Understanding the Dual Discrepancy Consistency Model for SLD Identification

**Dawn P. Flanagan, Ph.D.**

*St. John’s University, New York*

*Yale Child Study Center, School of Medicine*

Handout: flanagad@stjohns.edu

Outline for Today’s Presentation

- Brief overview of SLD identification
- Review of foundational sources of information necessary for making informed decisions about PSW method for SLD identification
- Description of the PSW method and conceptual similarities among PSW methods
- Description of the Dual Discrepancy/Consistency (DD/C) PSW method
- Use of the Cross-Battery Assessment Software System (X-BASS v2.3; new features and PSW component)
- Demonstration of X-BASS
- Case study
- Q & A
XBA and DD/C

- XBA was introduced 22 years ago
- The DD/C was introduced 17 years ago (was called the Operational Definition of SLD)

Clarifications of Terms

- **XBA** is a method that guides practitioners in systematically augmenting a core battery (e.g., WISC-V, KABC-II) in a manner that allows a broader range of abilities and processes to be measured as may be necessary vis a vis referral information. XBA also guides practitioners in conducting selective assessments and more in-depth assessments of specific abilities and processes, depending on the reason for referral. In some instances, usually when measuring narrower abilities and processes, composites may be generated from test scores from different batteries. XBA guidelines and procedures ensure that this approach is psychometrically and theoretically defensible. When cross-battery composites are desired (and permitted based on XBA guidelines), they are generated using a standard formula that includes median test reliabilities and median test intercorrelations. This assessment or measurement method (i.e., XBA) is accompanied by detailed information related to interpreting individual performance. **XBA was first proposed over two decades ago and predates DD/C.**

- **DD/C** stands for “Dual Discrepancy/Consistency”. To be very specific, it refers to Level IV of Flanagan and colleagues’ “Operational Definition of SLD” that they first proposed in 2002 (five years after they introduced XBA to the field and two years before the reauthorization of IDEA). Level IV of their definition is essentially the “PSW” component, as it requires the analysis of all data from a comprehensive evaluation to determine whether there is a pattern in the data that supports a diagnosis of SLD. The data are not interpreted in a vacuum. Rather, the data are interpreted within the context of referral information, behavioral observations, background information (e.g., familial), educational and intervention history, medical background, exclusionary factors, parent and teacher reports, work samples, and so forth.
Clarifications of Terms

• Because researchers did not use the descriptor, “operational definition of SLD” (or some variant of it) to describe Level IV of the definition, and instead referred to the definition as simply “XBA” or “XBA PSW”, Flanagan and colleagues changed the name of their operational definition to “DD/C” to set it apart from XBA.

• XBA and DD/C are not synonymous; they are not interchangeable. They are distinct. However, XBA may be used to gather data that are subsequently analyzed according to the DD/C method. XBA is not necessary to use DD/C and DD/C may be used without XBA. XBA and DD/C are compatible.

• Even though the name of Flanagan and colleagues’ “operational definition of SLD” was changed to DD/C seven years ago, recent publications continue to conflate these terms and approaches. For example,
  • Kranzler and colleagues (2016) claimed to have evaluated the validity of “XBA PSW”. Whatever method they evaluated was of their own making, as it was neither XBA nor DD/C (see Flanagan & Schneider, 2016 for details).
  • Other researchers have also confused XBA and DD/C, claiming to have evaluated the utility of XBA for SLD diagnosis, when in fact they evaluated DD/C (see studies by Fletcher, Miciak and colleagues).
  • Perhaps one of the worst and most confusing misrepresentations of DD/C is Beaujean and colleague’s review wherein they claimed that DD/C is a method that “misuses” “IQ scores” (2018). However, unbeknownst to these authors, they attacked XBA (not DD/C), claiming XBA (which they called DD/C) misuses IQ scores – a claim that fell flat, as it was based on their own misunderstanding of the XBA method.

• X-BASS is a software program with three main purposes
  • Assists in XBA and interpretation
  • Analyzes data according to the DD/C PSW method
  • Analyzes data to assist in understanding whether an individual’s culture/language difference is systematically reflected in the test performance for ELs
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”

(34 CFR 300.311(a)(5)), (34 CFR 300.309(a)(2(ii))

• 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)
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/Neuropsychological Assessment Data – Both Important for SLD Identification

Why Do Some Not Understand the Value of A Comprehensive Evaluation?
RTI and Cognitive Assessment are Not Mutually Exclusive

• There are countless arguments on each side, but none are 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.

• We are still not there...

Source:

Could evaluators use both an RTI and a PSW approach?

• ATDR 2002; Chapter 11, p. 350 (first presentation of our operational definition, which was prior to the 2004 Reauthorization of IDEA)

• Norm-referenced assessment (e.g., cognitive) for SLD begins only after the scope and nature of an individual’s academic difficulties has been documented via multiple data sources and data gathering methods....consistent with what eventually became known as RTI.
RTI Has Promise; Cognitive Assessment Has Meaning: Why Can’t the Twain Meet?

- Flanagan, D. P. (February 20, 2018) – LDA 55th Annual International Conference, Atlanta, GA.

