# 9. Interpretation of Data

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## **Chapter Overview**

This chapter will help specialists and instructional staff interpret data for the purposes of designing instruction and determining whether a student is eligible for special education services under SLD criteria. The chapter includes discussions on interpreting outcomes of formal assessment, guidance on integrating multiple sources of data, background information and intervention data, as well as guidance on issues that may surface in writing a summary of background information, including documenting evidence of exclusionary factors. Perhaps the most valuable part of this chapter is the tools and guidance for interpreting achievement data, basic psychological processing data and discrepancy.

## **Regulations and Rules**

**Note:** Regulations, statutes, and rules form the basis for legal compliance and are provided below to help teams, including the parents, understand what the law requires.



Under the federal regulation 34 CFR 300.306c1)-(7), in interpreting evaluation data for the purpose of determining if a child is a child with a disability (see 34 CFR 300.8) and identifying the educational needs of the child, each public agency must:

- 34 CFR 300.305 (a)(1) As part of an initial evaluation (if appropriate) and as part of any reevaluation, the IEP Team and other qualified professionals, as appropriate, must review existing evaluation data on the child.
- 34 CFR 300.306 (c)(i). Draw upon information from a variety of sources including aptitude and achievement tests, parent input, and teacher recommendations, as well as information about the child's physical condition, social or cultural background, and adaptive behavior, and must ensure the information obtained from all such sources is carefully documented.
- 34 CFR 300.304 (c)(6). Ensure the evaluation is sufficiently comprehensive to identify all of the child's or student's special education and related services needs, whether or not commonly linked to the disability category in which the child has been classified.
- 34 CFR 300.3204 (A). Meet the child's needs that result from the child's disability to
  enable the child to be involved and make progress in the general education
  curriculum and meet each of the child's needs that result from the child's disability.

This section refers to SLD eligibility criteria in Minnesota Rule 3525.1341:

- A child is eligible and in need of special education and related services for a specific learning disability when the child meets the items in A, B and C or D. Information about each item must be sought from the parent and must be included as part of the evaluation data. The evaluation data must confirm that the effects of the child's disability ... occur in a variety of settings.
  - A. The child does not achieve adequately in one or more the following areas: listening comprehension, oral expression, basic reading skills, reading comprehension, reading fluency, written expression, mathematics calculation, or mathematical problem-solving, in response to appropriate classroom instruction, and either:
    - The child does not make adequate progress to meet age or stateapproved grade-level standards in one or more of the areas listed above when using a process based on the child's response to scientific, research-based intervention (SRBI); or
    - ii. The child exhibits a pattern of strengths and weaknesses in performance, achievement, or both, relative to age, state-approved grade-level standards, or intellectual development, that is determined by the group to be relevant to the identification of a specific learning disability.

The performance measures used to verify this finding must be representative of the child's curriculum or useful for developing instructional goals and objectives.

Documentation is required to verify this finding. Such documentation includes evidence of low achievement from the following sources, when available: cumulative record reviews; class-work samples; anecdotal teacher records; statewide and district-wide assessments; formal, diagnostic, and informal tests; curriculum-based evaluation results; and results from targeted support programs in general education.

- B. The child has a disorder in one or more of the basic psychological processes which includes a basic psychological processing condition that is manifested in a variety of settings by behaviors such as inadequate: acquisition of information; organization; planning and sequencing; working memory, including verbal, visual or spatial; visual and auditory processing; speed of processing; verbal and nonverbal expression; transfer of information; and motor control for written tasks.
- C. The child demonstrates a severe discrepancy between general intellectual ability and achievement in one or more of the following areas: listening comprehension, oral expression, basic reading skills, reading comprehension, reading fluency, written expression, mathematics calculation, or mathematical problem solving. The demonstration of a severe discrepancy shall not be based solely on the use of standardized tests. The group shall consider these standardized test results as only one component of the eligibility criteria. The instruments used to assess the child's general intellectual ability and achievement must be individually administered and interpreted by an appropriately licensed person using standardized procedures. For initial placement, the severe discrepancy must be equal to or greater than 1.75 standard deviations below the mean of the distribution of difference scores for the general population of individuals at the child's chronological age level.
- D. The child demonstrates an inadequate rate of progress. Rate of progress is measured over time through progress monitoring while using intensive SRBI (scientific, research-based intervention), which may be used prior to a referral, or as part of an evaluation for special education. A minimum of 12 data points are required from a consistent intervention implemented over at least seven school weeks in order to establish the rate of progress. Rate of progress is inadequate when the child's:
  - Rate of improvement is minimal and continued intervention will not likely result in reaching age or state-approved grade-level standards;
  - ii. Progress will likely not be maintained when instructional supports are removed;
  - iii. Level of performance in repeated assessments of achievement falls below the child's age or state-approved grade-level standards; and
  - iv. Level of achievement is at or below the fifth percentile on one or more valid and reliable achievement tests using either state or national comparisons. Local comparison data that is valid and reliable may be used in addition to either state or national data. If local comparison data is used and differs from either state or national data, the group must provide a rationale to explain the difference.



## **Quality Practices**

#### **Interpreting Outcomes of Formal Assessment Data**

All information collected prior to and during a comprehensive evaluation will be of help to teams of professionals and parents in making a disability determination. At this step in the process, teams that have used the problem solving protocol and systematically addressed the appropriateness of instruction, curriculum, and environment should shift their focus to answering the question of why the student is unable to learn normally within the context of the regular classroom (Ortiz, 2008).

No single prescription exists to organize and weigh data. However, teams may find the tools provided in previous chapters helpful. The following tools were designed to integrate, evaluate, and summarize the findings from multiple sources of data:

- Guiding questions presented at the end of each chapter.
- Problem-solving protocol in Chapter 4.
- ICEL/RIOT matrix in Chapter 6.
- Analyzing Evidence Sample Forms in Chapter 6.
- Eligibility Worksheet in Chapter 10.

Specialist and instructional staff should keep the focus of the evaluation process on designing instruction that accelerates the student's rate of learning. In some cases, the instruction will be specialized to meet the unique needs of a learner with a disability; in other cases, it will be differentiated to meet the needs of a student without a disability, but who continues to struggle. A systematic approach to interpreting, prioritizing, synthesizing, and summarizing the findings will help teams not only improve instruction, but also determine eligibility for special education.

Care should be taken to not presume that persistent lack of achievement is automatically

the result of a specific learning disability. Specialists and instructional staff may be predisposed to narrowing data interpretation to fit a pre-judgment that a persistent learning problem is the result of a specific learning disability. The risk is that teams may focus on supportive data to the exclusion of disconfirming evidence and make an inappropriate eligibility determination. To avoid narrowing the review of data, specialists and instructional staff should reiterate the steps in the problem solving process described in Chapters 4, 6 and 8:



- **Step 1.** Redefine the learning problem.
- **Step 2.** Re-analyze the data to identify patterns in performance and evidence supporting explanations for why the learning problem occurs. Select instructional practices that address the student's needs.
- **Step 3.** Implement the instructional plan or Individualized Education Program
- Step 4. Monitor and evaluate the results of instruction.

The protocol to help integrate the problem-solving model into the eligibility criteria as described in Chapters 4, 6, and 8 is reiterated throughout this chapter to help specialists and instructional staff implement quality practices when interpreting data. Resources include general guidance in what teams should review with appropriate sources of evidence as well as specific guidance for questions that frequently occur during this part of an evaluation process.

## **Defining the Learning Problem**

#### **Reviewing Background Information and Intervention Data**

To understand the learning problem, specialists and instructional staff should review the background and history of the child as well as data gathered during intervention and parent interviews. The table below shows the background information to review and data sources to use.

Table 9-1
Relevant Background Information and Sources of Data

Background Information	Sources of Data
Reason for the referral (areas of concern and	Tip: Review data from the beginning of the process to understand the concerns that have emerged and how they have been addressed.
suspected disability(ies)	Problem analysis statement from secondary, tertiary intervention plans and prior written notice statements.
History in special education or other specialized	Student performance in relation to setting demands (onset, duration, variation across settings, interference with personal, interpersonal, and academic adjustment).
services Parent concerns	<ul> <li>Interviewee's perceptions of the problem, its nature, intensity, significance to the student, and relation to grade-level or age- appropriate expectations.</li> </ul>
and perspective  Language history	Information regarding the student's home language and family cultural background.
and cultural background	<ul> <li>Independent evaluation data or reports presenting concerns and links to academic or behavioral performance within the school setting.</li> </ul>
	Report cards, district test results, etc.
	Existence of relevant health or sensory problems potentially related to the referral concern.
	The student's developmental and educational history that provides context for why the learning problem is occurring.

Background Information	Sources of Data
Note: Analyze the summary of data gathered on instruction, curriculum, environment to ensure student has sufficient access to make progress towards grade-level standards	<ul> <li>When organizing data for interpretation, presume that the difficulty is more likely solved with changes in instruction, curriculum, or environment than attributable to factors intrinsic to the child. Summarize results in a way that illustrates whether the student has had sufficient access to high quality instruction and opportunity to perform within grade-level standards.</li> <li>Summarize evidence-based practices implemented in core instruction and through intervention supports.</li> <li>Be sure to include actual intensity and duration of interventions as well as attendance during intervention.</li> <li>Percent of students meeting benchmarks or targets for proficiency with core instruction.</li> <li>Permanent products reflecting nature of instructional demands and relative peer performance (performance of subgroups in the event the student being evaluated is culturally and linguistically different).</li> <li>Analysis of curriculum and curricular materials for difficulty, age appropriateness, and accessibility given student's language and cultural background.</li> <li>Patterns of behavioral and academic performance relative to instructional and curricular demands (observation, review of instruction and curriculum).</li> <li>Instruction provided to address language acquisition, differences in prior knowledge due to lack of exposure or cultural differences.</li> <li>Positive behavioral supports and discipline policies as they relate to referral concerns, as well as how they address the needs of the majority of same age peers (subgroups in case of culturally and linguistically diverse students).</li> <li>Attendance (if inconsistent attendance, review progress results during periods of consistent attendance to determine if bump in performance or in rate of learning occurs).</li> </ul>
Summarize what is known about the student and how the student learns	<ul> <li>Interaction between the student and the learning environment (influence of one upon the other).</li> <li>Skill level compared to peers in same setting.</li> <li>The level of academic skills proficiency (acquisition, fluency, maintenance, etc.) within core instruction.</li> <li>Observations and reports on student's approach to a task, organizing self to engage in a task, and persist until completion.</li> <li>Results of record reviews, observations, interviews indicating notable changes in behavior or performance as a result of differentiation, accommodation or modification.</li> </ul>

Background Information	Sources of Data
	Changes in performance with group size, incentives, change in staff, or change in task, etc.
	<ul> <li>Exclusionary factors (vision, hearing, or motor impairment; cognitive impairment; emotional or behavioral disorders; environmental, cultural or economic influences; or a history of inconsistent education program, limited English proficiency (LEP), or lack of instruction in reading or math).</li> </ul>
	Parent/teacher/student report regarding effectiveness of accommodation(s) and/or modification(s).
	Progress monitoring data collected during interventions.

#### Specific Guidance on Exclusionary Factors

It is not uncommon for teams to wrestle with understanding the extent to which exclusionary factors contribute to or preclude consideration of SLD as a primary disability.

Quality practices suggest that a thorough review of the recommended questions and summary of available evidence in the background section of the evaluation report will make the eligibility determination and documentation of instructional needs proceed smoothly. The team should always give consideration to the family and community systems, including culturally and linguistically diverse populations, when interpreting and evaluating the data. Refer to guiding questions in Chapter 7 that may help in interpreting the data with respect to specific exclusionary factors.

Regardless of whether an exclusionary factor is primary or contributing, teams must document all needs and the instructional programming designed to meet the needs.

