## Research-informed criteria for assessment of LD: A current snapshot of best practices, accommodation issues, and challenges to accurate diagnosis.

**Allyson G. Harrison, Ph.D., C.Psych.**

**Assistant Professor, Queen's University**

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**Clinical Director, Regional Assessment & Resource Centre**

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## Who is LD?

- Gukenberger *v.* Boston College (1990's)
- Students w/ LD dx frequently failed to meet any known dx criteria
- Often high IQ students not getting marks they or their families wanted
- Limited evidence of impaired academic performance vs most people.
- Result- urgent call to develop empirically based, specific and clear operational definition to be used by all professionals

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## Who is LD now?

- *"Ambiguity and inconsistency among current definitions of LD do not allow for the identification of individuals with LD in a reliable manner"*

  Flanagan, Keiser, Bernier & Ortitz, 2003

- *Psychoeducational assessment reports are seen as the work of biased advocates rather than impartial reporters of fact*

  Wolforth, 2012; Gordon, 2007

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## How to Diagnose LD?

- Great deal of confusion
- Dx options include
  - Research informed criteria
  - Advocacy group's definitions
  - Consensus definitions created thru groupwork
- Research shows that most clinicians don't bother applying any of these

(Harrison, Nichols & Larochette , 2008; Rosenblum et al, 2009; Sparks & Lovett, 2009; Weis, Sykes, & Unadkat, 2012)

### Who qualifies as LD?

- Must be disabled
  - cause impairment in normal functioning. Measured relative to average person. (DSM-V working group; Dombrowski et al., 2004; Flanagan et al., 2006; Gordon et al., 2006)
- Symptoms alone not enough
- IQ-achievement discrepancy method discredited

(e.g. DSM-V working group; Fletcher et al., 2002; Siegel, 1999, 2003; Spear-Swerling & Sternberg, 1998; Sternberg & Grigorenko, 2002; Vellutino et al., 2000; and many more).

### Who qualifies as LD?

- LD is a disorder of **academic achievement**
- Must be impaired in *academic functioning*.
- No such thing as an LD in processing speed or working memory *per se*.
- DSM-V working group highlights these facts

### Necessary but not sufficient

- Processing impairment alone necessary *but not sufficient* to dx LD.
- Many non-disabled individuals produce subtest scores on psychological tests that fall within the impaired range.
- Binder, Iverson and Brooks (2009) demonstrate that majority of non-disabled WAIS-IV normative sample participants had *at least one* subtest score that fell within the impaired range, & over half had two subtests scores that fell within this range.
- As number of tests in a flexible battery increases, likelihood of obtaining more below average scores increases.
- Having a few subtest scores on any flexible test battery that fall within the impaired range is neither unusual nor unexpected, and certainly not diagnostic of any type of disability.

### Diagnostic Criteria

- Most empirically supported model for dx of LD is three component model
  - Academic underachievement (defined vs. average)
  - Specific information processing deficits that impairs development of academic skill
  - Rule out other reasonable causes

  (see Harrison & Holmes, 2012 for lit review)

## Documentation disconnect

- Many students arrive at postsecondary with their IEP or school based assessment – told it is not sufficient
- WHY?

## Documentation disconnect

Assessment report:
- Does not reflect current needs
- Does not demonstrate an impairment relative to most people
- Does not demonstrate an impairment relevant to their program
- Testing was incomplete
- Data interpretation was not accurate
- Diagnosis not given or does not exist

## Determining eligibility at postsecondary

- Does student meet definition of having a permanent disability?
- Does student demonstrate clinically significant impairments in functioning?
- Do those impairments keep her from participating equally in all aspects of the postsecondary curriculum? If yes-
- Are there ways to minimize/equalize this?

## Permanent Disability definition

"A permanent disability is defined as a functional limitation that is caused by physical or mental impairment that __restricts__ your ability to perform the daily activities necessary to participate in studies at the post secondary level or in the labour force, and that is expected to remain with you for your expected life".