- Panel: From left – Jack Naglieri, Milt Dehn, Ed Schultz, Dawn Flanagan, Jack Fletcher

- One question: Since there is such heated debate in the fields of School Psychology and Neuropsychology regarding SLD methods, do the speakers believe that it would be appropriate for an LEA to adopt both methodologies? Could evaluators use both an RTI and a PSW approach, or are they mutually exclusive?
• RTI and PSW
  • Two different methods
  • Results of both inform an understanding of SLD
• Treatment resistant students should have a comprehensive evaluation that includes cognitive/neuropsychological assessment
  • With treatment resistant students, knowing more is preferable to knowing less

D. P. Flanagan, 2019

RTI and Cognitive/Neuropsychological Assessment Data – Both 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:
Best Practice in Diagnosis of Learning Disorder or Disability

- Do not over-rely on any one data source
- Remember that you cannot diagnose Learning disability with a formula
- Multiple data sources from multiple data gathering methods are necessary
- Converging data sources are necessary
- Clinical judgment must be exercised
- Exclusionary factors must be considered and examined systematically
- **Evaluation of Learning Disorder of Disability should rest on a consideration of key foundational sources of information**

Evaluation of Data for Learning Disorder and Disability: Key Foundational Sources of Information

- 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
- Requires understanding of the SLD construct
Evaluation of Data for Learning Disorder and Disability

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**WISC-V Primary Index Scales**
CHC Factors on the WJ IV COG

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

<table>
<thead>
<tr>
<th>CHC Broad Ability</th>
<th>Reading Achievement</th>
<th>Etiology of Reading Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gf</strong></td>
<td>Inductive (I) and general sequential reasoning (RS) abilities play a moderate role in reading comprehension. Executive functions such as planning, organization, and self-monitoring are also important.</td>
<td>Several cortical and subcortical structures are frequently implicated in basic reading skills and word reading accuracy. Recent work appears to identify dysfunction in a left hemispheric network that includes the occipitotemporal region, inferior frontal gyrus, and inferior parietal region of the brain (Shriki et al., 2005; Shaywitz et al., 2000; Fletcher, Simos, Papamichail, &amp; Denton, 2004; Richlan et al., 2005; Richan, 2012). Numerous imaging studies have also found that dysfunctional responses in the left inferior frontal and tempo-parietal cortices play a significant role with regard to phonological deficits (Keski et al., 2015). Similar brain regions are activated on tasks involving reading fluency, but additional activation is observed in areas involved in eye movement and attention (Jones, Asher, &amp; Brainagan, 2013). Further, there is also evidence for increased activation in the left occipitotemporal region, in particular, the occipitotemporal sulcus, which is important for rapid processing of letter patterns (Shaywitz et al., 2004; Dehaene &amp; Cohen, 2011). Brain regions often associated with reading comprehension include the anterior temporal lobe, inferior temporal gyrus, frontal inferior gyrus, inferior frontal sulcus, and middle and superior frontal and temporal regions (Ferstl et al., 2008; Gernsbacher &amp; Kaschak, 2003). More recent research has revealed a relationship between listening and reading comprehension and activation along the left superior temporal sulcus, which has referred to by some as the “comprehension cortex” (Bert et al., 2010). However, broader pathways are also activated in reading.</td>
</tr>
<tr>
<td><strong>Gc</strong></td>
<td>Language development (LD), lexical knowledge (VL), and listening ability (LS) are important at all ages for reading acquisition and development. These abilities become increasingly important with age. Oral Language, Listening Comprehension, and EF (planning, organization, self-monitoring) also important for reading comprehension.</td>
<td></td>
</tr>
<tr>
<td><strong>Gw</strong></td>
<td>Memory span (MS) and working memory capacity (WM) or attentional control are important for overall reading success. Phonological memory or WM for verbal and sound-based information may also be important. WM is important for reading comprehension, which involves holding words and sentences in awareness, while integrating prior knowledge with incoming information.</td>
<td></td>
</tr>
<tr>
<td><strong>Qr</strong></td>
<td>Orthographic processing (often measured by tests of perceptual speed that use orthographic units as stimuli) is related to reading rate and fluency. Orthographic processing involves the ability to process units of words based on visual long-term memory representations, which is critical for automatic word recognition.</td>
<td></td>
</tr>
<tr>
<td><strong>Qs</strong></td>
<td>Phonemic coding (PC) or phonological awareness / processing is very important during the elementary school years for the development of basic reading skills and word reading accuracy. Phonological memory or WM for verbal and sound-based information may also be important.</td>
<td></td>
</tr>
</tbody>
</table>

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**Note:** Information in this table was derived from the following sources: Plasman, Orlov, Alfonso, & Mascolo, 2006; Plasman, Orlov, & Alfonso, 2013; McDonagh, Plasman, Sy, & Alfonso, 2017; McGraw & Wadling, 2010; McGraw et al., 2014.
A Comprehensive Evaluation for Specific Learning Disability or Disorder Ought to Include Measurement of Cognitive Abilities and Processes Within At Least Eight CHC Domains

\textbf{Gf, Gc, GI, Gr, Gsm, Gv, Ga, Gs}

There is Evidence of Significant Positive Relationships Between Cognitive Abilities and Processes and Specific Academic Skills

Cognitive Processing Weaknesses Manifest in Real-World Performances (e.g., reading, math, writing achievement in the classroom)

\textbf{Evaluation of Data for Learning Disorder and Disability}

- 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
- \textbf{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}
- Requires understanding of the SLD construct
Cross-Battery Assessment

- **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

<table>
<thead>
<tr>
<th>Visual Memory (MV)</th>
<th>Age Range</th>
</tr>
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<tbody>
<tr>
<td>WM C</td>
<td>5-17</td>
</tr>
<tr>
<td>WM A</td>
<td>2-8, 18-31</td>
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<tr>
<td>WM B</td>
<td>3-5</td>
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<tr>
<td>WM C</td>
<td>20-89</td>
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<tr>
<td>WM D</td>
<td>20-89</td>
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<tr>
<td>WM E</td>
<td>10-89</td>
</tr>
<tr>
<td>WM F</td>
<td>18-97</td>
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<tr>
<td>WM G</td>
<td>18-97</td>
</tr>
<tr>
<td>WM H</td>
<td>18-97</td>
</tr>
<tr>
<td>WM I</td>
<td>18-97</td>
</tr>
<tr>
<td>WM J</td>
<td>6-66</td>
</tr>
<tr>
<td>WM K</td>
<td>3-92</td>
</tr>
<tr>
<td>WM L</td>
<td>6-17</td>
</tr>
<tr>
<td>WM M</td>
<td>6-17</td>
</tr>
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<td>WM N</td>
<td>1-93</td>
</tr>
<tr>
<td>WM O</td>
<td>1-93</td>
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<td>WM P</td>
<td>1-93</td>
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<tr>
<td>WM Q</td>
<td>1-93</td>
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<td>WM R</td>
<td>1-93</td>
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<td>WM S</td>
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<td>WM T</td>
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<tr>
<td>WM U</td>
<td>1-93</td>
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<tr>
<td>WM V</td>
<td>1-93</td>
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<tr>
<td>WM W</td>
<td>1-93</td>
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<tr>
<td>WM X</td>
<td>1-93</td>
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<tr>
<td>WM Y</td>
<td>1-93</td>
</tr>
<tr>
<td>WM Z</td>
<td>1-93</td>
</tr>
</tbody>
</table>