#### Specific Guidance on Summarizing Standard Scores

While Flanagan and Kaufman recommend that teams report standard scores with their associated confidence intervals (95 percent level recommended) along with needed data this guidance creates a problem when calculating and standard deviations with Minnesota's formula. The application of confidence intervals creates differences in the application of the 1.75 standard deviation interval.

The authors also present three variations of a normative descriptive system for reporting Full Scale IQ score results. The table below shows one that is growing in popularity among school and clinical psychologists:

Table 9-2
Standard Score Range, Classification, Performance

Standard Score Range	Classification	Performance
131+	Upper extreme	+2 SD
116 to 130	Above average	Normative strength as compared with the general population
		+ 1 SD (top 16 percent of the population)
		> 116 (85 <sup>th</sup> percentile)
85 to 115	Average range	Within normal limits
		+/- SD inclusive (68 percent of population)
		115 (84 <sup>th</sup> percentile)-85 (16 <sup>th</sup> percentile)
70 to 84	Below average	Normative weakness <-1 SD bottom 16 <sup>th</sup> percentile of population
		<84 (15 <sup>th</sup> percentile)
<69	Lower extreme	<-2 SD

## Re-analyzing the Problem - Interpreting Achievement Data

To ensure clarity and alignment of interpretation of data with Minnesota Rule, the step of re-analyzing the problem has been broken into interpreting achievement data, interpreting basic psychological processing data, and interpreting discrepancy. It is assumed that interpretation of intervention data, consistent with Minnesota Rule 3525.1341 subp. 2 D, could be done in the review of background information described above or in this section. It is a district decision.

The primary goals of interpreting achievement data should be to:

- Document all the academic needs.
- Identify areas where existing instructional supports are sufficient.
- Identify dimensions on which continued intervention or specialized instructional supports may be altered to improve achievement.
- Identify dimensions on which accommodations or modifications must be made to provide access to grade-level standards.

Teams may be tempted to skip or rush analysis of achievement data; however, evidence shows that careful data review can lead to additional discoveries relevant to the design of future instruction. The consequences of not considering all data sources may lead to inappropriate identification or designing ineffective instruction, which has implications for student self-efficacy as well as lowered expectations and misuse of educational resources. Ineffective instruction increases the challenge of accelerating achievement towards grade-level standards and readiness for post-secondary options.

**Note:** The results of a comprehensive evaluation should lead to instruction that accelerates acquisition of skills and effectively provides access to the regular education curriculum. For an easy way to integrate achievement data, refer to the eligibility worksheet in Chapter 10 or the instruction, curriculum, environment and learner (ICEL)/Review, Interview, Observe, Test (RIOT) tool in Chapter 6.

Table 9-3

Achievement Data Relevant to Intervention, Evaluation, and their Sources

This table shows what to include in a comprehensive review of achievement data in order to identify all areas of need and sources for that data.

Data to Document	Sources of information
The achievement level and rate of learning given:  • Evidence-based core instruction and supplementary interventions • Intensity of, frequency of, and attendance during delivery of research-based interventions. • Progress monitoring graphs • Fidelity of intervention implementation	<ul> <li>Tip: In addition to progress monitoring data, summarize both successful and unsuccessful supplemental efforts aimed at accelerating student learning and level of performance, which may include whether the intervention was frequent enough, long enough, and intensive enough to yield a change in performance or accelerated learning rate.</li> <li>Additional topics in the review of data include:</li> <li>Intervention plans.</li> <li>Progress monitoring data indicating slope, level, and progress as compared to benchmark or peer group.</li> <li>Documentation of fidelity (e.g. minutes of intervention as designed vs. received, observations that intervention was delivered as intended, etc.).</li> </ul>
Comprehensive review of additional achievement data	<ul> <li>Classroom based repeated measures of achievement (curriculum-based measures, formative assessment, informal inventories, etc.).</li> <li>Norm-referenced state, district, group, or individualized assessment data.</li> <li>Standardized observation protocols, e.g., Minnesota Student Oral Language Observation Matrix (MNSOLOM), rubrics, or rating scales.</li> <li>Criterion-referenced tests.</li> <li>Interviews with students, parents, teachers, etc.</li> <li>Observations during core instruction, intervention sessions, and/or individualized assessment documenting results of testing limits.</li> <li>Work samples, results of other targeted assistance programs, independent tutoring or intervention programs.</li> <li>Results of Cultural Language Interpretive Matrix (CLIM) for students with cultural and linguistic differences.</li> <li>Comparison of achievement data against background and contextual knowledge for students with cultural and linguistic differences.</li> </ul>

# How do we know whether the learning problem is related to limited English language acquisition vs. SLD?

The answer to this question is elaborated on in the appendix of this chapter with an explanation of the Cultural Language Interpretive Matrix. Essentially the team must return to interpreting the data from multiple sources that address language acquisition and SLD concerns.

Ortiz would likely say that if students do not have normative weaknesses in their first language, the concern(s) needs to be addressed outside of special education. However, some current measures of language acquisition may be inadequate and should be so noted in weighing the interpretation of data. Please refer to Interpretation using Cross-Battery Assessment below for a brief overview as well as the following resources:

Rhodes, R., Ochoa, S., & Ortiz, S. (2005). Assessing Culturally and Linguistically Diverse Students. New York: The Guilford Press. (Specifics for interpreting the Culture Language Interpretive Matrix (CLIM) found in the appendix.)

National Association of School Psychologists. (2009). "A Comprehensive, Multidimensional Approach to Assessment of Culturally and Linguistically Diverse Students." In Jones, Janine (Ed.) The Psychology of Multiculturalism in the Schools (Ch. 7). Bethesda, MD: Lau, M., & Blatchley, L.

Reducing Bias in Special Education for American Indian and African American Students from the Minnesota Department of Education (to be revised)

The Minnesota Department of Education has resources to support teams in developing appropriate procedures for English Language Learners (ELL) who are suspected of having a disability including the ELL Companion Manual.

#### **Specific Guidance for the Achievement Data Summary**

Issues of non-compliance have occurred when evaluation reports do not include all the areas of need that show up on Individualized Education Programs (IEPs) one or two years later. Minnesota rule requires teams to identify all the needs connected to the disability as well as any needs that are necessary to help the student gain control over and make progress in the general curriculum.

Providing statements in the evaluation report that discuss implications of a disability on future performance not only provides the team rationale for other goals, but also draws attention to the possibility of incorporating instructional strategies or practices that may reduce the adverse impacts of a specific learning disability.

Additional benefits include helping parents to fully participate in longitudinal planning, as they are typically the only team members that have both historical and future knowledge of the student throughout their academic career.



#### Illustrative Example

Sam, a third grade student, has normative weaknesses in basic reading skills, vocabulary, and working memory. The team does not currently find evidence of below-grade-level performance in math. The team decides to document only the concerns related to reading in the evaluation report. The fact that the team did not document all needs that may arise from the disability prevents them from providing services in math or written expression in later grades. Yet, Sam will likely need additional supports in fourth and fifth grade when he is required to master regrouping, take notes, summarize the main idea, etc.

Katrina, a first grader struggling to develop letter sound correspondence, receives balanced instruction in phonological awareness and vocabulary building. Both skills are woven into her reading instruction so that she continues to improve in reading and language abilities. The integration of vocabulary building skills prevents the need for language intervention later on.

Sometimes the area of concern does not match the picture of achievement that emerges from pulling together the results of formal assessment. Instances include, but are not limited to:

- Achievement that is within age or state grade-level expectations but below district expectations.
- An area of inadequate achievement not mentioned in the referral for special education evaluation.

If the team sees a mismatch between the referral concern and pattern of achievement that emerges from formal assessment, the team may have also missed data or context relevant to accurate interpretation and evaluation of the data. If so, collect those data and re-convene the team. Teams may have also chosen or been provided independent evaluation data that suggests physical, sensory, cognitive, or psychological issues. Teams integrating the results of evaluation need to be careful to include multiple sources of data and put them in the context. Teams may need to consider gathering additional or re-prioritize the data being presented.

#### **Resource Tool for Finding Patterns in Achievement Data**

Research indicates that predictable patterns of performance in achievement data will correspond with normative weaknesses in basic psychological processes. The following figure indicates where patterns of poor achievement emerge, the impact in other academic domains, as well as corresponding patterns in basic psychological processes.

The narrative that follows the figure describes a synthesis of the patterns found in the literature, as well as a cursory discussion of implications for instruction.

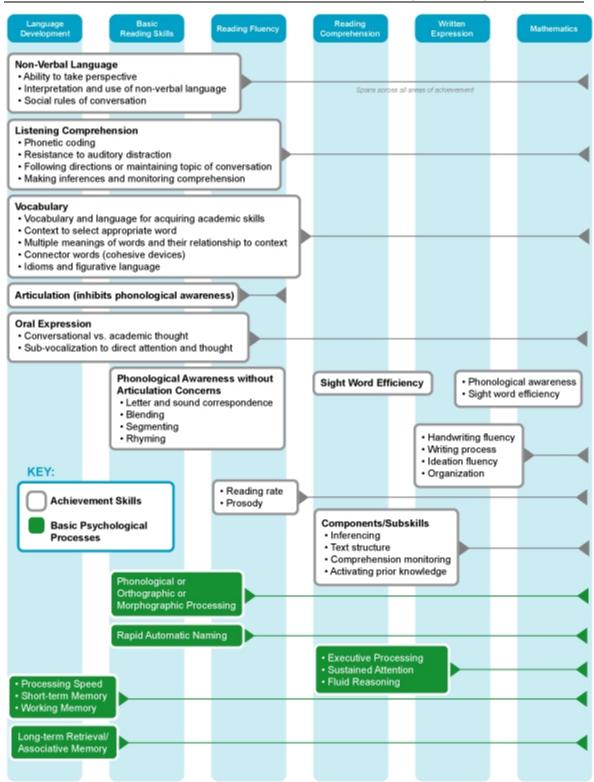


Figure 9-1: Likely Patterns of Performance for SLD Identification.

#### **Language Development and Instructional Implications**

It is unlikely that a student with significant inadequate achievement or developmental delays in the acquisition of listening comprehension and oral expression will have skills that develop in the average range in reading, writing, or math. Teams should look at the connection between the development of language and areas of academic achievement. At least four patterns emerge in language development, discussed below in the first column of the following table. The patterns described below are not exhaustive of what a team may find through formal evaluation.

Instructional implications for students with language development issues include balancing or switching emphasis between improving the instructional level of listening comprehension, basic skills acquisition, and reading comprehension. See suggestions in the second column.

Table 9-4

Language Development and General Instructional Implications

Language Development	General Instructional Implications
Pattern A: Poor articulation. Only in instances where evidence shows issues with articulation to be connected to the development of phonological awareness should an SLD be suspected. A speech language impairment that requires special education in the area of reading may also be likely.	Use skills hierarchy to determine instructional level, e.g., whether skill must be developed within listening comprehension, oral expression, reading comprehension, or written expression.
Pattern B: Inadequate development of nonverbal language skills. This typically indicates Speech and Language Impairment, Autism Spectrum (ASD) or non-verbal learning disorder (NVLD). This discussion is beyond the scope of this SLD Manual. Refer to the resources on the MDE Website for additional information on ASD and NVLD.	Determine if interventions in language skills need to be implemented alongside or in advance of targeted academic skills (prioritize content and vocabulary).

#### **Language Development**

Pattern C: Poor listening comprehension. Students with below average achievement in listening comprehension skills are most likely to have corresponding below average abilities in phonetic coding, resistance to auditory distraction, auditory processing, processing speed, auditory (verbal) working memory, short-term memory, or rapid naming. In addition, low or below average performance in oral expression is likely. As the curriculum becomes increasingly demanding, normative weaknesses in processing speed. auditory working memory, short-term memory, etc. would predict areas of persistent difficulty in acquiring grade-level listening comprehension, reading comprehension, reading fluency, written expression skills, and math computational fluency.

