Flanagan, Ortiz, and Alfonso (2002-2017)

- Level I: Cognitive strengths (IQ-100; more typically below 85)
- Must also meet criteria for domain-specific weaknesses
- Level II: Cognitive weaknesses not domain-specific (to determine domain-specific use X-BASS)
- Level III: Cognitive weaknesses not domain-specific (to determine domain-specific use X-BASS)
- General average ability across most cognitive areas does not meet the criterion of a domain-specific cognitive weakness
- Level IV: Data support a “dual discrepancy” and a “consistency” with at least average ability to think and reason
- Consistency: Empirical or ecologically valid relationship between cognitive and academic weaknesses

X-BASS (Flanagan, Ortiz, & Alfonso, 2015-2017) is necessary to conduct the DD/C PSW analysis

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**Consistency – Don’t Assume a Perfect Prediction**

Not all academic weaknesses have corresponding cognitive weaknesses

Cognitive processing weaknesses do not guarantee that there will be academic weaknesses—they simply raise the risk (Flanagan & Schneider, 2016)

Relationship is probabilistic, not deterministic, as some have erroneously assumed (e.g., Kranzler et al., 2016)
Not All Definitions of SLD Assume at Least Average Overall Ability

The Dual Discrepancy/Consistency (DD/C) Operational Definition of SLD Requires at Least Average Overall Ability to Think and Reason Despite Some Cognitive Processing Deficits

Is At Least Average Overall Ability Consistent with the SLD Construct?

Individuals with SLD have At Least Average Overall Ability

- The children often have average or above intelligence and good memory in other respects
- Hinshelwood, 1902

"Historical Perspective" Information from Nancy Mather, NVASP 2011
Individuals with SLD have At Least Average Overall Ability

Many of the children have a high degree of intelligence

Orton, 1937

“Historical Perspective” Information from Nancy Mather, NYASP 2011

Individuals with SLD have At Least Average Overall Ability

“It seems probably that psychometric tests as ordinarily employed give an entirely erroneous and unfair estimate of the intellectual capacity of these children” (p. 582)

Orton, 1925

“Historical Perspective” Information from Nancy Mather, NYASP 2011

Individuals with SLD have At Least Average Overall Ability

- Remedial training must continue until reading is in harmony with the child’s other capacities and achievement
- Some children of superior intelligence struggle to learn to read
- Monroe, M. (1932)

“Historical Perspective” Information from Nancy Mather, NYASP 2011
Individuals with SLD have At Least Average Overall Ability

- “Sometimes children of good general intelligence show retardation in some of the specific skills which compose an intelligence test” (p. 22)
- Monroe and Backus (1937)

“Historical Perspective” Information from Nancy Mather, NYASP 2011

Individuals with SLD have At Least Average Overall Ability

- “…generalized integrity and deficiency in learning (p. 9)...there is a deficit in learning in the presence of basic integrity” (p. 25).


Individuals with SLD have At Least Average Overall Ability

- The clearest expression of a special disability is consistently low scores on a series of tests in a given subject compared with average or superior scores on tests in other subjects. Such scores can be arranged in an "achievement profile." For example, in one of a reading disability, a child might obtain scores placing him in the ninth grade in arithmetic...and in the third grade in reading. Here we would have evidence of a striking reading disability.” (p. 43).


“Historical Perspective” Information from Nancy Mather, NYASP 2011
All historical approaches to SLD emphasize the spared or intact abilities that stand in stark contrast to the deficient abilities.

Kaufman, 2008, pp. 7-8

“Weaknesses in word reading and spelling surrounded by a sea of strengths”

Learning Disabilities Association of Canada

“Learning Disabilities refer to a number of disorders which may affect the acquisition, organization, retention, understanding or use of verbal or nonverbal information. These disorders affect learning in individuals who otherwise demonstrate at least average abilities essential for thinking and/or reasoning”

Source: www.ldac-acta.ca/en/learn-more/id-defined.html
Individuals with SLD have At Least Average Overall Ability

By failing to differentially diagnose SLD from other conditions that impede learning, such as intellectual disability, pervasive developmental disorders, and overall below average ability to learn and achieve, the SLD construct loses its meaning and there is a tendency (albeit well intentioned) to accept anyone under the SLD rubric who has learning difficulties for reasons other than specific cognitive dysfunction...

