

Recommended Guidelines for the Diagnosis of Children with Learning Disabilities

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Debate about the definition, assessment and diagnosis of Learning Disabilities has occurred since Samuel Kirk coined the term in 1962. The lack of consensus on the definition of LD or its diagnostic criteria contributes to confusion among professionals and the public. We have no intention of resolving the debate. We want to emphasise/propose a standard, step-wise process for psychological diagnosis.

The Road Ahead: Logical Steps in Determination of a Learning Disability

Despite the debates, there is some consensus that the LDAO and LDAC definitions and related criteria serves as sound framework for diagnosing Specific Learning Disabilities. The criteria reflect international research on the link between learning problems and processing deficits. We believe the following steps adapted from Dumont, Willis & McBride (2001) and Harrison (2005) will increase consistency of practice. These steps should be applied in the context of a full assessment, including developmental, medical and educational history, as well as social-emotional functioning.

GUIDING PRINCIPLES

Clinical judgement vs. statistical rules: statistical rules of inference are not a substitute for clinical judgement, but they can (and should) be used to enhance logical decision-making.

An underlying specific learning disability may be suspected when a student's unexpectedly weak academic performance is not meeting curriculum expectations. In cases where poor performance is attributed to weaker cognitive development, weak academic performance is not *unexpected*.

Step 1: Is there a problem with academic performance?

Academic problems may be subtle or difficult to document, but if there are no academic problems at all, there is no Learning Disability. Pay close attention to reports of problems that do not result in low grades even though they interfere with learning. For example, the school may be providing an informal spec. ed. program. Ask yourself:

- Are achievement test results low?
- Is the student receiving low or failing grades?
- Is the student working much too hard or much too long to earn or relying on too much support from others to achieve adequate grades?
- Is the teacher making extraordinary accommodations or curriculum modifications?
- Is there a notably deficient specific area of performance (e.g., tests, homework, note-taking)?

Step 2: What is the best estimate of the student's actual intellectual ability?

Beal et al (2016) argue that "...to efficiently predict a broad range of cognitively driven behaviors, then g – as defined by the Full Scale IQ – is always the best score to use (p66)." Variation between and within the indexes does not necessarily invalidate the FSIQ, nor is variation necessarily proof of underlying cognitive strengths or weaknesses. The authors go on to say that "...such variability then points to the need to shift test interpretation to the index score where the most clinically relevant information is more likely to be found". In other words, g is the best indicator to use to predict and to compare students. However, the job in diagnosis of a learning disability is to consider (and compare) scores within an individual. The job of the psychologist or psychological associate is to determine thinking and reasoning skills and to compare with psychological processing skills.

A best estimate of intellectual ability that is associated with at least average intellectual ability as identified by at least one of the following:

1. Ordinarily, a FSIQ or GAI Standard Score (SS) of 85 or higher.²
2. Where a FSIQ and GAI are deemed as invalid – a composite index measure of verbal or non-verbal ability most closely associated with g that is at or above a SS of 90.
3. A conclusion that intellectual abilities range from the below average to the average or above average and that qualitative judgement is made that a best estimate intellectual ability is average. Or, when cognitive scores are discrepant, a judgement of at least average thinking & reasoning abilities is made based on all the available evidence.

² According to Courville et al (2016), for the WISC-V, unless the difference between the highest and lowest index score is 36 points or more, the difference is not considered clinically meaningful. In this circumstance the FSIQ or GAI is used to establish discrepancies among psychological processes and between ability and performance on academic achievement tests.

Step 3: Are there impairments in one or more basic psychological processes involved in the development of reading, writing, mathematics or oral language?

Harrison (2005), as well as the more recent PPM:8 (MOE, 2014) lists the basic psychological processes as: Phonological processing; Language; Memory and attention; Processing speed; Perceptual-motor processing; Visual-spatial processing; and Executive functions.

Although the list is not exhaustive, nor is it based on any particular model of brain function, clinicians need to be able to demonstrate that the processing disorders are clearly defined, reliably measured, and convincing, but not always only as test scores. Ask yourself, can you make a logical argument that each identified processing deficit manifests itself in impaired academic performance? For example, a visual processing disorder might be reflected in misalignment of math problems. It's much harder to claim a visual processing disorder causes comprehension problems.

A psychological processing impairment or deficit is here defined as:

- A standard score of 84 or lower on two or more processing measures associated with at least one of the psychological processes related to learning (i.e., phonological processing; memory and attention; processing speed; language processing; perceptual-motor processing; visual-spatial processing; executive functions)³ – normative weakness

AND

a non-random, clinically significant discrepancy (at least 1 standard deviation difference or more) between an at least average best-estimate of intellectual ability and one or more of the specific psychological processes related to learning – relative weakness

Step 4: Can you make a logical argument that each identified impairment manifests itself in an academic problem?