Pattern D: Poor oral expression. Students with below average achievement in oral expression may exhibit normative weaknesses with: adequately understanding oral vocabulary; associating meaning and demonstrating flexibility with and deriving meaning from the spoken word; integrating new information with prior knowledge; following oral directions/information; remembering what was heard without distortion or omission of sequence or content; or accessing desired information within a reasonable time.

# General Instructional Implications

- Attend to the difference between classroom demands and the student's level of listening comprehension or oral expression as these may constrain acquisition of skills or performance within the general curriculum.
- Apply principles of differentiation and universal design of instruction to make grade-level content accessible (differentiate between language skills and content skills).
- Document the Speech and Language concerns, the impact on achievement in reading or math and develop the IEP to address the needs. There is a clear relationship between language delay and later academic concerns, normative weaknesses that persist in oral language often impact academic achievement. For more information see Brown, Alyward & Keogh (1966) at http://www.ldonline.org/article/63 66 for summary and references. There is variability as to how districts will handle this issue.
- In some situations it may be appropriate for the Speech and Language Pathologist to consult or collaborate with the special education teacher to address the language needs within the regular classroom.
- In other instances, the student may receive reading or math instruction from a special education teacher trained to embed language interventions within the special education services.

# Language Development

Frequent misunderstanding between the speaker and the student may occur as conversation is inappropriate to the topic or situation and verbal responses do not align with previously spoken comment or question. Speech may be limited and the student may have difficulty: finding words to describe intent, using inflection, relating experience or stories in sequential order, providing relevant detail to convey meaning to listener, showing control over the vocabulary that has been taught and relying on fixed expressions and highly familiar often less specific vocabulary. Overall, communicative success is likely adversely impacted both in the classroom and with peers. Students with oral expression issues may lack the ability to go deeper into a topic or discussion subject with a variety of vocabulary.

# General Instructional Implications

 In some schools, students with a language disability may receive some of the accommodations and/or modified instruction provided to their peers with SLD.

#### **Guidance on Assessing Oral Expression and Listening Comprehension**

Teams must be aware of which results are being summarized as documentation of achievement. So while a disorder of spoken language and the imperfect ability to speak (as measured by the Clinical Evaluation of Language Fundamentals (CELF)) may be indicators of a possible specific learning disability, the disorder must be demonstrated in academic functioning and manifest in a way that results in the student not learning at an adequate rate. Assessments continue to be developed and revised, so teams are in the kest position to select the assessments designed to meet the situational needs (inadequate achievement).

If the assessment data gathered thus far isn't helpful in answering why the student is not achieving within the regular classroom environment, teams may need to conduct additional observations to see how well the student is able to follow directions, filter out white noise, and focus/orient to teacher direction. For situations where a lesson conveyed technical content, conduct an interview with the student to determine what he/she understood (e.g. vocabulary, concepts, etc.). If the area is oral expression, use observations to explain or describe the experience. Are there differences in speaking on demand vs. self-initiated expression? Some staff may recall that this method is diagnostic teaching/evaluation.

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### Basic Reading Skills and Instructional Implications

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The table below shows the four common patterns for poor basic reading skills. The patterns described below are not exhaustive of what a team may find through formal evaluation.

Table 9-5
Basic Reading Skills and General Instructional Implications

Basic Reading Skills	Instructional Implications
Pattern A: Student shows poor achievement but all areas of basic psychological processing are within normative limits. Potential reasons for this pattern include lack of sufficient practice timed to when the student was developmentally prepared to accept the instruction and lack of prior knowledge, consistent, systematic, explicit evidence based instruction in the basics of phonological awareness, vocabulary, or decoding instruction.	Additional intensive evidence- based phonics and language instruction consistently implemented until a rate of achievement reaches within grade-level expectations.
Pattern B: Lack of progress in acquiring basic reading skills with corresponding below-average abilities in phonetic coding, resistance to auditory distraction, auditory processing, processing speed, auditory (verbal) working memory, short-term memory, or rapid naming. Students with this pattern are also more likely to have low or below average performance in oral expression. As the curriculum becomes increasingly demanding, normative weaknesses in processing speed, auditory working memory, short-term memory, etc. would predict persistent difficulty in acquiring grade-level listening comprehension, reading comprehension, reading fluency, written expression, and math computational fluency.	Differentiate between phonetic coding issues and resistance to auditory distractions. Poor phonetic coding requires evidence-based instruction in phonological awareness. When resistance to auditory distraction is indicated include an evaluation for Central Auditory Processing Disorder (CAPD). Provide accommodations and modifications consistent with CAPD, as well as evidence-based instruction in basic reading skills to remediate gaps in achievement.
Pattern C: A less frequent pattern results from a lack of orthographic fluency. Students with an orthographic processing weaknesses may have some basic decoding skills and strong sight word vocabulary; however, data indicate that spelling, reading connected text or reading multi-syllabic words are difficult. Students with normative weaknesses in orthography but not phonetic coding or auditory processing are less likely to have weaknesses in listening comprehension, oral expression, or vocabulary acquisition. Older students may develop poor reading fluency despite having basic decoding skills.	<ul> <li>Provide evidence-based instruction to address normative weaknesses in orthography and morphology.</li> <li>Emphasize sound symbol association and teach decoding and encoding simultaneously.</li> </ul>

Basic Reading Skills	Instructional Implications
Pattern D: The least likely pattern but also the pattern that is most difficult to accelerate is the pattern where both phonetic coding and orthographic processing are impaired. Students with this pattern of impairment are likely to have more severe normative weaknesses in all areas of reading as well as have weaknesses in vocabulary development.	Provide balanced phonics, vocabulary, listening comprehension and orthographic processing interventions. Address areas of concern in order to make continued progress in reading, writing, and math skills.

## **Reading Fluency Skills and Instructional Implications**

The table below shows two patterns of achievement connected to poor reading fluency. The patterns described below are not exhaustive of what a team may find through formal evaluation.

Table 9-6
Reading Fluency and Instructional Implications

Reading Fluency	Instructional Implications
Pattern A: Students with below average achievement in reading fluency but intact basic reading skills are also likely to have below average abilities in orthography and morphology and weaknesses in specific areas of reading comprehension; such as, inferencing, etc. Inferencing, text structure, and comprehension monitoring are common concerns with reading comprehension.	<ul> <li>Provide oral models of reading connected text to improve reading with intonation and emotion (prosody).</li> <li>Provide opportunities for repeated reading.</li> </ul>
	<ul> <li>Provide evidence-based strategy instruction in inferencing, text structure, and connecting prior knowledge to what is read.</li> </ul>
	Explicitly teach and reinforce comprehension monitoring.

#### **Reading Fluency**

**Pattern B:** It is highly unlikely that a student would be eligible for SLD with only inadequate achievement in reading fluency. That said, it may be the case that a student manages to comprehend despite a labored reading rate. As curriculum demands increase the volume of reading it may be that at some point the student is not able to keep pace. When the volume of reading outpaces a student's ability to keep up. the lack of reading fluency may begin to constrain the acquisition of grade-level vocabulary and reading comprehension. Teams should be aware that concerns with the development of reading comprehension may or may not be present at the time of evaluation but could develop if the student's reading rate cannot keep pace with assignments.

#### **Instructional Implications**

- The IEP should specify the amount and difficulty of text at the student's instructional level, number of repetitions and/or criteria for moving on, and type of feedback the student will receive.
- Clearly articulate
   accommodations and
   modifications made to contain the
   volume of reading and alternative
   means of making grade-level
   content accessible so that
   teachers know who will provide
   the modifications, what is
   included, when, and under what
   circumstances.
- If considering assistive technology, look at how the student will continue to acquire the necessary vocabulary and language comprehension skills to benefit from these options. Although not legally required, include each component in the IEP so staff more clearly meet the student's needs.
- Vocabulary interventions may also need to be put in place in order to accelerate reading comprehension to keep pace with grade-level content.

#### **Reading Comprehension and Instructional Implications**

The table below shows the two common patterns for poor basic reading skills. The patterns described below are not exhaustive of what a team may find through formal evaluation.

Table 9-7
Reading Comprehension and Instructional Implications

#### **Reading Comprehension**

**Pattern A.** Poor reading comprehension with coexisting weaknesses in phonological awareness, listening comprehension, oral expression, working memory and/or processing speed.

Teams should consider the student's lack of or different body of prior knowledge before assuming a language normative weakness. When assuming prior knowledge for a given prompt or sample of work, teams are more likely to find specific normative weaknesses in expressive or receptive language that limit the student's ability to develop schemas and multiple meanings for words. Individuals with this pattern of normative weaknesses may perform similarly to individuals with Nin-Verbal Learning Disability (NVLD). Lack of reading comprehension often leads to limited enjoyment and practice of reading, so students identified in later grades may have limited sight-word vocabulary as well as morphographic knowledge.

Pattern B. Poor reading comprehension with accurate beginning decoding skills, grade-level reading rate, and normative weaknesses on prosody and comprehension (may also be referred to as hyperlexia). Normative weaknesses in reading comprehension tend to be in inferencing, comprehension monitoring, and understanding of text structure. These students may have corresponding weaknesses in speed of processing, working memory, and/or executive functions (planning, sustained attention, self-monitoring, and problem-solving skills). Disorders in the executive functions listed are also consistent for individuals diagnosed with ADHD.

#### **Instructional Implications**

- Systematic explicit skills instruction in comprehension strategies and vocabulary acquisition strategies
- Identification of weaknesses in listening comprehension and oral expression to identify instructional level of language comprehension that must be developed in advance of application to silent reading comprehension
- Training in comprehension monitoring or use of internal speech as means of developing comprehension monitoring skills
- Modification of the instructional environment to cue students with disorders in executive function specifically planning and problem solving to apply the strategies they know at the moment they need them

#### Written Expression and Instructional Implications

Research for an operational definition of a disability that addresses written language continues to evolve. There is less research on established patterns of academic performance in written expression than in reading. Additionally, the academic normative weaknesses presented in the data are different for individuals with traumatic brain injury than those who have developmental writing disabilities.

Most students with a specific learning disability will have problems with one or more of the three writing skills (handwriting, spelling, expression of ideas). The patterns described below are more typical but not exhaustive of what a team may find through formal evaluation. There is an indication that the development of expression of ideas through writing is hampered when handwriting and spelling skills are poor.

Table 9-8
Written Expression and Instructional Implications

Written Expression	Instructional Implications
Pattern A: Normative weaknesses in written expression due primarily to poor handwriting and or spelling with no other language normative weaknesses. Poor handwriting and motor coordination constrains the development of written expression in that sloppy and labored writing tends to limit the quality and length of compositions. Just as poor decoding impairs the development of reading comprehension, poor handwriting and spelling impair the development of expression of ideas. Until handwriting becomes automatic, there may be little room in working memory to compose and connect ideas.	<ul> <li>Intervene as early as possible to improve handwriting to achieve improved compositions</li> <li>Consider appropriate assistive technology.</li> <li>Consider appropriate accommodations such as more time to complete written tasks, reduced amount of copying, shorten assignments by allowing the student to supplement work with illustrations, graphic organizers, and/or verbal explanations.</li> </ul>

#### **Written Expression**

Pattern B: Normative weaknesses in written expression due primarily to poor spelling. phonological or orthographic normative weaknesses. Language normative weaknesses may or may not be present. As mentioned previously, poor spelling skills have been linked with poor decoding skills. Normative weaknesses in phonological and/or orthographic processing may be the constraining factor in the development of listening comprehension, reading, as well as spelling. Poor spelling scores in the absence of normative weaknesses in hand writing or expression of ideas may indicate lack of automaticity in intermediate decoding or morphological awareness skills. It is most likely that poor spelling ability constrains the development and expression of ideas in the same way as poor handwriting.