What’s Next?

The PSW-A Component of X-BASS

Introduction and Functionality of the PSW-A Component of X-BASS

- Entering scores and interpreting output
- Guidance on selecting scores for inclusion in PSW Analysis
PWS Analysis Following the Dual Discrepancy/Consistency (DD/C) Model Using X-BASS

• Requires Estimates of Seven Cognitive Abilities and Processes
  – Gf
  – Gc
  – Glr
  – Gsm
  – Gv
  – Ga
  – Gs

• These 7 are necessary for the calculation of the g-value, FCC, and ICC
  – Other areas that may be included in the PWS Analysis, but do not contribute to the g-value, ICC, or FCC
    – Orthographic Processing
    – Speed of Lexical Access
    – Cognitive Efficiency

• Estimates Do Not Need to be
  Broad Cognitive Ability Estimates. Examples:
    – Broad CHC Estimate
      – Most likely in the areas of Gf, Gc, and Gs
      – WISC-IV Gc is estimate of V only. Ok if more deficits in reading
    – Narrow CHC Estimate
      – Vakia, Gs, Phonological Processing, and Gs (e.g., Perceptual Speed)
      – More than one CHC Estimate is ok

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  Broad Cognitive Ability Estimates. Examples:
    – Broad CHC Estimate
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    – Narrow CHC Estimate
      – Vakia, Gs, Phonological Processing, and Gs (e.g., Perceptual Speed)
      – More than one CHC Estimate is ok

X-BASS Welcome Screen
PSW Component of X-BASS

- Transfer best estimates of CHC abilities and academic scores to XBA Organizer Tab
- From XBA Organizer tab, select estimates to be used in PSW analysis (use select all button)
- View output
- Select different cognitive and academic weaknesses for analysis if necessary
- Print interpretation of results

Cross-Battery Assessment Software System (X-BASS® v2.0)

Criteria for Consideration: Is variable significant or substantiated?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

Follow-up Recommendations

- Do the results suggest a need for follow-up?

Options:

- Yes, recommended for follow-up
- No, no action recommended

Note: Additional Subtests were Administered
10 New Clinical Composite Based on Actual Norms
Calculated Automatically on the WISC-V Tab

<table>
<thead>
<tr>
<th>Clinical Composite</th>
<th>Subtest Composites</th>
<th>Brief Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Scale IQ (FSIQ) Tab</td>
<td>verbal + information</td>
<td>Provides an estimate of overall intelligence, including both verbal and nonverbal abilities.</td>
</tr>
<tr>
<td>Verbal Comprehension Composite Tab</td>
<td>vocabulary + information</td>
<td>Evaluates the ability to understand spoken and written language.</td>
</tr>
<tr>
<td>Perceptual Reasoning Composite Tab</td>
<td>object assembly + block design</td>
<td>Measures the ability to reason about objects and designs, using visual and spatial information.</td>
</tr>
<tr>
<td>Processing Speed Composite Tab</td>
<td>symbol substitution + coding</td>
<td>Evaluates speed and accuracy of information processing.</td>
</tr>
<tr>
<td>Working Memory Composite Tab</td>
<td>digit span + forward and reverse span</td>
<td>Measures the ability to hold and manipulate information in working memory.</td>
</tr>
<tr>
<td>Processing Speed Composite Tab</td>
<td>symbol substitution + coding</td>
<td>Evaluates speed and accuracy of information processing.</td>
</tr>
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</table>

Summary of the New Clinical Composites for the WISC-V (Cont’d)

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<th>Brief Description</th>
</tr>
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</tr>
<tr>
<td>Processing Speed Composite Tab</td>
<td>symbol substitution + coding</td>
</tr>
</tbody>
</table>
10 New Clinical Composite Based on Actual Norms
Calculated Automatically on the WISC-V Tab

Note: The more scores that make up a composite, the larger the difference needs to be between highest minus lowest score for a noncohesive composite. Large differences are common in the general population. Nevertheless, when large differences are present, the composite may obscure important information about the individual’s strengths and weaknesses.