There needs to be a logical relationship between the impaired basic psychological process and achievement in school. For example, children with phonological processing impairments have considerable difficulty assigning the right sounds to their symbols (letters) when reading. Misreading individual words compromises meaning. As well, the student has to direct much of their attentional capacity to the mechanics of reading which means less attentional resources

³ While most tests related to intelligence and psychological processing are associated with those psychological processes listed here, there may be cases where other terms better describe a measured psychological process (i.e. sequential reasoning). In such instances, a psychological processing deficit may be referenced as meeting this criteria – of course all other criteria should be met.

are available to track meaning – further compromising comprehension. Children with graphomotor difficulties have difficulty writing, printing and, possibly keyboarding. Children with problems in phonological processing, graphomotor coordination, plus selective attention would be expected to have difficulty across the curriculum.

Step 5: Is there an unexpected underachievement inconsistent with the student's intellectual ability?

There isn't any simple (or complex) formula for determining the significance of such an inconsistency. However, if Steps 1 – 4 have been followed, a persistent pattern of academic difficulties despite adequate ability and opportunity will (or will not) emerge. This will likely present as:

☒ functioning in one or more areas of academic achievement significantly below the expected based on the student's intellectual ability, presenting as a normative weakness (1 SD or more below the mean).

OR

☒ academic achievement that is within expected levels, but is sustainable only by extremely high levels of effort and support.

Step 6: Is the underachievement due primarily to the processing impairment?

It is possible to have a learning disability and another condition, such as ADHD, hearing or vision loss, emotional disorder, cultural/linguistic difference or economic disadvantage. The clinician must be able to rule out these explanations as the primary cause of the learning problem. There must be a logical and convincing argument that explains how the psychological processing deficit impairs performance on unaccommodated academic achievement tasks. Rule out as primary cause:

1. other conditions, such as intellectual disability or global developmental delay, primary sensory deficits (e.g., visual or hearing impairments), or other physical difficulties;
2. environmental factors, such as deprivation, abuse, socio-economic status, cultural differences, lack of proficiency in the language of instruction; or lack of motivation or effort; gaps in schools attendance or inadequate opportunity to benefit from instruction;
3. cultural or linguistic diversity;
4. any other co-existing condition such as Developmental Coordination Disorder, Attention Deficit Hyperactivity Disorder or anxiety.

It is important to emphasize that a specific learning disability is only one explanation as to why a student underachieves. Chronic disengagement for whatever reason and inadequate opportunities to benefit from instruction (i.e. inadequate or inappropriate instruction) often underlie underachievement and give the impression that a SLD exists when it does not. Clinicians are strongly advised to rule out such causes: failure to do so can lead to a false positive diagnosis and inappropriate intervention.

Step 7: A clear and informative diagnostic statement.

Steps 1 through 6 provide a set of guidelines for clinicians to follow when constructing a diagnosis of a Specific Learning Disability. Step 7 involves generating a clear diagnostic statement of a Learning Disability. The recommended form of the preferred statement includes verifying that a student has a Specific Learning Disability as well as the psychological processes that are involved and the areas of academic skills that are affected. The form of the statement would be:

Student has a (Specific) Learning Disability characterized by deficits in (list impaired psychological processes) that affect (list areas of academic achievement).

For example, a diagnostic statement that reflects this format would be:

Student has a (Specific) Learning Disability characterized by deficits in phonological processing that affects reading and writing.

A more complex Learning Disability might read:

Student has a (Specific) Learning Disability characterized by deficits in visual-motor, perceptual-motor and processing speed that affects writing and math.

At what age can a clinician make a diagnosis of SLD?

Before the age of eight the basic psychological processes are still developing, both rapidly and unevenly in normal children and there have been problems validly and reliably diagnosing SLD with younger children. The most salient reason to account for this is the predictive validity of IQ scores at a very young age. Cognitive ability is simply not stable enough at the concrete operational stage and before the stage of operational thought to be making definitive diagnostic decisions about a SLD. Uneven development in young children, and a number of other factors (such as applying formal, standardized tests; lack of the young child's exposure to academic interventions, etc.) further complicate reliably assessing the cognitive abilities of the very young student. Young

students who have difficulty rhyming words or reciting the alphabet may be at higher risk for an emerging LD. Their needs warrant educators' attention and intervention, but not necessarily comprehensive psychoeducational assessment and early diagnosis. In practice, assessment and diagnosis should only be considered after a period of more intensive instruction and support. Diagnosis of a SLD can be confirmed with much greater certainty after the age of eight.

Is it possible to have LD when the FSIQ is Very High or Extremely High and there are significant, relative weaknesses in a psychological process and academic achievement?

While it is theoretically possible for students to be “twice exceptional,” in practice the Learning Disability diagnosis is reserved for those students demonstrating processing weaknesses of at least one standard deviation below average. Caution should be applied when a relative weakness in a psychological process is not weak normatively.