#### **Instructional Implications**

 Explicitly teach spelling within reading instruction to strengthen both decoding and spelling skills. When the writing process is the focus, use of word banks or assistive technology may be an appropriate accommodation or modification.

#### Written Expression

**Pattern C:** Normative weaknesses in written expression due to poor composition and expression of ideas. Data may indicate that the student has difficulty with poor organization, variety of sentence structure, limited vocabulary use (semantics knowledge or word finding), or grammar.

Normative weaknesses in written expression may co-occur with normative weaknesses in oral language, reading and mathematics, speed of processing, working memory, and executive functions (planning, sustained attention, self-monitoring, and problem-solving skills). Additionally, normative weaknesses in written expression may co-occur with diagnosed ADHD and NVLD. Individuals with ADHD may have writing samples that indicate poor monitoring of writing process leading to poor sentence coherence, evaluation of quality and appropriate conventions, and lack of editing in their own writing, quantity of writing, decipherable handwriting, use of vocabulary to convey ideas.

Alternatively, students with NVLD may have data that indicate literal interpretation and expression of ideas, a focus on details at the expense of the coherence in addressing the writing assignment. There may be late emerging normative weaknesses in organization, and complexity of writing. Writing is functional, grammatically and syntactically correct, but semantically simple. There may be few alternative words and sentence structures. Writing samples are predictable, formulaic, and concrete, and lacking in creativity or novel perspective.

Poor note-taking ability, poor report writing, and low scores on writing fluency samples may indicate motor coordination or speed of processing issues; therefore, interpretation of writing samples should take into consideration both variables.

#### **Instructional Implications**

 Develop instructional plan to address handwriting, notetaking, and creative writing abilities. Use observations of behaviors during assessment and class work to identify accommodations that may be practical for the student: such as word banks, ½ filled notes, use of keyboarding, graphic organizers, chunking of writing process, receptivity to strategy instruction, etc.

#### Math Calculations and Problem-solving and Instructional Implications

Research in math calculations and problem solving continues to evolve as do subtypes or patterns of normative weaknesses. Patterns of normative weaknesses are more predicted by the model of mathematical abilities put forward by the researcher; however, some indications show that inadequate achievement in math calculations may coincide with inadequate number sense, normative weaknesses in phonological processing, speed of processing, and/or short-term and working memory.

Table 9-9

Math Calculations and Problem-Solving and Instructional Implications

#### Math Calculations/Problem-Solving

#### **Pattern A:** Students with a delay in mastering oneto-one correspondence and number sense are likely to have the most severe and persistent difficulties in acquiring math skills. There may be a pattern of normative weakness in working knowledge of number facts, combinations and important number relationships, letter correspondence in reading, as well as age appropriate development of listening comprehension and oral expression. Instructional implications are to develop efficient means of deducing math facts as quickly as possible. Normative weakness in working memory and shortterm memory also lead to "careless" and procedural errors, poor strategy use, difficulty recalling and implementing sequences. It is likely that difficulties with problem-solving will develop as curricular demands increase. These types of difficulties are also prevalent for individuals with ADHD.

Pattern B: Students with difficulties in problem-solving are also likely to have normative weaknesses in language acquisition, non-verbal problem-solving abilities, concept formation, sustained attention, simultaneous processing, sight word efficiency and possibly working memory. They are most likely to have difficulty with sequencing procedures, vocabulary (numerical quantifiers), language acquisition in the area of semantics and categorization. These types of difficulties are also prevalent for individuals with ADHD and NVLD due to disorders in executive functions.

#### Instructional implications

- Include systematic and explicit instruction in problemsolving skills as early as possible. They should not be put off until basic computational skills are overlearned. Students with difficulty in mastering basic computation are likely to have normative weaknesses in processing speed and working memory which not only impact numerical computation, but also multistep procedures (such as regrouping)
- Develop language skills sufficient to assist in the comprehension, acquisition, and production of academic skills
- Intervention and development of problem-solving skills should take place as early as possible. They should not be put off until basic computational skills are over learned

# Analyzing the Problem - Interpreting Basic Psychological Processing Data

Teams should have a hypothesis of suspected areas of weaknesses in basic psychological processing as well as correlating normative weaknesses in achievement.



#### **Illustrative Example**

Jackie O. has below normative performance in processing speed as verified in interviews and classroom observations. Her academic performance in reading, math, and written expression is in the low to below average in all areas.

Bobby received interventions for poor reading fluency. Although he has average decoding abilities, his vocabulary knowledge is very narrow and inferencing skills are below average. Bobby's assessment data indicates normative weaknesses in associative memory.

Given a hypothesis for why the learning problem exists, the team should look for convergent evidence of below normative performance on cognitive or measures of aptitude that correspond with areas of academic weakness described above (for tools illustrating the connection between basic psychological processes and achievement see Chapters 6 and 8.)

Current research recommends that normative weaknesses are present when performance on standardized measures indicates that cluster scores fall below a standard score of 85 and are confirmed by additional sources of data such as interviews, observations or records. An intra-individual weakness alone is not sufficient to determine eligibility for a specific learning disability. For example, a student with high abilities in working memory and low average abilities with processing speed has significant intra-individual weaknesses, but this difference is not synonymous with a specific learning disability.

Finally, basic psychological processing abilities are developmental. Basic psychological processing abilities impacting the acquisition of academic and/or behavioral skills will change across development. For example, orthographic processing is more highly correlated with acquisition of basic reading skills and working memory with reading comprehension.

Teams should realize that assessment of executive functions, reliable if measured after age seven, may be beneficial in predicting additional needs that emerge as curriculum and grade-level expectations increase in rigor and abstraction (Janzen, E. 2008). Additionally, teams may find that evaluating executive functions or working memory provides a means of documenting the need for accommodations in order to have access to general education curriculum (e.g. instructional and testing accommodations).

Normative weaknesses in executive functions may also impact a student's ability to learn and/or apply strategies. Thus, teams should be mindful of areas of weakness when designing instruction, modifications and behavior plans. If an individual has normative weaknesses in problem-solving or sustained attention, an intervention focusing on

strategy instruction will not be sufficient. Additional training on how to use cues and system supports to apply the appropriate strategy at the moment it is needed.

Instructional implications for students with normative weaknesses in basic psychological processing: Students may be able to compensate in some areas better than others may; however, increasingly rigorous and abstract academic standards may overwhelm compensatory strategies. Students identified late in a school career may have reached a point where compensating is no longer possible without supports. Teams may find benefit in taking time to review grade-level content standards and the basic psychological processing abilities required to achieve the standards. This process can be used to predict points where students may need additional differentiation or instructional supports to achieve grade-level expected performance.

Given the pattern of achievement and basic psychological processes, near future curriculum demands, and current levels of performance, teams should note and document skills or abilities that require monitoring and differentiated instruction. At the first signs of struggle the team should develop a preventive intervention or special education supports. With documentation indicating the logical relationship between the student needs, the findings from evaluation, and the appropriate instructional supports there should not be a concern about adding special education services a year or more after the evaluation.

Review data from both achievement and cognitive processing. See tools for integrating data previously mentioned in Chapters 10 and 6.

Table 9-10

Basic Psychological Processing - Information Summary and Sources of Data

Information for Summary	Sources of Data
Review areas of academic concern	Observational data from classrooms, notable behaviors documented during formal testing, behaviors noted during intervention
Review areas of basic	Student work samples and teacher records
psychological processes	Interviews from student, parent, teachers, etc.
that signal below normal performance	Analysis of curriculum and grade-level standards indicating demands on cognitive processing,
	Data from independent evaluations or observations made during tutoring
	Test results from normative standardized cognitive achievement or rating scales
	Data noting exclusionary factors
	Relevant medical data or developmental history indicating risk or likely history of impairment in cognitive processing (comparison relative to norm group or same age peers)

#### **Specific Guidance for Implementing Minnesota Rule**

Although Minnesota Rule does not explicitly require standardized measures to be used, there are defensible research-based assessments of processing available (see Ch. 8).

The following bulleted lists are for creating a profile of strengths and weaknesses for instructional planning purposes:

#### **1. Profile of Strengths –** Include the following:

- Describe intra-individual strengths or otherwise normal and higher abilities.
- Include the student's strengths and weaknesses in learning styles.
- Integrated analysis of data indicates areas of performance are within normal range or higher relative to age or state-approved grade-level standards.
- Multiple sources of data (2-3 pieces) indicate similar level of functioning. (home, community involvement, school, self reports and assessments).
- Documentation of strengths that can be tapped to motivate or accelerate acquisition of skills.

#### 2. Profile of Weaknesses - include the following:

 Integrated analysis of data indicates all areas of performance below age or stateapproved grade-level standards.

- Multiple sources of data (2-3 pieces) indicate similar level of functioning across areas listed.
- Assessment tasks that were developmentally appropriate and yield data consistent with classroom demands or expectations.
- Analysis indicating stage of learning (acquisition, fluency, maintenance, generalization, adaptation).
- Error analysis, and professional judgment indicate skill areas important for future instruction or functioning post-high school.

OR

 Data from scientific research-based intervention (SRBI) indicates intensity and frequency of intervention are equivalent to intensity and frequency of service delivery within special education and/or rate of improvement is minimal and continued intervention will not likely result in reaching age or state-approved gradelevel standards.

**Note:** When integrating data from multiple sources, teams should consider the purpose of the test, types of tasks, and strengths and weaknesses of information gained from each source. Teams should explain why low achievement on a point in time test (MCAs, NWEA, WJIII, etc. ) provides a narrow picture of a student's abilities. Reasons may vary: task required recognition vs. recall; task was not commensurate with grade-level expectations, etc.

# Analyzing the Problem - Interpreting Intellectual/Cognitive Functioning Data

General intellectual ability is a student's general overall capacity to adapt and function in the environment. It does not reflect specific abilities within an academic area. It includes not only the student's cognitive abilities displayed at school, home, and in social relationships, but also his/her abilities as estimated from individually administered standardized intelligence tests. Test results used to make eligibility decisions must be evaluated in light of the student's developmental, psychological, and family histories, as well as home and school environmental influences.

Careful interpretation of the intellectual test results by a school psychologist is critical. Three situations warrant special consideration of results:

Table 9-11

Mitigating Factors in IQ Tests and Possible Solutions

Mitigating Factors	Possible Solutions
When the learner's background experience is significantly different from that of the group on which the test was normed.	It is inappropriate to report norm-referenced scores or to use them to draw conclusions regarding eligibility. In some cases, the derived IQ scores may not accurately reflect the general intellectual ability of a student. For example, a student may have low motivation, low self-esteem, inattentiveness, cultural and linguistic differences, or may fail to comprehend and follow the directions, resulting in a low score.
When a student's language- based disability precludes an accurate estimate of intelligence.	In these cases, using a supplemental test of intellectual ability or supplemental procedure is recommended (for more information see Reducing Bias in Special Education Assessment for American Indian and African American Students, Minnesota Department of Children, Families, and Learning, 1998; Essentials of Cross Battery Assessment, Second Edition).
When the results indicate extreme variations in cognitive performance.	See specific guidelines and resources for school psychologists below.

Teams should be looking for convergence in data. For students performing near cut-off scores, a pattern of information consistent with the underlying diagnostic construct should lead to classifying a student as a student with a disability. When one or more sources of information are not consistent with the hypothesized learning problem, the team should consider alternative explanations. Is it that there is a mismatch in expectations between the two sources of data? Or is it that the student is not disabled, but presents with low performance.

## **Guidelines and Resources for School Psychologists**

**Important:** This section illustrates three theoretical orientations **school psychologists** may choose to use to interpret the data. The section is divided as follows:

Part A: Interpreting the WISC-IV

Part B: Interpreting the KABC-II Scales and Global Scales using models CHC and Luria

Part C: Interpretation using Cross-Battery Assessment

Part D: Alternative Model for ELL Students

There tend to be fewer questions about interpretation of the Woodcock Johnson III Cognitive; therefore, we have not included specific guidance on interpreting that in this manual.

