

# SLD Evaluation: Linking Cognitive Assessment Data to Learning Strategies

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**The Individuals with Disabilities Education Improvement Act (IDEA) 2004, and subsequent regulations published August 2006 have significantly changed the way students suspected of having specific learning disabilities (SLD) are identified and found eligible for special education.**



According to the 2006 IDEA regulations (§300.307) concerning SLD, each state must adopt criteria for determining

whether a child has a specific learning disability as defined by §300.8 (c)(10) that:

1. must not require the use of severe discrepancy between intellectual ability and achievement for determining whether a child has a specific learning disability as defined in §300.8 (c)(10);
2. must permit the use of a process based on the child's response to scientific, research-based intervention; and
3. may permit the use of other alternative research-based procedures for determining whether a child has a specific learning disability as defined in §300.8 (c)(10); (IDEA, 20 U.S.C. §1414 (b)(6)(A).

Local education agencies (LEAs) must use criteria set forth by their respective State Education Agencies (SEAs). While the federal government provides guidelines for state educational agencies to follow, individual states are charged with the responsibility of setting the criteria to be used by local education agencies. A recent study (Schultz & Stephens, 2008) conducted to identify the criteria of SLD identification used by each of the fifty states indicate many states allow the option of other alternative research-based procedures along with severe discrepancy and a process based on RTI. The present article will describe one of these alternative based assessment procedures, specifically the processing deficit approaches, and how it may assist educators in linking specific strategies to address the unique needs of a student with SLD.

# Cognitive Processing Deficit Approaches

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Several states allow assessment personnel to use a “research-based alternative eligibility method” when determining SLD eligibility. Of the fifty states, twenty-one (N = 21) allow for the use of an alternative method of eligibility, generally by determining if a student exhibits a pattern of strengths and weaknesses and/or examining specific areas of cognitive processes that interfere with learning.

SLD identification based on processing deficits approaches has primarily focused on operationalizing the federal definition of SLD and the processes linked to reading. According to Ahearn (2003), there is some agreement among professionals involved in SLD identification that certain psychological processing problems are involved in SLD, such as limitations in working memory capacity, phonological processing deficits, and auditory perception. Identifying SLD by examining processing deficits has also given meaning to the most salient component of the federal definition of SLD—a disorder in one or more of the basic psychological processes (Fiorello, Hale, & Snyder, 2006; Flanagan, Ortiz, Alfonso, & Dynda, A.M., 2006; Kavale, Holdnack, & Mostert, 2005). Perhaps most important inherent in this type of approach is being able to use the data from cognitive assessment to link to specific strategies (Fiorello, Hale, & Snyder, 2006).

In a processing deficit approach, a comprehensive SLD evaluation would include measurement of specific psychological processes that interfere with a student’s ability to perform academically (Flanagan et al., 2006; Kavale et al., 2005). In addition to a thorough examination of exclusionary factors and measures of achievement, this approach measures psychological processes in order to establish logical and empirical links between the psychological process and academic area of concern (Fiorello & Primerano, 2005; Flanagan et al., 2006). For example, deficits in fluid intelligence (Gf) and the links between math achievement have been cited both logically and empirically (Floyd, Evans, & McGrew, 2003) as well as auditory processing (Ga) and reading achievement (Anthony & Francis, 2005; Evans, Floyd, McGrew & Leforgee, 2001; Fiorello et al., 2006; Volker, Lopata, & Cook-Cottone, 2006).

A practical example is illustrated in the Indiana and Texas state regulations regarding SLD identification. Indiana’s Special Education rules (2008) described SLD as neurological in origin and allow intellectual development that is determined by the group to be relevant to the identification of a specific learning disability to be used as evidence to support SLD determination. Specific cognitive processes that are linked to specific academic skills are assessed. For example, nonverbal problem solving, working and long-term memory, processing speed, and attention are assessed when a student has difficulty in math. In a similar fashion, the commissioner’s rules concerning special education in Texas (2008)

permits examining a pattern of strengths and weaknesses and examining specific areas of cognitive processing and linking them to areas of achievement as a method of SLD identification.