References

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<http://www.edu.gov.on.ca/extra/eng/ppm/ppm8.pdf>

Appendix 1: Tests that Measure Basic Psychological Processes

Phonological processing

CTOPP-2, WIAT-3 Pseudo-word Reading, NEPSY-2 Phonological processing

Process Assessment of the Learner-II, Woodcock-Johnson IV Tests of Cognitive Ability

Memory and attention

WRAML-2, CMS, CVLT-C, WISC-5 WMI; Process Assessment of the Learner-II has excellent tests of auditory working memory pertaining to academic materials

Processing speed

WISC-5 PSI; Woodcock-Johnson IV Tests of Cognitive Development (Processing Speed; Perceptual Speed)

Woodcock-Johnson IV Tests of Oral Language (Speed of Lexical Access; a measure of verbal processing speed) Perceptual-motor processing

Beery-Buktenica Developmental Test of Visual-Motor Integration; Visual Perception; and Fine Motor

Nepsy -II

Visual-spatial processing

Woodcock-Johnson IV Tests of Cognitive Ability

Processing Assessment of the Learner-II (Orthographic Patterns)

Executive functions

D-KEFS, NEPSY-2, CAS-2 Trail Making

Appendix 2: a decision-making tool for LD diagnosis

	Yes	No	Comments:
1. Is there a problem with academic performance?			
<i>Are achievement test results low?</i>			
<i>Is the student receiving low or failing grades?</i>			
<i>Is the student working much too hard or much too long to earn or relying on too much support from others to achieve adequate grades?</i>			
<i>Is the teacher making extraordinary accommodations or curriculum modifications?</i>			
<i>Is there a notably deficient specific area of performance (e.g., tests, homework, note-taking)?</i>			

	Yes	No	COMMENTS:
2. Is there a best estimate of the student's actual intellectual ability, specifically:			
<i>A FSIQ or GAI of 85 or higher</i>			
<i>Where a FSIQ and GAI are deemed as invalid – a composite index measure of verbal or non-verbal ability most closely associated with g that is at or above a SS of 90.</i>			
<i>A conclusion that intellectual abilities range from the below average to the average or above average and that qualitative judgement is made that a best estimate intellectual ability is average.⁴</i>			
<i>Or, When cognitive scores are discrepant, a judgement of at least average thinking & reasoning abilities is made based on all the available evidence.</i>			

⁴ Note if the student's profile suggests that the best estimate of intellectual ability is below 85 but above 75 (where there are similar adaptive deficits), then the student's profile is not consistent with a Learning Disability.

3. Are there impairments in one or more basic psychological processes involved in the development of reading, writing, mathematics or oral language?	Yes	No	Comments:
PPM-8, LDAO			
<i>Phonological processing</i>			
<i>Memory and attention</i>			
<i>Processing speed</i>			
<i>Perceptual-motor processing</i>			
<i>Visual-spatial processing</i>			
<i>Executive functions</i>			
<i>Other (specify)</i>			
Five Domains of Development (Berninger)			
<i>Cognition & Memory</i>			
<i>Receptive & Expressive Language</i>			
<i>Sensory/Motor (specifically graphomotor)</i>			
<i>Attention & Executive Function (including Working Memory)</i>			
<i>Social cognition</i>			
PASS Consistency/Discrepancy (Naglieri)			
<i>Planning</i>			

<i>Attention</i>			
<i>Successive Processing</i>			
<i>Simultaneous Processing</i>			
C-H-C Approach (Flanagan)			
<i>Quantitative knowledge Gq</i>			
<i>Short-Term and Working Memory (Gwm)Gsm</i>			
<i>Long-term retrieval Glr</i>			
<i>Visual Processing Gv</i>			
<i>Auditory processing Ga</i>			
<i>Processing Speed Gs</i>			

	Yes	No	Comments:
4. Can you make a logical argument that each identified impairment manifests itself in an academic problem?			
5. Is there an unexpected underachievement inconsistent with the student's intellectual ability?			
6. Is the underachievement due primarily to the processing impairment? Rule out as primary cause:			
<i>other conditions, such as global developmental delay, Attention Deficit Hyperactivity Disorder, primary sensory deficits (e.g., visual or hearing impairments), or other physical difficulties</i>			
<i>environmental factors, such as deprivation, abuse, socio-economic status, cultural differences, lack of proficiency in the language of instruction; or lack of motivation or effort; gaps in schools attendance or inadequate opportunity to benefit from instruction</i>			
<i>cultural or linguistic diversity</i>			
<i>any other co-existing condition such as Developmental</i>			

<i>Coordination Disorder, anxiety or history of trauma</i>			
	Yes	No	Comments:
7. Is there a clear and informative diagnostic statement?			