#### Part A: Interpreting the Wechsler Intelligence Scale for Children (WISC-IV)

In their chapter on interpreting the WISC-IV, Flanagan and Kaufman (2004) describe a way to meaningfully organize WISC-IV data that is consistent with contemporary theory and research. These include:

- Analysis of index scores (including Full Scale IQ) to determine the best way to summarize the student's overall intellectual ability. The four index scores are Verbal Comprehension Index (VCI), Perceptual Reasoning Index (PRI), Working Memory (WMI), and Processing Speed (PSI)
- 2. Analysis of fluctuations in the student's index profile to identify strengths and weaknesses in cognitive skills, both in terms of inter-individual and intra-individual comparisons
- 3. Analysis of composite or professional cluster scores to further identify patterns of cognitive capabilities
- 4. Exclusion of individual subtest interpretation
- 5. Use of base rate data to evaluate the clinical meaningfulness of score variability
- 6. Grounding interpretation in the CHC theory of cognitive abilities
- 7. Guidance on the use of supplemental measures to test hypotheses about significant subtest variation

**Important:** Use a variety of current intellectual assessment instruments such as K-ABC, DAS-2, Stanford Binet, Woodcock Johnson Cognitive Ability, and the UNIT to accommodate the needs and performance styles of diverse learners. The WISC-IV should not be the only measure used for cognitive assessment.

#### Summarizing Overall Intellectual Ability using the WISC-IV

The WISC-IV examiner must consider the four index scores:

Verbal Comprehension Index (VCI)

- Perceptual Reasoning Index (PRI)
- Working Memory Index (WMI), and Processing Speed Index (PSI).

**Note:** Verbal and Performance IQ scores became obsolete with the arrival of the WISC-III.

The Full Scale IQ (FSIQ) score, which is an aggregate score that summarizes performance across multiple cognitive abilities in a single number, and the four index scores should be reported and discussed in the Evaluation Report.

When unusual variability is observed within the set of subtests that comprise the FSIQ, professional interpretation should characterize the diversity of abilities to be most useful for parents, teachers, and other professionals (WISC-IV Technical Report #4).

An interpretable Full Scale IQ (FSIQ) score means that the size of the difference between the highest and lowest index scores does not equal or exceed 1.5 SDs (23 points). If this is true, then the FSIQ may be interpreted as a reliable and valid estimate of the student's global intellectual ability. If this is not true, then the variation in the index scores that compose the FSIQ is considered too great for the purpose of summarizing global intellectual ability in a single score.

When to Use a GAI Score: When the FSIQ is not interpretable; determine whether a General Ability Index (GAI) may be used. Answer this question: Is the size of the standard score difference between the Verbal Comprehension Index and the Perceptual Reasoning Index less than 1.5 SDs (<23 points)?

*If yes,* then the GAI may be calculated and interpreted as a reliable and valid estimate of the student's global intellectual ability.

If no, then the variation in the index scores that compose the GAI is too great for the purpose of summarizing global ability in a single score. The GAI score is sensitive to cases in which working memory performance is discrepant from verbal comprehension performance and/or processing speed performance is discrepant from perceptual reasoning performance at an unusual level. The GAI can be compared to the FSIQ to assess effects of working memory and processing speed on the expression of cognitive ability.

Thus, there are cases in which the WISC-IV FSIQ score is not interpretable and therefore, discrepancy calculations would not be appropriate. In this case, the variability of performance across index scores is too great to be summarized in a single score. Teams would need to consider all other components of the eligibility criteria. They would also want to examine the consistency between the cognitive index scores and the student's academic profile. Is there a logical picture of the student's cognitive and academic skills? The administration of a different intellectual test is not recommended unless the validity of the WISC-IV is seriously questioned. Rather, the team shifts from a purely discrepancy model approach to a cognitive processing approach and develops a justification for accepting or rejecting eligibility based on all the evaluation data that is available.

**Important:** The GAI score is not necessarily a more valid estimate of overall cognitive ability than the FSIQ. Working memory and processing speed are vital to the comprehensive evaluation of cognitive ability, and excluding these abilities from the evaluation could be misleading. Thus, even if the GAI score is used to determine the ability-achievement discrepancy, the WMI and PSI scores should still be reported and interpreted (WISC-IV Technical Report #4).

If the psychologist and team decide to use the GAI score rather than the FSIQ score as the best estimate of global intellectual functioning for the individual student, the rationale should be described in the Evaluation Report. This would be consistent with the intent of the publishers of the WISC-IV in giving flexibility to practitioners in interpreting the quantitative data yielded by the test. This would not be considered an over-ride because no data is being rejected as invalid in preference for other data that is more valid.

Select the most accurate interpretation of the available data given the unique pattern of strengths and weaknesses of the student. It is appropriate to examine the FSIQ – GAI score discrepancy.

If the difference is equal to or larger than the critical value, the difference is considered a true difference rather than a difference due to measurement error or random fluctuation.

If the two scores are not significantly different, this suggests that reducing the influence of working memory and processing speed on the estimate of overall ability resulted in little difference.

#### Resource Tool for Using GAI vs. the Full-Scale Score

Use the following steps as a decision tree for determining when to use the GAI versus the Full-Scale score.

**Step 1:** Determine if each of the four indexes is unitary and interpretable: A unitary ability is defined as an ability that is represented by a cohesive set of scaled scores, each reflecting slightly different or unique aspects of the ability.

To determine if the VCI and PRI index scores are interpretable, subtract the lowest subtest scaled score from the highest subtest scaled score within each index and answer the question: Is the size of the difference less than 1.5 SDs (<5 points)?

If yes	If no
The ability presumed to underlie the VCI or PRI is unitary and may be interpreted.	The difference is too large and the VCI or PRI cannot be interpreted as representing unitary abilities.

Use the same procedure for the two subtest Working Memory and Processing Speed indexes. When there is extreme variability in a student's profile, there are additional guidelines for interpretation, which can be found in Flanagan and Kaufman (2004).

**Step 2:** Determine normative and personal strengths and weaknesses in the index profile: Only unitary index scores can be included in the analysis. Refer to the table above to describe the range within which each interpretable score lies.

To determine personal strengths and weaknesses:

- 1. Compute the mean of the student's index standard scores and round to the nearest 10th of a point.
- 2. Subtract the mean of all Index standard scores from each interpretable Index standard score.

To be considered statistically significant, the difference must be equal to or greater than the value reported in a chart called "Difference Required for Statistical Significance between an Index and the Mean of all four Indexes by Age and Overall Sample."

If the difference is significant and the interpretable Index is higher than the mean:	If the difference is significant and the interpretable Index is lower than the mean:
Then the Index is a personal strength.	Then the Index is a personal weakness.

The examiner may also determine if any of these personal strengths or weaknesses are uncommon compared to base rates in the WISC-IV standardization sample. Personal strengths can be considered key assets for the student, while personal weaknesses can be considered high priority concerns.

**Step 3:** Additional professional analysis of a student's profile is possible using CHC clinical clusters. This may yield meaningful hypotheses that relate to diagnosis and educational programming. In Sattler's chapter of Interpreting the WISC-IV, additional analysis of a student's profile includes six steps of profile analysis. This is to provide information about cognitive strengths and weaknesses, and can be used to develop hypotheses about the student's cognitive functioning.

Description of these processes goes beyond the scope of the SLD Manual. Interested readers are referred to Sattler (2008), Flanagan & Kaufman (2004) or Flanagan, Ortiz, & Alfonso (2007) for further information.

# Part B: Interpreting the KABC-II Scales and Global Scales with Respect to Two Models (CHC & Luria)

In their chapter on interpreting the KABC-II, Kaufman, Lichtenberger, Fletcher-Janzen, Kaufman, N. (2005) provide both a step-by-step guide to the interpretive approach and ground rules for the interpretive system. Only the first two steps are considered essential. An optional step includes generating hypotheses to be verified with other data (background information, observations, etc).

This system includes the four steps described in the KABC-II manual and two additional steps. The six steps are applicable to both the CHC and Luria models and are:

**Step 1: Interpret Global Scores** Interpret the global scale index whether the Fluid-Crystallized Ability (FCI: CHC model), Mental Processing Index (MPI: Luria model), or Nonverbal Index (NVI) (ages 3-18).

Whether the FCI or MPI is used, before evaluating the global score you need to determine whether the global scale is interpretable.

- 1. Calculate Range of All Index Scores before Interpreting FCI or MPI.
- 2. Subtract the highest from the lowest index standard score.
- 3. If the difference is greater than or equal to 23 points (1.5 SD) then do not interpret the FCI or MPI, rather focus interpretation on the four or five indexes.

**Note:** If administering the Nonverbal scale, do not conduct other interpretive steps.

**Step 2: Interpret Profile of Scale Indexes** Interpret the student's profile of scale indexes to identify strengths and weaknesses, both personal (relative) and normative(ages 4-18).

- 1. Determine whether each scale is interpretable, using a base rate criterion of <10 percent.
- 2. Identify normative weaknesses (SS<85) and normative strengths (SS>115) in the scale profile.
- 3. Identify personal (relative) weaknesses and strengths in the scale profile.
- 4. Determine whether any of the scales that are personal strengths or weaknesses differ to an unusually great extent from the mean scale index, using the <10 percent base rate criterion.

The approach to interpretation of the profile of scale indexes is predicated on several ground rules. See Appendix for Ground Rules for Interpretive System (ages 4-18). (Appendix Data Table) An uninterpretable index indicates that the index does not meaningfully represent the student's ability in that domain.

#### Step 3 (Optional) - Make Scale Comparisons

- Step 3A. Learning/Glr (initial) vs. Delayed Recall (ages 5-18). Note: some subtests are each designated as out of level at some ages and should not be interpreted separately.
- Step 3B. Learning/Glr vs. Knowledge/Gc (ages 4-18). Knowledge/Gc must be given as a supplementary scale.

#### Step 4 (Optional): Analyze Supplementary Subtest

If the examiner has administered one or more supplemental subtests, this step determines if scaled scores are consistent with Core subtests on the same scale. (Manual Table 5.3)

Compute the difference between the supplementary subtest scaled score and the mean scale score, and compare the difference with values shown in Manual Table D.10 Step 5: Make Planned Clinical Comparisons.

#### **Step 5: Make Planned Comparisons**

Four of five planned comparisons involve alternative groupings into relevant clusters, but have no theoretical foundation (exception: Nonverbal Ability versus Verbal Ability). Authors recommend this step only if the examiner is comfortable with in-depth analysis and has no objections to examination of subtest profiles.

- Step 5A: Nonverbal Ability (NVI) vs. Verbal Ability (ages 3-18).
- Step 5B: Problem-Solving Ability vs. Memory & Learning (ages 3-18).
- Step 5C: Visual Perception of Meaningful Stimuli vs. Abstract Stimuli (ages 4-18).
- Step 5D: Verbal Response vs. Pointing Response (ages 4-18).
- Step 5E: Little or No Motor Response vs. Gross-Motor Response (ages 4-18).

#### Step 6: Generate Hypothesis to Explain Fluctuations in Two Circumstances:

When one or more scale indexes are not interpretable from Step 2A, then proceed to try to identify possible hypothesis as to why Supplementary subtest was either significantly higher or lower than Core subtest on its scale. Options include Step 5, and/or use of Interpretive Worksheet.

Optional Steps 3-6: Provide examiners with guidelines to generate hypothesis to examine these differences for both the CHC and Luria models as well as providing educationally relevant interventions. Because steps 3-6 are beyond the scope of the SLD Manual, the reader is referred to Kaufman et al. 2005.