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

Evaluation of Data for Learning Disorder and Disability

- Requires an understanding of contemporary theory
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- 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
- **Requires understanding of the SLD construct**
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.

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Utility of KTEA-3 Error Analysis for the Diagnosis of Specific Learning Disabilities

Dawn P. Flanagan, Jennifer T. Mascolo, and Vincent C. Alfonso

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<table>
<thead>
<tr>
<th>Name:_____________________</th>
<th>Age: ____</th>
<th>Grade: ____</th>
<th>Examiner:____________________</th>
<th>Date: ___________</th>
</tr>
</thead>
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KABC-II and KTEA-II Data with WJ III as Supplement

2002-2006

- **Unexpected Underachievement**
- **Domain-Specific**

Historical Concept of Intra-Individual Discrepancies

Pattern of generally average cognitive abilities and processes establishes basis for satisfying criterion of “an otherwise normal ability profile”
### RESPONSE-TO-INTERVENTION: SEPARATING THE RHETORIC OF SELF-CONGRATULATION FROM THE REALITY OF SPECIFIC LEARNING DISABILITY IDENTIFICATION

Kenneth A. Kavale, James M. Kauffman, Randy J. Bachmeier, and Gretchen B. LeFever

When a student does not meet the discrepancy criterion and, therefore, cannot be deemed an underachiever, there is the strong possibility that the student is a “slow learner” (SL; i.e., a student with an IQ level between about 70 and 85). About 14% of the school population may be deemed SL, but this group does not demonstrate unexpected learning failure, but rather an achievement level consonant with IQ level. Although NCLB makes such low achievement problematic, slow learner has never been a special education category, and “What should not happen is that a designation of SLD be given to a slow learner” (Kavale, 2005, p. 555).

Learning Disability Quarterly, Summer, 2008
An Operational Definition of SLD

Revised and updated in 2011
Updated in Essentials of Cross-Battery Assessment, 3e (2013) and renamed:
   Dual Discrepancy/Consistency (DD/C) Method
Operationalized in X-BASS (2017) – most sophisticated and psychometrically defensible PSW model to date

Alternative Research-Based Approaches to SLD Identification

PSW Methods:
• Flanagan, Ortiz, Alfonso (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
• Naglieri, 1999, 2013
  • Discrepancy/Consistency (PASS Model; CAS-2 battery) – battery specific (automated)
• Hale & Fiorello, 2004, 2011
  • Concordance-discordance model (based on neuropsych theory within the context of a hypothesis testing approach) – not automated
• Dehn & Szasz – Psychological Processing Analyzer-5 (automated)
• WISC-V
  • two discrepancy comparisons for PSW – automated in WIAT-III, KTEA-III scoring programs
• Schultz – C-SEP

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The Focus of the Presentation is on the DD/C Model

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

**Cognitive Strengths**

Aggregate of cognitive strengths suggest at least average general ability

May be supported by typically developing academic skills

**Academic Weakness/Deficit**

Actual cognitive area of weakness is significantly lower than expected based on estimated general cognitive ability

Cognitive deficit(s) is **specific**, not general or pervasive, because aggregate of cognitive strengths suggest at least average general ability (i.e., 85 or higher)

**Conceptual 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 weakness(es)
  • It is not unusual to find one or more exclusionary factors that contribute to academic weaknesses
  • Use exclusionary factors form to ensure accountability

• Level III: Cognitive weakness (SS < 90; more typically below 85)
  • Must also meet criteria for domain-specific weakness
  • Not all cognitive weaknesses are domain-specific (to determine domain-specific use X-BASS)
  • Generally low average ability across most cognitive areas does not meet the criterion of a domain-specific cognitive weakness

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

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

• Level IV: Data support a “dual discrepancy” and a “consistency” with at least average ability to think and reason

  • Discrepancy 1: Difference between cognitive strengths and cognitive weaknesses is significant; difference between actual and predicted (from general ability or the Facilitating Cognitive Composite [FCC]) performance is unusual (base rate of about 10%) – supports domain-specific cognitive weakness

  • Discrepancy 2: Difference between cognitive strengths and academic weaknesses is significant; difference between actual and predicted (from general ability or FCC) performance is unusual (base rate of about 10%) – supports unexpected underachievement

  • 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
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).

Tom Kelly, St. John’s University – Dissertation (WJ IV Standardization Data)
Not All Definitions of SLD Assume at Least Average Overall Ability

The Dual Discrepancy/Consistency (DD/C) Model Requires at Least Average Overall Ability to Think and Reason (≥ 85) Despite Some Cognitive Processing Deficits

At Least Average Ability to Think and Reason ("Spared" Abilities) is Consistent with the SLD Construct and has been for over a Century

It’s not the definition of SLD that is changing, it’s the method of identifying SLD that is changing

***The PSW Component of X-BASS will allow the user to override this criterion. However, a pop-up message will inform the user that this override means that the analysis is no longer entirely consistent with DD/C.

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, NYASP 2011
Many of the children have a high degree of intelligence.

Orton, 1937

“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

Gf-Gc Composite Recommended in Comparison Procedures for students suspected of SLD

“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).