Check Boxes for Transfer to XBA Analyzer Tab for Analysis of Variability

XBA Analyzer Tab Provides the SAME Composite
No difference between Actual Norms and the Composite Generated by X-BASS

X-BASS composites based on the most psychometrically defensible means of calculating composites when actual norms are not available.
What if I wanted to do something else? Can I Generate a Different Composite or Composites Based on my Clinical Judgment?

---

Note: This version of X-BASS not yet released; available to X-BASS v2.0 users free in 4-6 weeks.

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Score configuration and interpretation:
The difference between the highest and lowest scores is less than or equal to 1 and 36.50 and, therefore, they form a composite that is considered cohesive and fairly a good summary of the set of theoretically related abilities that comprise it. Interpret the composite as an adequate estimate of the ability that is intended to measure. If, however, there are reasons to consider an alternative configuration based on additional data, clinical significance, narrow abilities measured, etc., click the "Evaluate Score Configuration" button.
X-BASS: "XBA Analyzer Tab"

**Crystallized Intelligence (Gc)**

<table>
<thead>
<tr>
<th>Task</th>
<th>Clear Score</th>
<th>Entry Score</th>
<th>Converted Standard Score</th>
<th>Composite Score Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>WISC-V Similarities (Gc-VS)</td>
<td></td>
<td>85 A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WISC-V Vocabulary (Gc-V)</td>
<td></td>
<td>10 80 500 8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WISC-V Information (Gc-I)</td>
<td></td>
<td>9 85 8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WISC-V Comprehension (Gc-C)</td>
<td></td>
<td>6 80 20 A</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Use Alternative Composite(s)**

| SS:                            | 80 97       |
| PR:                            | 8 42        |

**Score configuration and interpretation:**

At least one alternative composite has been formed using the scores entered into this domain. For any scores between 80-87 inclusive that may have been used to form a composite, additional data and information should exist to support inclusion in the composite as either a strength or a weakness.
This is a situation where some have claimed that XBA leads to “over-testing.” [The apparent “need” to follow up with another Gf subtest – in this case Gf:RG – is to get a cohesive composite. However, this may or may not be necessary, depending on available data sources.] Note that over-testing only happens when the practitioner does not understand his or her data.

The question in this situation is: How do I represent the “average” part of Gf in my PSW analysis without “over-testing” in “average” areas?

Is administration of Pictorial Sequences “chasing” the high score? No, not unless there is solid ecological validity for the initial Gf:RG performance. If ecological validity is available, then consider the following...

Evidence from multiple data sources indicates that Gf:RG (and reasoning with numbers) is not posing any problems for the student at this time.

Multiple data sources include: Teacher report, multiple work samples, math problem solving, grades in math.
Use “Other Data Entry Tab”

Type the name of your “Composite”, enter score; transfer to Data Organizer tab

Cross-Battery Assessment System (X-BASS v2.0)

Data Organizer and Score Summary

X-BASS: WISC-V Tab and Gsm Subtest Scaled Scores Transferred to XBA Analyzer Tab
Supplement the WISC-V with tests from CTOPP-2 for Ga: Phonetic Coding

Top Row for all areas in XBA Analyzer Tab includes the names of Tests and Batteries that do not have their own separate tab in X-BASS. Use the drop down menu in the top row in the Ga domain to find the CTOPP-2.

CTOPP2 Manual does not include critical values for determining cohesion of composites.
Supplement the WISC-V with tests from CTOPP-2 for Ga: Phonetic Coding

Subtests
- Elision (ss = 8)
- Blending Words (ss = 9)
- Phoneme Awareness (ss = 9)

Composite
- Phonological Awareness (SS = 91)

CTOPP2 Manual does not include critical values for determining cohesion of composites. Enter the composite in the top row; select the subtests that make up the composite; and enter the scaled scores for each subtest and X-BASS will evaluate cohesion.
Supplement the WISC-V with tests from CTOPP-2 for Ga: Phonetic Coding

**X-BASS Builds in the Guiding Principle: Use Actual Norms Whenever they are Available**

Transfer Phonological Awareness Composite to Data Organizer Tab
7 CHC Estimates Have Been Transferred to the Data Organizer Tab