The new KABC-II approach is similar to new approach for the WISC IV interpretation (Flanagan & Flanagan, 2004) in the following ways:

- 1. Limits the number of alternate groupings of subtests to a small number of carefully chosen clusters.
- 2. Does not advocate the interpretation of subtest-specific abilities under any circumstances.
- 3. Blends ipsative assessment with normative assessments
- 4. Descriptive categories are the same as those used for the WISC IV.

#### **Summary of KABC-II**

The KABC II can be interpreted from both a CHC and Luria perspective. The global score measuring general mental processing ability from the Luria perspective is the Mental Processing Index (MPI), and the global score measuring general cognitive ability from the CHC perspective is the Fluid-Crystallized Index (FCI). Only the first two steps are considered essential as outlined in the manual. (Kaufman and Kaufman, 2004) The six interpretive steps (Kaufman et al, 2005) are the foundation for the CHD and MPI interpretation. The KABC-II Interpretive Worksheet (Appendix) assists with summarizing each step of the profile.

#### Suggested Readings on Interpreting the KABC-II:

Kaufman, A., Lichtenberger, E., Fletcher-Janzen, E., & Kaufman, N. (2005). Essentials of KABC-II Assessment. Hoboken, NJ: John Wiley & Sons.

National Association of School Psychologists. (2008). Best Practices in School Psychology V. Bethesda, MD: Thomas, A., & Grimes, J.

#### Part C: Interpretation Using Cross-Battery Assessment (XBA)

While teams may use the Cross-Battery Approach when applying the Cultural Language Interpretive Matrix, as applied with culturally and linguistically diverse learners, there is nothing that precludes using the inherent logic in this approach to other applications when doing an evaluation. The Cross-Battery Assessment approach includes a set of research-based interpretive guidelines that allow practitioners to interpret data from one or more batteries from Cattel-Horn-Carroll (CHC) theory and research using psychometrically defensible methods. The link between CHC theory and student achievement are addressed in the *CHC Theory of Cognitive Processing* (see chapter 8 Table 8-2), which may provide assistance in the interpretation of test results.

Stages within the Framework for Cross-Battery Assessment and Interpretation (Flanagan et al, 2007) provides an overview of the steps. Complete descriptions of these processes, however, are beyond the scope of the SLD Manual. See Flanagan, Ortiz, & Alfonso (2007), Thomas & Grimes (2008), and Kaufman, et al. (2005) for further information.

**Note:** The department is not specifically endorsing one methodology over another; but is identifying Cross-Battery as one quality practice because it has operationalized steps and research to support interpretation and conclusions. Practitioners should take steps to ensure any adopted methodology is implemented with fidelity. As more research-based methods are operationalized for standardized analysis and interpretation become available, they will be included as well.

# Part D Application of Cross-Battery for Interpreting Cognitive Assessment of ELL Students

Cognitive assessment with ELL students is problematic due to both linguistic and cultural factors that make students of concern not comparable to those who were represented in the normative samples on which most standardized tests are based. When this assumption of comparability is violated, the assessment may be invalid and discriminatory (Ortiz & Ochoa, 2005).

When this lack of comparability occurs, the alternative model calls upon the psychologist to redefine the purpose of the intellectual assessment. It is not to derive a standard score that might be used for discrepancy determination. It is to administer the best available nonverbal and low culturally loaded measures to estimate a range of functioning. Consistency with other assessments of academic skills, first and second language proficiency, and adaptive functioning should be considered in deriving this estimate. On this basis, the psychologist should be able to either rule out Developmental Cognitive Disability as a likely hypothesis or to rule it in as a possibility. The latter possibility would of course signal the requirement for further assessment.

With the first scenario, the psychologist and evaluation team may turn their attention to the question of to what extent is the student's academic achievement significantly different from that of grade-level peers with the same linguistic and cultural background, and similar educational experiences. Some large urban districts have found it useful to systematically collect such academic norms for their various ELL groups in order to facilitate such judgments of discrepancy. The measures generally used have been curriculum-based measures, which are direct, brief, sensitive to growth, and have demonstrated reliability and validity (Lau & Blatchley, 2009). In this application of these measures, the norms represent expected achievement on the part of a linguistically and culturally unique population of students. The size of this discrepancy, along with all other assessment data, has been found to be a valid index of the possibility of disability in the target student.

When districts lack the resources or the critical mass of ELL students to justify the collection of norms, it is possible to collect data on a smaller group in order to make less formal comparisons. One of the advantages of this model is that the same curriculum based measures may be used for progress monitoring to evaluate the effectiveness of the Tier 2 or 3 interventions being applied with the student. This data could also be used to validate the accuracy of judgments about the student's performance made earlier in the process. The rate of a student's academic learning over time is a very basic yet powerful measure for analysis.

#### **Overview of the Cross Battery Approach**

The research-based guiding principles address the test selection process. The step-by-step process starts from the selected intelligence battery to the interpretation of data. "Enter data into the XBA DMIA" refers to the CD ROM included with the book Essentials of Cross Battery Assessment-Second Edition, which contains three programs that allow users to enter data and review results: the Cross Battery Assessment Data Management and Interpretive Assistant; the Specific Learning Disability Assistant; and the Culture-Language Interpretive Matrix (C-LIM).

The Culturally and Linguistically Diverse (CLD) corresponds to application of Cross Battery to CLD assessments.

Table 9-12

Overview of Cross-Battery Approach (Applications)

Guiding Principles	Step-by-Step Process	CLD Populations			
Select battery that best addresses referral concerns	Select intelligence battery	Review C-LTC and select tests that are likely to be most fair			
Use clusters based on actual norms when possible	Identify Broad and narrow CHC abilities measured by battery	Include tests from C-LTC needed for referral despite CHC classification			
Select tests classified through an acceptable method	Select tests to measure CHC abilities not measured by battery	Administer entire collection of tests selected in standardized way			
When broad ability is underrepresented, obtain from another battery	Administer battery and supplemental tests as necessary	Use C-LIM to compare results to expected pattern of performance			
When crossing batteries, use tests developed and normed within a few years	Enter data into XBA DMIA	If pattern evident, results are invalid, cannot interpret data further			
Select tests from the smallest number of batteries to minimize error	Follow XBA interpretive guidelines	If no pattern, results are valid, interpret via XBA guidelines			

**Note:** CHC=Cattell-Horn-Carroll; C-LTC=Culture-Language Test Classifications; C-LIM=Culture-Language Interpretive Matrix; CLD=Culturally and Linguistically Diverse; XBA DMIA=Cross-Battery Assessment Data Management and Interpretive Assistant. Essentials of Cross-Battery Assessment, Second Edition, 2007.

The following FAQs should answer some commonly asked questions about the Assessment.

Table 9-13
FAQs: Intellectual Assessment of Culturally and Linguistically Diverse Students

Question	Answer				
To use Culture-Language Test Classifications (C- LTC) and Culture- Language Interpretive Matrix (C-LIM), must I use "CHC Cross-Battery Assessment"?	No. Any combination of tests or test battery is acceptable; C-LTC and C-LIM are used to analyze and interpret the results. The administration of the culture-language test classifications are independent of what the tests are actually designed to measure. Their organization is based on the degree to which they share the characteristics of cultural loading and linguistic demand rather than a particular cognitive ability, such as visual or auditory processing.				
How do we handle a student whose language profile is blacked out on the "Ochoa & Ortiz Multidimensional Assessment Model (MAMBI)?"	Exceptions to the "illogical" or "improbable" classifications include: <b>Refugee students</b> who arrive in the U.S. at older ages with no or very limited prior schooling. Those who have begun or have already learned English may display language Profile 2 (L1 emergent/L2 minimal) or Profile 3 (L1 fluent/L2 minimal). The length of time the student has received formal education and how long they have been learning English is critical. High school students may in fact have few years of formal instruction and learning English. Treat these as similar to students who display profile 2 within the K-4 category. Evaluate the student's developmental pattern as opposed to relying solely on age or grade placement.				
	International adoptees or refugees who lost or had limited native language development and have learned English within the adopted home might display Profile 7 (L1 limited/L2 fluent) or Profile 8 (L1 emergent/ L2 fluent). The recommended mode of evaluation would be more like Profiles 2 and 4 within the K-4 category.				
MAMBI seems to equate CALP with reading/writing skills. Discuss late-arriving refugees without prior schooling or literacy skills with higher skills in oral expression & reasoning.	The concept of CALP has never been strictly specified from a theoretical standpoint and thus how it is to be operationalized can vary significantly. Generally, reading and writing are components of CALP which emerge as a function of formal schooling. Yet, it is possible that students develop higher order skills related to oral language use and communication that are evidence of some type of CALP. This level of CALP may be measured by SOLOM informally or by Bilingual Verbal Abilities Test (BVAT) formally.				
The Ochoa & Ortiz MAMBI seems to imply that students who are served primarily in ESL programs cannot be identified as students with Specific Learning Disabilities. Is this true?	No. Students served in ESL-only and general programs are equally identifiable. The only reason it seems that it is harder is that the lack of native language instruction needs to be ruled out as the primary cause for the student's learning problems. This is not impossible, only difficult as compared to students in native language programs where the issue has already been dealt with. Thus, with students in native language programs, instructional factors are much more easily eliminated as possible causes of observed learning difficulties.				

Question	Answer
The link between MAMBI and C-LTC/C-LIM is unclear. When recommending assessments in English as the primary or secondary assessment mode, should C-LTC/C-LIM be used?	MAMBI provides guidance on the method, e.g., native language or bilingual which is likely to yield the fairest estimates of actual ability. If C-LTC/C-LIM is not used, MAMBI leads to the least discriminatory mode of assessment. Use C-LTC after choosing assessment modality to "hand pick" the tests that measure the constructs of interest with the least amount of cultural loading or linguistic demand and bias leading to fairest evaluation of the student's abilities. Use C-LIM to analyze test results, MAMBI to select the modality, C-LTC to select the fairest tests within that modality, and C-LIM to interpret the results.
C-LTC categorizes subtests according to low/ medium/ high language demand and cultural loading. Is it appropriate to plot student's language and cultural background (low/medium/high), English proficiency and low/medium/high degree of acculturation? If so, how do the categories correlate to the various language profiles on the MAMBI?	Yes, determine the student's degree of "difference" in terms of English language proficiency and level of acculturation. The language profiles in MAMBI would break down as follows: minimal (CALP level=1 or 2) is "low," emergent (CALP level=3) is "moderate" and fluent (CALP level=4 or 5) is "high." Levels of acculturation can also be equated fairly simply and in the same manner from results of acculturation checklists or other data and information that were gathered. Thus, in terms of "difference," which is the key to fair assessment and interpretation, individuals with high degrees of English proficiency and high degrees of acculturation would be only "slightly different." Those with more moderate levels of proficiency and acculturation would just be "different" or "moderately different." Those with low levels of proficiency and acculturation would be "markedly different." Note that proficiency and acculturation are highly related to and predict each other. Thus, although possible, it's unlikely that a student will be at two different levels at the same time and any such differences ultimately must be resolved into one category or another.
The UNIT is designed to evaluate verbal reasoning skills through nonverbal means. Do you think it does so adequately?	No. The kind of internal, meta-linguistic processes that people may use during the completion of a task are not the same as the overt use of receptive and expressive oral language skills that are demanded and measured by other tasks. No compelling evidence shows that self-talk is required for completing tasks on the UNIT. They may well be completed without any internal verbal mediation. In short, the only appropriate and valid way to measure verbal reasoning skills is through verbal reasoning tasks.
Should the UNIT be used as a stand-alone instrument (as the only measure of intellectual ability)? If not, what additional measures should it be combined with?	The UNIT is used as a stand-alone measure of intellectual ability in some circumstances, particularly if the results are analyzed via C-LIM. However, when culture and language are ruled out as primary influences on the results, practitioners may find that they have measured a relatively limited range of cognitive abilities. The UNIT tends to measure visual processing (Gv) almost exclusively with one test of fluid intelligence (Gf) added. Thus Gv is well represented on the UNIT, but Gf is underrepresented and many important areas of functioning, such as short-term memory, auditory processing, long-term retrieval, processing speed, etc., are not represented at all. Thus, if a more comprehensive evaluation of cognitive abilities is desired, supplementing the UNIT is necessary. Give subtests from the WJ III cognitive battery as it contains at least two good measures of all of the abilities that may be relevant or of interest.