## Otherwise qualified- OHRC

- Human rights code pertains to otherwise qualified individuals being discriminated against due to arbitrary/artificial barriers
- Assumes person is "otherwise qualified" and promotes "equal" access
- Means that the person could participate equally (i.e. has the skills and abilities necessary to participate) if not for some arbitrary barrier. Requiring admission standards or minimal competency is NOT an artificial or arbitrary barrier.

## New DSM-V Criteria SLD

Must show **all** of the following (based on consistent evidence from historical data, real life, and test scores):

1. Persistent difficulties in learning & using academic skills
2. Affected skills are substantially and quantifiably below age (and significantly interfere with major life activities relative to the average person)

## New DSM-V Criteria con't

3. Onset is in the early school years, although may become more fully expressed as child progresses through elementary school.

*Specifically notes that *"learning difficulties persist despite provision of targeted classroom instruction"*

## New DSM-V Criteria

4. Exclusionary criterion. Learning problems not better accounted for by:

Intellectual disability
Global developmental delay (eg MID)
Vision or hearing problems
Other mental or neurological disorders
Psychosocial adversity
ESL/FSL
Inadequate education

### New DSM-V Criteria

- Descriptive Feature Specifiers
  - Specify from which academic domain(s) the subskills are impaired AT TIME OF ASSESSMENT
  - Reading
    - Word reading accuracy
    - Fluency *
    - Reading comprehension*
  - Written Expression
    - Spelling
    - Grammar & punctuation*
    - Clarity or organization
  - Mathematics
    - Memorization or recall of arithmetic facts
    - Accurate or fluent calculation
    - Math reasoning

### Operationalizing the criteria for SLD

- Persistence = 6 months except math which MUST be more than 1 full year
- Academic skills substantially & quantifiably below age
  - Typically score(s) at least **1.5 SD below** mean for age (SS <79 or 5th percentile  +/- SEM)
  - In class achievement may be better if requires excessive and extensive support to achieve
  - Appropriate tests administered by clinician
- Student not intellectually disabled or MID

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Academic Accommodations at post secondary

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### Purpose of accommodation

- Elementary & HS tend towards maximizing achievement (dodobird effect)
  - *Participants ran around the lake until they were dry. Nobody measured how far each person had run, nor for how long. When they asked the Dodo who had won, he said "Everybody has won and all must have prizes."*
- Postsecondary governed by Human rights
- Purpose=to allow for equal participation, NOT to guarantee academic success.

**Clinical Training**

- How much formal training are Psychologists **required** to have in assessing & diagnosing LD in order to be licensed in Ontario to make this diagnosis?
  - 1 half-year graduate level course
  - 1 full year graduate level course
  - More than 1 course
  - none

**Clinical Training**

- How much formal training are Psychologists required to have in assessing & diagnosing LD in order to be licensed in Ontario to make this diagnosis?

  **–none**

**Clinical Training**

- How much formal training in diagnosing ADHD is required in order to be able to give this diagnosis to clients in Ontario?
  - 1 half-year graduate level course
  - 1 full year graduate level course
  - More than 1 course
  - none

**Clinical Training**

- How much formal training in diagnosing ADHD is required in order to be able to give this diagnosis to clients in Ontario?

  **–none**

### Results from recent survey of 110 Psychological service providers

- More than half did not know the purpose of accommodations at postsecondary level.
- More than half did not understand the legislation that compels accommodation at postsecondary level.
- Almost half felt that the purpose of an assessment was to prove that a student had a disability that required accommodation.
- 14% felt it was all right to lie and give a diagnosis even if the student did not really meet the diagnostic criteria.

### Common problems with documentation

- Don't use appropriate tests
- Don't employ appropriate norms
- Use significance as a diagnosis
- Fail to take good history
- Forget to use all of DSM (or research informed) criteria
- Fail to show how person is impaired
- Fail to use common sense
- Recommend ++accommodations, many of which unrelated to persons strengths & weaknesses

### How does the impairment disable the person?

- Where is inequitable opportunity to participate due to impact of disability?
- Do documented impairments match with real-world behaviours?
- One subtest score on one day is not the same as a lifetime of performance
- Is the accommodation fair to other students?
- Will the accommodation produce an iatrogenic disability?