Scroll below the cognitive domains to see the academic/SLD areas

8 Achievement Subtest Scores Have Been Transferred to the Data Organizer Tab

There is no requirement that all 8 areas of SLD (listed in IDEA) be evaluated for the purpose of conducting a PIAW analysis.
All Cognitive Areas Assessed Should Contribute to PSW Analysis
Note: You may have a strength and a weakness within a broad ability domain (Gf and Gc in this example) – the score representing a strength contributes to the FCC and the score representing a weakness contributes to the ICC.
Summary and Conclusions

PSW Model Provides Information About Important Markers for SLD

- Overall cognitive ability is at least average despite specific cognitive processing weaknesses – FCC (top oval)
- Specific cognitive processing weaknesses – ICC or individual weaknesses as reported in bottom left oval
  - Weaknesses relative to most people (< 90)
  - Weaknesses because they are significantly lower than FCC
  - Weaknesses because difference between actual and predicted performance is unusual in the general population
  - Unexpected underachievement
- SLD is specific, not general
- Academic weaknesses – as reported in bottom right oval
  - Weaknesses relative to most people (< 90)
  - Weaknesses because they are significantly lower than FCC
  - Weaknesses because difference between actual and predicted performance is unusual in the general population
  - Unexpected underachievement
- May have academic areas of strength (reported in top oval as they are expected to be consistent with the FCC)
- Consistency between cognitive processing weakness (or weaknesses; e.g., ICC) and academic area of weakness (bottom two ovals)
  - Specific learning disabilities are caused by underlying cognitive processing weaknesses
  - Disorder is one or more of the basic psychological processes” – IDEA

PSW Models: The Controversy

- Given its increasing popularity, research on the PSW approach is emerging.
- One emerging body of research indicates that there is a lack of agreement among PSW models.
  - This research also suggests that PSW models are effective at determining who is not SLD, but they are not as effective at determining who is SLD.
  - Valid points are made about potential weaknesses of PSW models in this literature (e.g., Stuebing, Fletcher, Branch-Martin, & Fuchs, 2012).
- Another emerging body of research provides support for a neuropsychological/cognitive processing PSW approach (Hale et al., 2010 White Paper).
  - This research shows the relevance of PSW methods for differential diagnosis of learning disability in:
    - reading (e.g., Feifer, Gerhardt, Flanagan, Zorn, & Arndt, 2014)
    - math (e.g., Kubis, Smith, Post, Ulrich, Reardon, & Knight, 2014)
    - written expression (e.g., Hanwa, Kubis, White, van Meter, & Selke, 2010).
  - Valid points are made about the potential strengths of PSW models in this literature.
- While valid points are made for and against the use of PSW models, the results of the studies that have been published to date are impacted by methodological preferences used to analyze the data as well as the accuracy/inaccuracy of the assumptions made about each PSW model.
PSW Models: The Controversy

• There will be arguments for and against PSW over the next several years.

• All methods have limitations; PSW is no exception. Nevertheless, it most certainly can be used effectively to inform SLD diagnosis.

• Until the critics produce a better method, PSW will predominate and the battles will focus on which PSW method should be used in the schools.

Bottom Line

• There is no SLD litmus test; the more well-versed you are in different approaches and methods, the more information you will gain about the student (including how to best help him or her).

Identification of SLD

• Involves more than just examining scores from standardized tests or progress monitoring data
  – A convergence of data sources is necessary
  – Data should be gathered via different methods
  – Exclusionary factors must be considered and examined systematically
Three Important Tasks for All School Personnel

• Work to ensure that RTI is up and running well, most especially in the early grades
• Work closely with teachers to create a supportive environment for students where they can access the curriculum at their instructional level

Three Important Tasks for All School Personnel

• Conduct comprehensive assessments of students who do not respond as expected to quality instruction and intervention
  – Include cognitive/neuropsychological tests
  – Connect assessment findings to instructional strategies and interventions

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Questions?

Special thanks to Drs. Dawn Flanagan and Sam Ortiz for sharing their slides based on the work of Flanagan, Ortiz, and Alfonso (2013, 2017).

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