Question	Answer
Should interpreters be used in the administration of the UNIT?	The UNIT can be administered entirely in pantomime using eight gestures provided in the instructions. However, how these gestures (which represent a de facto language and communication system) are to be taught to an individual who does not speak or understand English is unclear. Therefore, the UNIT can be administered via use of an interpreter subject to the conditions described in the section above on "Native Language Assessment and the Use of Interpreters." This person should ensure that the student knows the purpose of the activity, when to start, stop, and when to work quickly.
Many batteries place a premium on speed and quick responses. Are modifications in administration such as allowing more time recommended?	Yes, but only in cases where the test has already been administered in English in a standardized manner. The second administration, presumably conducted in the native-language via a translator or via a native-language test, is the recommended point at which modifications such as removing time constraints, testing the limits, additional mediation, and so forth should be employed. But the ability to draw valid and equitable inferences from the data rests on following the procedures outline above in the section titled "Native Language Assessment and the Use of Interpreters."

Note: Developed in collaboration with Dr. Samuel O. Ortiz, St. John's University, New York.

## Suggested Readings for Interpreting Cognitive Abilities of Culturally Diverse Learners:

Flanagan, D., Ortiz, S., and Alfonso, V. (2007). Essentials of Cross-Battery Assessment. Hoboken, N.J. John Wiley & Sons.

Kaufman, A., Lichtenberger, E., Fletcher-Janzen, E., & Kaufman, N. (2005). Essentials of KABC-II Assessment. Hoboken, NJ: John Wiley & Sons.

National Association of School Psychologists. (2008). Best Practices in School Psychology V. Bethesda, MD: Thomas, A., & Grimes, J.

### **Analyzing the Problem - Applying the Discrepancy Formula**

The required level necessary to determine a severe discrepancy between general intellectual ability and achievement is -1.75 standard deviations (SD) below the mean of the distribution of difference scores for the general population of individuals at the student's chronological age.

A severe discrepancy must be determined with individually administered standardized tests using standard procedures. Both general intellectual ability and achievement levels must be assessed with these practices. When the standardized assessment is complete, the Minnesota Regression Table must be used to determine a severe discrepancy; it is included at the end of this section. A subtest, a screening instrument, or diagnostic test score may not be used to calculate a severe discrepancy.

Broad abilities are analyzed to identify suspected areas of strength and weakness. Although eligibility decisions may be made off of broad or cluster scores, cluster scores should be used for validating eligibility decisions as they are more narrowly focused and go further in identifying relevant performance differences within the individual and compared to a normative group.

Best practice indicates that cluster scores be comprised of at least two or three subtests which are under the test's same theory of cognitive abilities/processes, and preferably developmentally appropriate to the individual being tested. Subtest scores may be used to further understand the nature of strengths and weaknesses as well as direct focus during instructional planning and goal setting. Only use global intelligence scores when there is no significant factor or subtest variability. Use only broad or cluster scores to analyze achievement.

#### **Minnesota Regression Table**

Use the Minnesota Regression Table to determine a severe discrepancy consistent with state criteria. In previous practice, teams were to assume a .62 correlation and used only that column to determine discrepancy. For more accurate practice, current research tells us to identify and use the appropriate correlation for the specific ability test and the achievement test used in the assessment.

The steps below show how to accurately use the Minnesota Regression Table.

**Step 1:** Find the correlation between the ability and achievement tests administered to the student. Such information will usually be available at different age levels in the technical manuals provided by the test publishers. It is helpful to consult with someone who is well-versed in the technical aspects of tests, such as a school psychologist, to locate the information. If a specific correlation is not available, use the .62 correlation column.

**Step 2:** If the student's achievement score (standard score) is equal to or less than the score reported in the correlation column, then the student's discrepancy is considered severe and meets this part of the SLD eligibility criteria. Caution: This is just one of three criteria for SLD eligibility. The team must also verify and document the presence of the other two criteria elements (severe underachievement and basic psychological processing condition).

**Step 3:** The team must verify this discrepancy through other measures such as observation, performance-based measures, etc.

#### **Minnesota Regression Formula**

In order to provide the cutoff values tabled for an achievement test, a regression formula was chosen. Expected achievement scores were calculated for each IQ. The regression formula has the general form (Ferguson, 1966):

$$Y = [rxy Sy(IQ - x)] \div [y Sx]$$

where

Y = the expected achievement score for a given IQ score

rxy = the IQ – achievement score correlation

Sy = the standard deviation of the achievement scores

x = the mean IQ

Sx = the standard deviation of the IQ scores

y = the mean achievement standard score

The next calculation in this discrepancy formula is to determine a significant (severe) deviation from the expected achievement score. This is accomplished by defining discrepancy in terms of standard deviation units from the expected achievement scores.

The average standard deviation can be determined without actually computing these values (scores) for each of the achievement distributions. With a large sample, the average standard deviation can be directly obtained from the equation for the standard error of estimate (measurement) (Blommers and Lindquist, 1960):

$$SD_v \sqrt{(1-r_{xv}^2)}$$

Where:

SD<sub>v</sub> = the standard deviation of all of the achievement scores

r<sub>xx</sub> = the IQ-achievement score correlation

For Minnesota criteria this value is  $SD_y \sqrt{1-r_{xy}^2}$  which is then multiplied by 1.75 (the criteria established in Minnesota rule) and subtracted from the expected achievement score resulting in achievement cutoff scores.

In absence of other correlation information the practice in the field has been to use the .62 correlation column in the Minnesota Regression Table. The .62 correlation column is closest to a .63 correlation. The estimate of .63 was obtained by accepting 70 percent of the theoretical limit of the true correlation as the correlation between ability and achievement. Seventy percent was chosen because it was found most accurate in predicting known correlation coefficients.

The Minnesota Regression Table below shows the correlation between ability and achievement tests.

Ability	Correlation										
Score	.32	.37	.42	.47	.52	.57	.62	.67	.72	.77	.82
	Achievement Standard Scores										
75	67	66	66	65	65	64	64	64	64	64	64
76	67	67	67	66	66	65	65	65	64	65	65
77	68	67	67	66	66	65	65	65	65	66	66
78	68	67	67	66	66	66	66	66	66	66	66
79	68	68	67	67	67	66	66	66	67	67	68
80	69	69	68	68	67	67	67	67	67	68	69
81	69	69	68	68	68	68	68	68	68	69	69
82	69	69	69	68	68	68	68	68	69	69	70
83	70	69	69	69	69	69	69	69	70	70	71
84	70	70	69	69	69	69	69	70	70	71	72
85	70	70	70	70	70	70	70	70	71	72	73
86	71	70	70	70	70	70	71	71	72	72	73
87	71	70	71	71	71	71	71	72	72	73	74
88	71	70	71	71	71	72	72	72	73	74	75
89	72	72	72	72	72	72	73	73	74	75	76
90	72	72	72	72	72	73	73	74	75	76	77
91	72	72	72	73	73	73	74	74	75	76	78
92	73	73	73	73	73	74	74	75	76	77	78
93	73	73	73	74	74	74	75	76	77	78	89
94	73	73	74	74	74	75	76	76	77	79	80
95	74	74	74	74	75	76	76	77	78	79	81
96	74	74	74	75	75	76	77	78	79	80	82
97	74	75	75	75	76	77	78	79	80	81	83
98	74	75	75	76	77	77	78	79	80	82	83
99	75	75	76	76	77	78	79	80	81	82	84
100	75	76	76	77	78	78	79	81	82	83	85
101	75	76	77	77	78	79	80	81	83	84	86
102	76	76	77	78	79	80	81	82	83	85	87
103	76	77	77	78	79	80	81	83	84	86	87
104	76	77	78	79	80	81	82	83	85	86	88
105	77	77	78	79	80	81	83	84	85	87	89
106	77	78	79	80	81	82	83	85	86	88	90
107	77	78	79	80	81	82	84	85	87	89	91
108	78	79	80	81	82	83	84	86	88	89	92
109	78	79	80	81	82	84	85	87	88	90	92
110	78 70	79	80	82	83	84	86	87	89	91	93
111 112	79 70	80	81	82	83 83	85	86	88	90	92	94
112	79 70	80	81 82	82	83 84	85 86	86	88	90	92	94
114	79 80	80 81	82	83 83	85 85	86	87 88	89 90	91 92	93 94	96 96
115	80	81	82	84	85	87	89	90	93	95	96
116	80	82	83	84	86	88	89	91	93	96	98
117	81	82	83	85	86	88	90	92	93	96	99
118		82	84	85		89	91	93	95		100
110	81	02	04	00	87	69	91	93	90	97	100

Ability	Correlation										
Score	.32	.37	.42	.47	.52	.57	.62	.67	.72	.77	.82
	Achievement Standard Scores										
119	81	83	84	86	87	89	91	93	95	98	101
120	82	83	85	86	88	90	92	94	96	99	101
121	82	83	85	87	88	90	92	95	97	99	102
122	82	84	85	87	89	91	93	95	98	100	103
123	82	84	86	88	90	92	94	96	98	101	104
124	83	84	86	88	90	92	94	97	99	102	105
125	83	85	87	89	91	93	95	97	100	103	105
126	83	85	87	89	91	93	96	98	101	103	106
127	84	86	88	90	92	94	96	99	101	104	107
128	84	86	88	90	92	94	97	99	102	105	108
129	84	86	88	90	93	95	97	100	103	106	109

**Note:** Both the ability and achievement scores are based on a mean standard score of 100 with a standard deviation of ±15. In constructing this table, standard scores were rounded to the nearest whole number.

#### Scores of Less Than 75

The Minnesota Regression Table may not be used with standard scores on measures of general intellectual ability of less than 75 for two reasons. First, there is a general concern in the field that the correlation between tests and the reliability of individual tests is low at a level greater than two standard deviations from the mean, making the statistical comparison difficult.

Second, the effects of cognitive impairment on achievement must be discussed and ruled out as the primary reason for a student's underachievement (see Exclusionary Factors in Chapter 7). The IEP team must discuss general academic expectations for a student with low ability. Ruling out the effects of a cognitive impairment on achievement is difficult. IEP teams may not extend the Minnesota Regression Table to include lower scores. The scores on the Minnesota Regression Table are computed using a regression formula (see Appendix C). Scores of 75 or lower require an override.

#### Specific Guidance in Applying the Discrepancy Formula

In instances where a student was referred, but standardized achievement data indicate within grade-level or ability level expectations, a determination of SLD eligibility will not likely be substantiated. The team may wish to problem-solve why performance on assessments is higher than classroom functioning.

Students with exceptionally high abilities may very well exhibit intra-individual discrepancies. A discrepancy between achievement and aptitude must be put in the context of grade-level expectations. If the student is performing within what is expected of his/her age or state approved grade-level standards, a determination of SLD may not be appropriate. There is no legal obligation to provide specialized services for a student performing within grade-level.

If the discrepancy is not in the area of referral concern, the team should ask why it was not identified during the problem identification phase of comprehensive evaluation.

When the area of concern identified through comprehensive evaluation is not connected to the referral concern, the team should revisit the first step in the problem-solving process to understand how the data informs accurate identification of the learning problem. The team should examine multiple sources of data to look for a connection to inadequate achievement vis-à-vis age or state-approved grade-level standards.