Cited in: Mather, N. (2016). *Using the WJ IV to Diagnose Specific Reading Disabilities*. Webinar – Houghton Mifflin Harcourt. [bcove.me/g81r4scv](bcove.me/g81r4scv)

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“Historical Perspective” Information from Nancy Mather, NYASP 2011

“...the clearest expression of a special disability is consistently low scores on a series of tests in a given subject conjoined with average or superior scores on tests in other subjects. Such scores can be arranged in an ‘educational profile.’ For example, in case 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).

All historical approaches to SLD emphasize the spared or intact abilities that stand in stark contrast to the deficient abilities.

Individuals with SLD have At Least Average Overall Ability

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

Kaufman, 2008, pp. 7-8
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...


Summary of Foundational Sources of Information Necessary to Inform 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
• Requires understanding of the SLD construct

• How to conduct a PSW Analysis

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Introduction to 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
  - Gl, Gr
  - Gsm
  - Gv
  - Ga
  - Gs
  - These 7-8 are necessary for the calculation of the g-value, FCC, and ICC
  - Other areas that may be included in the PSW Analysis, but do not contribute to the g-value, ICC, or FCC
    - Orthographic Processing
    - Speed of Lexical Access
    - Cognitive Efficiency (which combines Gs and Gsm)
    - Executive Functions
    - Visual-motor abilities
    - Sensory-motor abilities
    - Composites that represent abilities and processes from other batteries not in X-BASS

- Estimates Do Not Need to be Broad Cognitive Ability Estimates. Examples:
  - Broad CHC Estimate
    - Most likely in the areas of Gf, Gc, and Gv
    - WISC-V Gv is estimate of Vz only. Ok if no Gv difficulties are suspected and referral is reading
  - Narrow CHC Estimate
    - Likely in Ga (e.g., Phonetic Coding; Phonological Processing) and Gs (e.g., Perceptual Speed)
  - More than one CHC Estimate in a broad Domain is ok
    - For example, in the area of Gf, one estimate of I and one estimate of RQ is ok

Encompasses approximately 20 frequently measured cognitive abilities and processes
Representation of Broad and Narrow Abilities

- 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 it is at least average (entire 68% CI within the average range or higher) and converging data sources exist to support the score – ecological validity.
- Never acceptable with low subtest scores.
- Remember: Single measures make for poor measurement.

Every rule has an exception. There is no exception to this rule.

D. P. Flanagan, 2019

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X-BASS Welcome Screen

Cross-Battery Assessment Software System (X-BASS® v2.3)

COMING SOON! X-BASS Online is still in development but its release date has been delayed. We will make future announcements regarding availability once we have firm information.

NEW: We are anticipating release of an independent Intervention Library program in early Fall. Although it can be informed via use of X-BASS, it will work as a stand alone product that provides help in finding empirically validated interventions for students with learning difficulties. Look for it on sale soon!

New Users:
- If you are new to XBA or X-BASS, click the “Start Here” button and follow the prompts for step-by-step guidance. This option is strongly recommended for first time and inexperienced users of X-BASS. New users should also read and review the User Guide for X-BASS before.

Experienced Users:
- Experienced users can just set the User Mode and navigate directly to one of the six product levels:
  - Use Mode:
    - Beginner
    - Intermediate
    - Advanced

PSW-QA Analysis:
- If you have access to scores for which you would like to conduct a quick PSW-QA analysis, click here for guidance on using the PSW-QA tool.

Beginner Mode Provides a “Built in” Tutorial
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
- Classify scores as Strengths or Weaknesses
- View output
- Select different cognitive and academic weaknesses for analysis if necessary
- Print interpretation of results
When the Criteria for the DD/C Pattern are Met, the Following May be Concluded Within the Context of Flanagan and Colleagues' Operational Definition of SLD

- **At least average ability to think and reason**
- **Exclusionary factors are not the primary reason for underachievement**
- **Low achievement is unexpected**
- **There are domain-specific weaknesses in cognitive areas that are related empirically to achievement weaknesses (consistency)**


---

What Does DD/C Allow You to Conclude When Criteria are Met?

**Failure To Respond to quality instruction and intervention**

- Bob's academic difficulties in reading and writing have persisted despite being exposed to quality instruction and intervention over a prolonged period. These difficulties could not be explained by global cognitive impairment, social-emotional problems, cultural and linguistic differences, sensory-motor difficulties, lack of motivation, environmental disadvantage, or a health-related impairment. Rather, Bob exhibited specific and circumscribed weaknesses in cognitive areas that are known to be related to difficulties in reading and writing, namely short-term memory, retrieval ability, phonological processing, and possibly associative memory. Thus, while Bob can think and reason like most children his age, as demonstrated by his performance in the cognitive areas of Fluid Reasoning, Comprehension-Knowledge, and Visual-Spatial ability, he possesses specific and related cognitive and academic deficits that are consistent with a diagnosis of Specific Learning Disability (SLD).

What Does DD/C Allow You to Conclude When Criteria are Met?
(DD/C is Level IV in Flanagan and Colleagues' Operational Definition of SLD)

At least Average Ability to Think and Reason
Low Achievement is Unexpected

- Bob’s academic difficulties in reading and writing have persisted despite being exposed to quality instruction and intervention over a prolonged period. These difficulties could not be explained by global cognitive impairment, social-emotional problems, cultural and linguistic differences, sensory-motor difficulties, lack of motivation, environmental disadvantage, or a health-related impairment. Rather, Bob exhibited specific and circumscribed weaknesses in cognitive areas that are known to be related to difficulties in reading and writing, namely short-term memory, retrieval ability, phonological processing, and possibly associative memory. Thus, while Bob can think and reason like most children his age, as demonstrated by his performance in the cognitive areas of Fluid Reasoning, Comprehension-Knowledge, and Visual-Spatial ability, he possesses specific and related cognitive and academic deficits that are consistent with a diagnosis of Specific Learning Disability (SLD).