In addition to not achieving adequately on age or grade level achievement standards, a student may have SLD if he or she:

(II) exhibits a pattern of strengths and weaknesses in performance, achievement, or both relative to age, grade-level standards, or intellectual ability, as indicated by significant variance among specific areas of cognitive function, such as working memory and verbal comprehension, or between specific areas of cognitive function and academic achievement (p.4).

## Linking Assessment Data to Intervention

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Common criticisms of using severe discrepancy models to identify SLD has been that discrepancy formulas do not inform instruction (Gresham, 2001, Kavale, 2005) and it does not contribute to an understanding of the SLD of a student (Meyer, 2000). Advantages of using cognitive processing deficit approaches to identify students with SLD has been to help practitioners develop targeted interventions based on the students unique needs (Fiorello, Hale, & Snyder, 2006) and to inform further intervention planning when a student fails to respond to RTI efforts prior to referral (Flanagan, Ortiz, Alfonzo, & Dynda, 2006).

The remainder of this article will focus on linking interventions to cognitive assessment data. While several theoretical intelligence models can be used to address cognitive processes, this article will use the Cattell-Horn-Carroll (CHC) theory of intelligence due to the wide range of cognitive abilities described and the significant impact of CHC on test development and revisions (Flanagan, Ortiz, and Alfonzo, 2007). Seven broad basic psychological processes will be briefly described that are commonly measured and examples of interventions and strategies that may be appropriate to use to address deficiencies in these areas.

## Cognitive Processes and Interventions/Strategies

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**Cognitive Process**

**Children with processing deficits  
may benefit from:**

<p><i>Fluid Intelligence:</i> Refers to mental operations that a person uses when presented with a relatively novel task that cannot be performed automatically. Includes concept formation, problem solving, reorganizing and transforming</p>	<p>Step-by-step instructions, problem solving strategies, sequencing skills development, explicit and systematic teaching, categorization skills, and graphic organizers.</p>
<p><i>Crystallized Intelligence:</i> Refers to the breadth and depth of a person's general fund of knowledge. These knowledge stores are acquired through formal school experiences and general life experience. These stores are primarily language based and include both declarative and procedural knowledge.</p>	<p>Relating new information to prior knowledge, vocabulary strategies and instruction, rich learning experiences (e.g., museums, field trips, and virtual field trips), scaffolded instruction, and incorporating student interests in learning.</p>
<p><i>Short-Term Memory:</i> Refers to the ability to apprehend and hold information in immediate awareness and then use it within a few seconds (p. 29).</p>	<p>Short, simple instructions, overlearning, repetition, review, and memory strategies (eg., chunking, mnemonics, verbal rehearsal)</p>
<p><i>Visual Processing:</i> Refers to the ability to think with visual patterns and stimuli. Includes the ability to rotate, reverse, and manipulate spatial configurations, and spatial orientation.</p>	<p>Manipulatives, note taking assistance, graph paper, verbal descriptions of visual stimuli, assist with visual discrimination tasks.</p>
<p><i>Auditory Processing:</i> Refers to the ability to notice, compare, discriminate, and distinguish distinct and separate sounds.</p>	<p>Provide phonological awareness activities (e.g., rhyming, alliteration, songs, imitations), explicit and systematic phonics instructions, and visual aids.</p>
<p><i>Long-term Storage and Retrieval:</i> Refers to the ability of storing new or previously acquired information and then fluently retrieving that information.</p>	<p>Overlearning, repetition, mnemonic instruction, graphic organizers, cues, additional practice and time.</p>

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*Processing Speed:* Refers to the ability to fluently and automatically perform cognitive tasks (mental quickness).

Providing additional time, focus on quality and accuracy, note taking assistance, fluency building (e.g., practicing to reduce cognitive demands, flashcards)

(Cognitive Processes adapted from Flanagan, Ortiz, Alfonso, & Mascolo, 2006, p. 25-30; Interventions/Strategies adapted from Mather and Jaffe, 2002)

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## Conclusion

While the debate on the best method to identify students with SLD will continue, linking intervention and strategies to data obtained from a cognitive assessment holds significant promise to students with SLD. As the states' response to 2006 regulations mature, it will be important for policy makers and researchers to continue to improve upon contemporary and emerging practices.

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