#### Other Example Questions to Consider:

- Did the curriculum and instruction provided address the needed skill development?
- How was the hypothesis of the problem defined?
- What did progress monitoring and changes in the interventions indicate?
- Were multiple sources of data used? Is there a mismatch between curriculum expectations and norms of standardized assessments?
- Does analysis of standardized achievement results indicate a low subtest score that might have other implications? For example, low spelling scores reflect proficiency of reading skills more than written expression.
- In a setting where students have more that one teacher for academic subjects, does teacher A "never refer" students, while teacher B does refer within his/her subject area?
- Were cultural and linguistic factors considered?

Teachers' concerns are frequently based on their perception of the student's primary area of concern based on the data, observations, and their professional judgment. The purpose of the comprehensive evaluation process is to determine if eligibility for a disability has been met.

#### Specific Guidance to Interpret Data to Determine Discrepancy in Reading Fluency

The following suggestive guidance and procedures from Minnesota Department of Education is not mandated. They apply under the following circumstances:

- The student has been referred for a concern in the area of reading fluency and interventions have been implemented to improve reading fluency.
- Student does not qualify via criteria for basic reading skills or reading comprehension.
  - o If student meets criteria in basic reading skills, there would be no need to determine eligibility in the area of reading fluency. In the evaluation report, document the need for specialized instruction in reading fluency when need for instruction can be accounted for beyond what is attributable to poor accuracy in basic reading skills.
  - If the student meets criteria for inadequate achievement in reading comprehension, the team should use reading comprehension for meeting eligibility criteria. The team would need to note that data indicates a need for specially designed instruction in reading fluency in the evaluation report.

When interpretation of multiple sources of data indicates that the student has accurate decoding skills, inadequate reading rate and poor prosody despite high-quality instruction, further evaluation for meeting criteria in reading fluency may be justified. The following procedures for identifying discrepancy in the area of reading fluency follow

quality practices in problem identification as well as being psychometrically defensible.

To identify an inadequate achievement in reading fluency, we suggest using multiple data sources, gathered across time.

#### Step 1:

- 1. Evaluate progress-monitoring data from pre-referral interventions that were delivered with fidelity, well matched to student needs, and proven effective to accelerate growth in fluency skills across time (see National Center on Student Progress Monitoring for definitions and sample tools).
- 2. Document how well the student responded to explicit attempts to improve fluency. Note what worked and did not work given intensive interventions.
- 3. If progress-monitoring data was not gathered, interventions were not administered faithfully, or data gathered during interventions is not valid or reliable, gather multiple measures of reading fluency and look for convergence in the standardized assessment data (2 of 3 independent measures).
- 4. Look for error rates to decrease and accuracy to increase to 95 percent with rate of reading approaching grade-level or benchmark expectations.

**Note:** At this time there is currently not a test or group of tests that would yield a cluster score for calculating a discrepancy in reading fluency. Scores from independent measures should not be aggregated and used to calculate a discrepancy.

#### Step 2:

 Measure two of the three aspects of fluency important in facilitating reading comprehension (accuracy, rate, and prosody). Prosody is not likely to develop if accuracy and rate are significantly below expectations.

**Note:** For more information on assessments see lists of assessments and tools (see attached lists of assessments).

2. Consider data from multiple fluency measures to identify what skills the student is able to perform proficiently (see also the diagnostic sequence in the appendix for more details). Lower scores on measures of connected text than word lists may indicate slower oral production, orthographic processing normative weakness, or lack of automaticity in decoding skills. If the student also has lower scores in spelling and morphographic knowledge an orthographic processing a normative weakness is more likely.

#### Step 3:

- 1. If, through an analysis of multiple sources of data, the team can rule out accuracy in decoding or word identification, then it may also rule out oral motor production concerns.
- 2. If oral motor production problem exists, use alternative measures to establish poor reading fluency (e.g., MAZE when appropriate). Silent reading fluency measures do not allow analysis of decoding skills, so they should be considered after accuracy of decoding has been established.

#### Step 4:

- 1. Determine the extent to which inadequate fluency is adversely impacting reading comprehension.
  - o Does student comprehend despite low oral reading rate?
  - o What types of comprehension tasks prove easier more difficult?
  - How well does the student score on vocabulary measures or language measures? Students with only a fluency problem are less likely to have normative weakness in language or weaknesses in vocabulary. The exception may be instances where a student has both a phonological processing normative weakness and a rapid naming normative weakness.
- 2. When both phonological and rapid naming normative weaknesses exist, the student may present with accuracy and fluency problems and lower vocabulary scores.
- 3. Teams should consider first qualifying the student using basic reading skills and include services for both word attack and fluency.

#### Step 5:

- 1. Establish a case and document low achievement in the area of reading fluency that is discrepant from what would be predicted by global ability index scores.
- 2. Incorporate the following data into the evaluation report:
  - Data from repeated measures or progress monitoring indicating that student is not responding to high-quality instruction or research-based interventions in fluency.
  - Data on accuracy, rate, and prosody has been evaluated and summarized. Scores should be judged as significantly lower than age or state approved grade-level standards, or intellectual development.
  - Data indicating impact of performance in spelling and comprehension not primarily attributable to a normative weaknesses in language or vocabulary.
  - Data indicating normative a normative weakness in processing speed, working memory, short-term memory, associative long-term memory, orthographic processing, or oral motor production as corroborating evidence of an information-processing normative weakness.
  - Until a cluster score for fluency can be calculated, teams may establish a
    case for an override. The next two steps are crucial to making a case for
    an override. Document the sources of valid and reliable evidence that the
    team believes indicate greatest relative importance for establishing a
    discrepancy between what would be expected (IQ or GAI scores) and
    current level of performance (fluency scores).
  - o If a cluster score is not available explain why the procedures if used would not yield a valid and reliable discrepancy score. For example, an override is justifiable because psychometrically defensible assessments are not yet available provide a cluster score (of accuracy, rate and prosody) that can be included within the discrepancy calculation.

**Important:** MDE does not recommend specific tests to identify inadequate achievement in fluency. However, districts are required to use tests for the purposes for which they were designed. Tests should be technically adequate, developmentally appropriate, and reflect the nature of task demands in the classroom. Teams should be intimately aware of what the test measures and the appropriateness of the measure used to establish levels of achievement, etc. According to Christine Espin's Ph.D. work with Curriculum Based Measures MAZE scores are measures of fluency, not comprehension.

#### **External Evaluation**

Outside evaluations are those assessments and evaluations conducted outside of the school setting. These can be initiated by either the school or the parent. Some reasons that either party may seek this type of assessment are:

- The school does not have personnel qualified to conduct the necessary evaluation.
- Parents may seek outside assessment prior to the school team moving to the evaluation process.
- Parents may request or bring in outside evaluations that identify medical diagnoses such as Central Auditory Processing Disorder, Attention Deficit Hyperactivity Disorder, Non-verbal Learning Disability, Fetal Alcohol Syndrome, etc.
- Parents may wish to have an evaluation completed by an impartial person.
- Parents have the right to request an independent educational evaluation (IEE) should they disagree with the conclusions from the school assessment and evaluation.
- A hearing officer or court order requires it.

Parents may request an independent educational evaluation at the school district's expense if the parents disagree with the school district's evaluation results. While the team must consider information from an outside evaluation, it can accept it in part or whole or reject the information if it has data to dispute the findings. A diagnosis made according to DSM or other independent diagnostic criteria is not synonymous with federal regulations governing Special Education Eligibility.

According to federal and state special education rules, a student may have a disability or impairment that is not a disability for educational purposes. For example, the student may have a disability (such as Dyslexia or ADHD), but may not be in need of special education and related services. However, that same student may be in need of accommodations made available through a Section 504 plan.

According to federal and state special education rules, a student may have a disability or impairment that is not a disability for educational purposes.

It is the responsibility of the team determining eligibility to take seriously the findings of an outside evaluation and apply them to a two pronged test. Do the findings meet the Federal definition of disability (criteria in one of 13 categories)? Does the student's disability interfere with learning and require specially designed instruction to make progress in the general curriculum?

The following figure depicts the process of considering outside evaluation data. When the team is presented with a medical diagnosis or diagnosed disorder, it must weigh it against the criteria outlined in the federal definition of a disability. It must also determine the impact on a student's learning. The impact on learning is likely to determine whether the student meets criteria and need for a 504 plan or an IEP.

#### **Twice-Exceptional Students**

For a student that is twice exceptional, identified with a diagnosed disorder and advanced abilities, the goal may be to design instruction to both accommodate advanced abilities and accelerate achievement of below grade-level abilities.

The Twice-Exceptional Student also needs to demonstrate a need for specially designed instructional services. Federal regulations and state statutes require the student to be demonstrating inadequate achievement according to state approved grade-level standards in one of the eight areas (listening comprehension, oral expression, basic reading skills, reading fluency, reading comprehension, written expression, mathematics calculation, mathematical problem solving).

**Important:** The rest of this section provides specific guidance on issues related to using independent evaluation data.

#### **Parent Rights**

Rule language does not preclude teams from considering intervention data gathered from tutoring. To be clear, teams should discuss the nature of data gathered, the evidence-based practice being used and the fidelity of instruction. Regardless of where the intervention data comes from, to be used as evidence for meeting eligibility criteria all intervention data considered within the comprehensive evaluation needs to meet state criteria under Subpart 2 D.

## Communicating with Parents Seeking/Bringing Independent Educational Evaluation (IEE) Data to the Team

Parents may bring an outside evaluation to the school district staff for consideration during the evaluation process. The district is not obligated to accept that information but only to seriously consider that data.

If the parents ask the school about an independent educational evaluation that the parents have funded but want the school district to consider, the parents must understand that the outside evaluation does not necessarily take priority over the school district evaluation.

#### Connecting Independent Educational Evaluations (IEEs) with Scientific Research-Based Intervention (SRBI) data

• District staff should check if they are evaluating the same thing as the independent evaluator or something different. The differences should be explained to the parent. Schools need to know when in the process the independent educational evaluation was completed. Given data from the independent evaluation, teams should consider the likely effectiveness of intervention efforts. Any data that can be used to further identify the learning problem and necessary ongoing instructional supports should be included in the problem-solving process. Refer to the section on re-analyzing the problem within this chapter for how to manage data that is contradictory.

#### The team may incorrectly determine the student has an SLD because:

- Parent(s) and their attorney are pressing for special education services; the path of least resistance may be to identify the student with SLD.
- Every year the parent(s) request a comprehensive assessment in writing.

The identification of SLD has long-term consequences, both positive and negative for the student and the family. In instances where data from an independent evaluation indicates a diagnosis of a disorder, teams have an obligation to seriously consider the results of that evaluation.

If there is no or limited impact on educational performance, the student may have a diagnosis of a disorder, but be taught in the general education setting. If there is "substantial impact on a major life function" and the student requires accommodations to access the general curriculum, then the student may qualify for a 504 plan (Section 504 of the Rehabilitation Act). The multi-disciplinary team may decide to move forward with interpreting the data for the purposes of designing appropriate 504 accommodations and modifications. This step may require convening another meeting with staff responsible for making 504 determinations. If the multi-disciplinary team determines that in addition to the data from the independent evaluation, there is data sufficient to meet state SLD criteria, then the student may be eligible for special education services.

# Interpreting Data for Young Students Aging Out of Developmental Delay (DD)

The following checklist may assist teams in determining eligibility for students aging out of Developmental Delay.

- Review existing and new assessment data.
- Review medical history (include information from non-school service providers, including the parents), developmental history and social history.
- Review student's present level of educational performance and progress monitoring data over time that was provided in the ECSE and/or kindergarten program.
   Determine if the areas of achievement or behavior are reliably displayed, unique to a student with a disability and adversely impacting achievement in a meaningful manner.
- Determine which of the eight areas of inadequate achievement are impaired.
   Determine whether the young student receiving services under the ECSE or general education program will be assessed for a suspected specific learning disability or will be exited from special education services. Students who exit from DD, but do not meet SLD criteria, may need to be screened for targeted intervention, additional curriculum supports or accommodations provided within general education in order to make progress in the general curriculum.

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