What Does DD/C Allow You to Conclude When Criteria are Met?
(DD/C is Level IV in Flanagan and Colleagues' Operational Definition of SLD)

Exclusionary Factors are ruled out as primary reason for underachievement

- Bob’s academic difficulties in reading and writing have persisted despite being exposed to quality instruction and intervention over a prolonged period. These difficulties could not be explained by global cognitive impairment, social-emotional problems, cultural and linguistic differences, sensory-motor difficulties, lack of motivation, environmental disadvantage, or a health-related impairment. Rather, Bob exhibited specific and circumscribed weaknesses in cognitive areas that are known to be related to difficulties in reading and writing, namely short-term memory, retrieval ability, phonological processing, and possibly associative memory. Thus, while Bob can think and reason like most children his age, as demonstrated by his performance in the cognitive areas of Fluid Reasoning, Comprehension-Knowledge, and Visual-Spatial ability, he possesses specific and related cognitive and academic deficits that are consistent with a diagnosis of Specific Learning Disability (SLD).
What Does DD/C Allow You to Conclude When Criteria are Met?
(DD/C is Level IV in Flanagan and Colleagues’ Operational Definition of SLD)

Domain-specific weaknesses in cognitive areas that are related empirically to achievement weaknesses (consistency)

- Bob’s academic difficulties in reading and writing have persisted despite being exposed to quality instruction and intervention over a prolonged period. These difficulties could not be explained by global cognitive impairment, social-emotional problems, cultural and linguistic differences, sensory-motor difficulties, lack of motivation, environmental disadvantage, or a health-related impairment. Rather, Bob exhibited specific and circumscribed weaknesses in cognitive areas that are known to be related to difficulties in reading and writing, namely short-term memory, retrieval ability, phonological processing, and possibly associative memory. Thus, while Bob can think and reason like most children his age, as demonstrated by his performance in the cognitive areas of Fluid Reasoning, Comprehension-Knowledge, and Visual-Spatial ability, he possesses specific and related cognitive and academic deficits that are consistent with a diagnosis of Specific Learning Disability (SLD).


Exhibits DD/C “pattern of strengths and weaknesses”

- Bob’s academic difficulties in reading and writing have persisted despite being exposed to quality instruction and intervention over a prolonged period. These difficulties could not be explained by global cognitive impairment, social-emotional problems, cultural and linguistic differences, sensory-motor difficulties, lack of motivation, environmental disadvantage, or a health-related impairment. Rather, Bob exhibited specific and circumscribed weaknesses in cognitive areas that are known to be related to difficulties in reading and writing, namely short-term memory, retrieval ability, phonological processing, and possibly associative memory. Thus, while Bob can think and reason like most children his age, as demonstrated by his performance in the cognitive areas of Fluid Reasoning, Comprehension-Knowledge, and Visual-Spatial ability, he possesses specific and related cognitive and academic deficits that are consistent with a diagnosis of Specific Learning Disability (SLD).

Additional Subtests were Administered
Check Boxes for Transfer to XBA Analyzer Tab for Analysis of Variability

<table>
<thead>
<tr>
<th>Index Name</th>
<th>Enter score</th>
<th>Transfer score to XBA Analyzer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbal Comprehension Index</td>
<td>82</td>
<td></td>
</tr>
<tr>
<td>Vocabulary (Gc,VL)</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Similarities (Gc,V,Gf)</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Composite Score Analyses</th>
<th>Converted Standard Score</th>
<th>Composite</th>
<th>Clear Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>WISC-V Similarities (Gc,V,Gf)</td>
<td>7</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>WISC-V Vocabulary (Gc,VL)</td>
<td>10</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>WISC-V Information (Gc,IK)</td>
<td>9</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>WISC-V Comprehension (Gc,IK)</td>
<td>6</td>
<td>60</td>
<td></td>
</tr>
</tbody>
</table>

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?

Balancing the Art and Science of Test Interpretation

Fine-Tuning Cross-Battery Assessment Procedures: After Follow-Up Testing, Use All Valid Scores, Cohesive or Not

W. Joel Schneider  
Illinois State University

Zachary Roman  
University of Kansas

We used data simulations to test whether composites consisting of cohesive subtest scores are more accurate than composites consisting of divergent subtest scores. We demonstrate that when multivariate normality holds, divergent and cohesive scores are equally accurate. Furthermore, excluding divergent scores results in biased estimates of construct scores. We show that divergent scores should prompt additional testing under some conditions. Although there are many valid reasons to exclude scores from consideration (e.g., malingering, fatigue, and misunderstood directions), no score should be discarded simply because it is different from other scores in the composite.
### X-BASS: “XBA Analyzer Tab”

#### CRystallized Intelligence (Gc)

<table>
<thead>
<tr>
<th>Subtest</th>
<th>Score</th>
<th>Converted Standard Score</th>
<th>Composite Score Analyses</th>
</tr>
</thead>
<tbody>
<tr>
<td>WISC-V Similarities (Gc;Vl,Gf,l)</td>
<td>7</td>
<td>85</td>
<td>A</td>
</tr>
<tr>
<td>WISC-V Vocabulary (Gc;Vl)</td>
<td>10</td>
<td>100</td>
<td>A</td>
</tr>
<tr>
<td>WISC-V Information (Gc;Kl)</td>
<td>9</td>
<td>95</td>
<td>A</td>
</tr>
<tr>
<td>WISC-V Comprehension (Gc;K0)</td>
<td>6</td>
<td>80</td>
<td>A</td>
</tr>
</tbody>
</table>

### COHESIVE: Use 4-subtest XBA composite

- **SS:** 88
- **PR:** 21

**Score configuration and interpretation:**
The difference between the highest and lowest scores is less than or equal to 1 and 1/3 SD and, therefore, they form a composite that is considered cohesive and likely a good summary of the set of theoretically related abilities that comprise it. Interpret the composite as an adequate estimate of the ability that it 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>Subtest</th>
<th>Score</th>
<th>Converted Standard Score</th>
<th>Composite Score Analyses</th>
</tr>
</thead>
<tbody>
<tr>
<td>WISC-V Similarities (Gc;Vl,Gf,l)</td>
<td>7</td>
<td>85</td>
<td>A</td>
</tr>
<tr>
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<td>10</td>
<td>100</td>
<td>A</td>
</tr>
<tr>
<td>WISC-V Information (Gc;Kl)</td>
<td>9</td>
<td>95</td>
<td>A</td>
</tr>
<tr>
<td>WISC-V Comprehension (Gc;K0)</td>
<td>6</td>
<td>80</td>
<td>A</td>
</tr>
</tbody>
</table>

**Score configuration and interpretation:**
The difference between the highest and lowest scores is less than or equal to 1 and 1/3 SD and, therefore, they form a composite that is considered cohesive and likely a good summary of the set of theoretically related abilities that comprise it. Interpret the composite as an adequate estimate of the ability that it 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.

---

**Using standard XBA rules, a cohesive 4-subtest XBA composite has been calculated and is likely the best representation of overall performance in this domain. However, if supported by additional data, score configuration, or narrow abilities measured, etc., one alternative would be to combine the three highest scores to form a clinically meaningful 3-subtest alternative composite with one lower divergent value. Would you like to calculate this type of composite?** If you click 'Yes' the three highest scores will be used to form the composite and the lowest score will remain a divergent value. Otherwise click 'No' to continue with other options.
X-BASS: “XBA Analyzer Tab”

Score configuration and interpretation:
At least one alternative composite has been formed using the scores entered into this domain. For any scores between 80-89 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.
The XBA Analyzer Tab in X-BASS Provides Composites that are Well Within a SEM of the Norm-based Composite
### Clinical Composites

<table>
<thead>
<tr>
<th>Subtest Name</th>
<th>Scores</th>
<th>PR</th>
<th>Transfer Score</th>
<th>Criteria for Cohesion: Is variability...</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>statistically significant? infrequent or uncommon?</td>
</tr>
<tr>
<td>Gc-Verbal Expression-Low (Gc-VE/L)</td>
<td>98</td>
<td>45th</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Vocabulary (VL)</td>
<td>10</td>
<td>50th</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Information (KI)</td>
<td>9</td>
<td>37th</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

#### Gc-Verbal Expression-High (Gc-VE/H)

<table>
<thead>
<tr>
<th>Subtest Name</th>
<th>Scores</th>
<th>PR</th>
<th>Transfer Score</th>
<th>Criteria for Cohesion: Is variability...</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>statistically significant? infrequent or uncommon?</td>
</tr>
<tr>
<td>Similarities (VL)</td>
<td>70</td>
<td>8th</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Comprehension (KI)</td>
<td>7</td>
<td>16th</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

---

**Figure 1: Normed Composite Vs. X-BASS Composites created by “cohesive” subtests (scores within 1 SD)**

*Graph showing WISC-V VCI scores for norm composite and XBA composite.*
X-BASS: WISC-V Tab and Gf Subtest Scaled Scores Transferred to XBA Analyzer Tab

Gf Section of XBA Analyzer Tab

CLINICAL JUDGMENT NEEDED

Gf Section of XBA Analyzer Tab
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 the 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 yes and 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”

Data Entry - Other

This tab permits use of scores for Receptive Analysis from tests/batteries that are not available in A-BAS (current core text tabs) or drop down menus. Type in the name of a composite or subtest in the appropriate section, enter the score (scaled or Standard Scores only—0 to 100), enter the appropriate test, and enter whether it is a scaled or composite score. Click the corresponding button to transfer the data directly to the Data Organizer where it can be selected for use in subsequent A-BAS analysis. Note that composite/subtests entered into A-BAS via this tab cannot be evaluated for subscale; cannot be combined with other composites to form ERA composites, and cannot be evaluated within the C-VM Analyzer. As such, caution should be exercised whenever a decision is made to include and utilize scores entered on this tab in an evaluation of SLD. NOTE: DATA ENTERED HERE WILL NOT BE SAVED UNTIL IT HAS BEEN TRANSFERRED TO THE DATA ORGANIZER AND ONLY AFTER THE ACTIVE DATA RECORD HAS BEEN SAVED TO UPDATE CHANGES.

For cognitive domains, enter the name/score of a composite; for academic domains, enter the name/score of a composite or subtest and indicate which it is. Click the button to transfer it to the Data Organizer.
### Data Organizer and Score Summary

The purpose of this tab is to organize composite and subtest scores to assist in the selection of those to be used for evaluation of the pattern of strengths and weaknesses in the RWK Analyzer. Test names and scores cannot be entered into this tab directly. Rather, this tab provides a summary of test battery and subtest scores that were transferred from other tabs because they were considered the best estimates of WISC-V abilities, academic areas, and selected neuropsychological domains. Use this tab to select the composite and subtest scores you would like to use in RWK analyzers by clicking on the check box to the right of each one in any domain for which there are data. You may select up to two composites for each of the WISC-V ability (i.e., Gc, Gf, and Gs) and neuropsychological (e.g., Descriptive Functions, Orthographic Processing) domains and up to three scores for each of the academic areas. Note that you may also click on the "Data Organizer Graph" to view or print information from this tab. For more information on how to select the best scores for use in RWK analyzers, click the button to the right.

#### CRYSTALLIZED INTELLIGENCE (Cr)

<table>
<thead>
<tr>
<th>Indicator which composite/subtest you will use in the RWK Analyzer. No more than two scores can be selected for this domain.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crystallized Intelligence (Cr)</td>
</tr>
<tr>
<td>Whole Language Comprehension</td>
</tr>
<tr>
<td>Vocabulary</td>
</tr>
</tbody>
</table>

#### FLUID REASONING (Fr)

<table>
<thead>
<tr>
<th>Indicator which composite/subtest you will use in the RWK Analyzer. No more than two scores can be selected for this domain.</th>
</tr>
</thead>
<tbody>
<tr>
<td>WISC-V/Fr (plus converging data sources)</td>
</tr>
<tr>
<td>Fluid Reasoning (Fr)</td>
</tr>
<tr>
<td>Core</td>
</tr>
</tbody>
</table>

---

### X-BASS: WISC-V Tab and Gsm Subtest Scaled Scores Transferred to XBA Analyzer Tab

#### Visual Spatial Index (VSI)

<table>
<thead>
<tr>
<th>Indicator which composite/subtest you will use in the RWK Analyzer. No more than two scores can be selected for this domain.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual Design (Vs)</td>
</tr>
<tr>
<td>Block Design (Bd)</td>
</tr>
<tr>
<td>Visual Figures</td>
</tr>
</tbody>
</table>

#### Working Memory Index (WMI)

<table>
<thead>
<tr>
<th>Indicator which composite/subtest you will use in the RWK Analyzer. No more than two scores can be selected for this domain.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working Memory Index (WMI)</td>
</tr>
<tr>
<td>Digit Span (MS)</td>
</tr>
<tr>
<td>Letter-Number Sequencing (LNS)</td>
</tr>
</tbody>
</table>

#### Digit Span (WMI/MS)

<table>
<thead>
<tr>
<th>Indicator which composite/subtest you will use in the RWK Analyzer. No more than two scores can be selected for this domain.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digit Span (WMI)</td>
</tr>
<tr>
<td>Digit Span (MS)</td>
</tr>
<tr>
<td>Letter-Number Sequencing (LNS)</td>
</tr>
</tbody>
</table>

---

### Score configuration and interpretation:

- The difference between the highest and lowest scores is not large enough, therefore, they form a composite that is considered adequate and likely a good summary of the child's relatively related abilities that comprise this composite as an adequate summary of the child's considered adequates.
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.
Supplement the WISC-V with tests from CTOPP-2 for Ga: Phonetic Coding

Subtests
- Elision
- Blending Words
- Phoneme Awareness

Composite
- Phonological Awareness

CTOPP2 Manual does not include critical values for determining cohesion of composites

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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

113
Supplement the WISC-V with tests from CTOPP-2 for Ga: Phonetic Coding

CTOPP2 Manual does not include critical values for determining cohesion of composites.

Choose CTOPP-2 from top row drop-down menu; Enter the composite in the top row

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

CTOPP2 Manual does not include critical values for determining cohesion of composites.

Select the subtests that make up the composite; and enter the scaled scores for each subtest;
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

 WIAT-III Tab
### WIAT-III Tab

#### Basic Reading (DRE-R)
- Word Reading (DRE): 152
- Pseudoword Decoding (DRE): 153

#### Reading Compr. and Fluency (DRE-R)
- Reading Comprehension (RC): 62
- Oral Reading Fluency (ORF): 84
- Early Reading Skills (DRE): 86

#### Written Expression (GRE-WR)
- Spelling (GRE): 8
- Alphabet Writing Fluency (WE): 98
- Sentence Composition (WE): 90
- Essay Composition (WE): 95

#### Mathematics (MC)
- Math Problem Solving (MC): 100
- Numerical Operations (MC): 100

#### Math Fluency (DF)
- Math Fluency – Addition (MC): 102
- Math Fluency – Subtraction (MC): 103
- Math Fluency – Multiplication (MC): 104
- Math Fluency – Division (MC): 105

#### Oral Language (OL)
- Oral Language: 132
- Listening Comprehension (OL): 124
- Oral Expression (OL): 130

#### Shift button to select or clear all shift boxes for the interpretation.

#### Transfer Subtasks to WM Analyst

#### Transfer Subtasks to Data Organizer

---

**Note:**
- All scores are at least average, follow up is not considered necessary.
- All scores are at least average, follow up is not considered necessary.
- All scores are at least average, follow up is not considered necessary.
- All scores are at least average, follow up is not considered necessary.
- All scores are at least average, follow up is not considered necessary.
CHC Estimates Have Been Transferred to the Data Organizer Tab

On the Data Organizer Tab, Scroll below the cognitive domains to see the IDEA Academic 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 PSW analysis.
All Cognitive Areas Assessed Should Contribute to PSW Analysis

When determining cognitive areas of strength and weakness, consider whether an ability or process likely facilitates or inhibits overall learning and specific academic skill acquisition and development.
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.

When a broad ability domain includes both a strength and a weakness, only a portion of the g weight for that domain contributes to the g-Value.
### Analysis and Interpretation of g-Value

The g-value reflects overall cognitive ability based on the broad CHC abilities judged by the evaluator to be strengths for the individual using the following scale:

- **g-value = 0.78**: Average overall ability is very likely

#### How likely is it that the individual's pattern of strengths indicates at least average overall cognitive ability?

Lack of strength in one or more cognitive domains, the evaluator indicated that the individual possess average or better functioning in cognitive domains considered important for acquiring the academic skills typical for this grade level. In this case, the individual's overall ability ought to enable learning and achievement, particularly if the FIC/CIC is greater than or equal to 80 and when specific cognitive weaknesses are minimized through compensatory efforts, accommodations, and the like. If the FIC/CIC is between 80 and 90 inclusive, the criteria for at least average overall ability within the DDC model should be supported by additional data and information.

#### DD/C and the Facilitating Cognitive Composite (FCC) and Inhibiting Cognitive Composite (ICC)

- **g**: An aggregate of performance across all domains

Evaluator makes the determination of whether a CHC ability or processing score is a strength or weakness – X-BASS purposefully allows evaluator to use clinical judgment

- Eliminates a cut score for determining strengths and weaknesses

### Diagram

**FCC and ICC**

- Gc
- Gf
- Gwm
- Glr
- Ga
- Gv
- Gs

The Cognitive Strength graph indicates the abilities used for the purpose of calculating the g-value and FCC and which collectively represent general ability within the DDC model. The g-value is determined according to the likelihood that an individual possesses at least average overall cognitive ability.

The Cognitive Weakness graph indicates the abilities used for the purpose of calculating the ICC. The ICC is the default value used to represent the areas of cognitive weakness in the DDC model. It is compared to the ICC and evaluated for consistency with specific areas of academic weakness.
DD/C and the Facilitating Cognitive Composite (FCC) and Inhibiting Cognitive Composite (ICC)

- g – value determines the likelihood of “at least average overall ability” despite cognitive weaknesses
- FCC is an estimate of overall ability to think and reason – w/o the attenuating effects of cognitive processing weaknesses (aggregate of strengths)
- Inhibiting Cognitive Composite (ICC) is also calculated (aggregate of weaknesses)

For direct navigation to any of the core test tabs, use the quick navigation menu button bar above. This menu bar appears on all tabs and are color coded for easy reference. Otherwise, select an option below from the drop down menus provided to begin performing the desired action.
Dual-Discrepancy/Consistency Model: PSW Analyses for SLD

Name: Rebecca  Age: 9 years 0 month(s)  Grade: 3  Date: 10/10/2018

Did the individual’s observed cognitive and academic performances meet criteria within the DDC model consistent with PSW-based SLD identification?

YES. Based on the data selected for use in the PSW analysis, specific criteria for establishing a PSW consistent with SLD were met. However, this pattern of results does not automatically confirm the presence of SLD. The pattern must be considered within the context of the entire case history of the individual. In addition, other data gathered through multiple methods need to be considered (e.g., information regarding exclusionary factors) when identifying or diagnosing SLD (see chapter 4 in Essentials of Cross-Battery Assessment, 3rd Ed.).

1. Is there evidence of domain-specific weaknesses in cognitive functioning?

YES. The difference between the individual’s estimate of overall cognitive abilities (TQ/VIQ) and the score representing the area of specific cognitive weaknesses (CIQ/VIQ) is statistically significant. This finding means that there is likely a true or real difference between the estimate of overall cognitive strengths and the identified area of specific cognitive weaknesses for the individual. In addition, there is an unusually large difference between actual performance in the specific cognitive area and expected performance (obtained as predicted by overall cognitive strengths), indicating it is not a case of a hidden weakness or an artifact of measurement error. The results of these analyses suggest that the individual’s PSW consists of a domain-specific cognitive weakness (particularly when the actual (TQ/VIQ) or inclusionary criterion for SLD.)

2. Is there evidence of unexpected underachievement?

YES. The difference between the individual’s estimate of overall cognitive abilities (TQ/VIQ) and the score representing the area of specific academic weaknesses (PRI/VIQ) is statistically significant. This finding means that there is likely a true or real difference between the estimate of overall academic strengths and the identified area of specific academic weaknesses for the individual. In addition, there is an unusually large difference between actual performance in the specific academic area and expected performance (obtained as predicted by overall cognitive strengths). That is, based on the individual’s estimate of overall cognitive abilities, it was predicted that the individual would perform much better in the specific academic area. In fact, the size of the difference between the individual’s actual and predicted performance in the specific academic area was very small. The results of these analyses suggest that the individual’s PSW consists of an unexpected underachievement (particularly when the actual (PRI/VIQ) or inclusionary criterion for SLD.)

3. Is there evidence of a below-average aptitude-achievement consistency?

YES. The specific cognitive (TQ/VIQ) for ICC and academic (PRI/VIQ) for RDC scores are indicators of normative weaknesses or deficits compared to same-age peers (PRI/VIQ). There is research that supports a moderate relationship between the deficit in cognitive processing and an average index of academic performance. This indicates that the deficit is compromised in case of lower cognitive areas that are related to making comprehensions. Therefore, the combination of scores provides evidence that suggests a problem in explaining the nature of the individual’s observed learning difficulties. Based on all of these considerations, these findings appear to indicate valid support for the existence of below-average aptitude-achievement consistency.
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 Now Available on X-BASS v2.3
### Exclusionary Factors

#### Hearing (Check All That Apply):
- Hearing test recent (within 1 year)
- Hearing test outdated (>1 year)
- Passed
- Failed
- Uses Hearing Aids

#### Motor Functioning (Check All That Apply):
- Fine Motor Delay/Difficulty
- Gross Motor Delay/Difficulty
- Improper pencil grip.
  - Specify:
- Assistive devices/ aids used
  - (e.g., weighted pencil, pencil grip, slant board, etc.)

### Cognitive and Adaptive Functioning (Check All that Apply):
- Significantly "subaverage intellectual functioning" (e.g., IQ score of 75 or below)
- Pervasive cognitive deficits (e.g., weaknesses or deficits in many cognitive areas, including CF and CE)
- Deficits in adaptive functioning (e.g., social, communication, self-care)
  - Areas of significant adaptive skill weaknesses (check all that)
    - Motor Skill
    - Communication
    - Daily Living Skills
    - Behavior/Emotional Skills
    - Socialization
    - Other

### Social Emotional/Psychological Factors (Check All That Apply):
- Diagnosed psychological disorder. Specify:
- Date(s) of Diagnosis:
- Family history significant for psychological difficulties
- Disorder presently treated - specify treatment modality (e.g., counseling, medication)
- Reported difficulties with social/emotional functioning (e.g., social phobia, anxiety, depression)
- Social-Emotional/Psychological issues suspected or suggested by referral
- Home-School Adjustment Difficulties
- Lack of Motivation/ Effort
- Emotional Stress
- Autism
- Present Medications (type, dosage, frequency, duration):
- Prior Medication Use (type, dosage, frequency, duration)
- Hospitalization for psychological difficulties, specify dates:
- Deficits in social, emotional, or behavioral [SEB] functioning (e.g., as assessed by standardized rating scales)
  - Significant scores from SEB measures:

### Additional Notes:
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Dual Discrepancy/Consistency 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
  - 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