### Inappropriate tests

- Issue regarding norms and appropriate ages for tests
  - e.g. Bender Gestalt Test being used to diagnose visual memory, motor memory skills, personality, in anyone.
  - e.g. GORT (and others) only has norms up to age 18 and is ORAL reading only.
  - e.g. Durrell Analysis of Reading difficulty only goes up to grade 6
  - e.g. test ceilings for some tests

## Inappropriate Norms

- Use of "Grade equivalent" scores rather than age norms.
- Using "Grade-based" norms as comparison
- If trying to determine impairment relative to most people then <u>must</u> use same metric (e.g. vs age)
  - e.g. Nelson Denny percentile scores

## Inappropriate interpretation

- Quartile scores
- e.g. WIAT reading speed quartile scores
  - Manual specifically says not to use these diagnostically.
- Stanine scores
- Bonferroni correction when multiple comparisons made

## Interpretative Bias

- Picking highest IQ index score and saying this is reflective of the person's "potential" and then using this to contrast with other scores.
- Using outdated IQ test (which gives inflated score) and contrasting with up to date achievement scores.
- Use CDN IQ scores to qualify someone as MID even though US IQ score is Average.
- Making dx based on Texas Sharpshooter fallacy

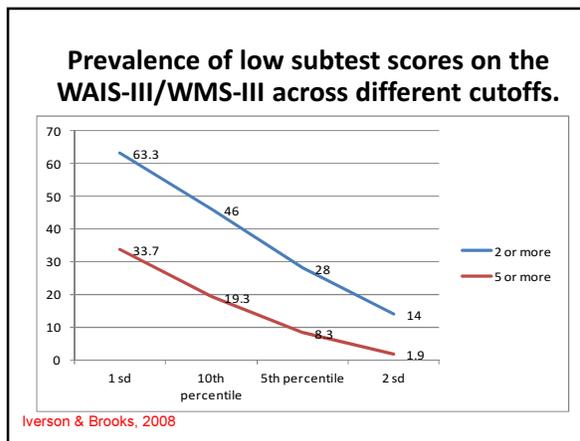## Misinterpretation of normal variability in performance

- All people have variability in cognitive functioning.
- Higher you go in IQ, **greater** that variability is.
- Less formal education you have, larger number of below average scores.
- As # of tests in a flexible battery increases, likelihood of obtaining more below average scores increases.

Table 3. Percentages of normative participants with 10 or more, 15 or more, 20 or more, and 25 or more point discrepancies between WAIS-IV Index scores by IQ level

From Binder et al., 2009

| Amount of discrepancy | Verbal comprehension – perceptual reasoning | Verbal comprehension – working memory | Perceptual reasoning – processing speed | Verbal comprehension – processing speed | Perceptual reasoning – working memory | Working memory – processing speed |
|---|---|---|---|---|---|---|
| Full scale IQ <79 | | | | | | |
| 10 points | 40.8 | 36.5 | 37.1 | 45.0 | 36.0 | 41.3 |
| 15 points | 19.0 | 13.8 | 21.2 | 28.0 | 11.6 | 25.9 |
| 20 points | 7.4 | 6.4 | 9.0 | 14.8 | 6.8 | 9.6 |
| 25 points | 3.7 | 1.0 | 4.2 | 8.5 | 2.1 | 5.3 |
| Full scale IQ 80 – 89 | | | | | | |
| 10 points | 45.9 | 45.9 | 49.5 | 55.9 | 42.0 | 40.1 |
| 15 points | 21.9 | 20.3 | 30.7 | 38.6 | 22.5 | 31.6 |
| 20 points | 10.1 | 6.7 | 15.2 | 22.5 | 11.6 | 19.5 |
| 25 points | 3.6 | 3.0 | 7.6 | 13.6 | 4.5 | 10.0 |
| Full scale IQ 90 – 109 | | | | | | |
| 10 points | 45.9 | 42.4 | 51.6 | 53.0 | 46.6 | 49.2 |
| 15 points | 26.2 | 25.0 | 30.8 | 33.8 | 25.8 | 29.2 |
| 20 points | 15.1 | 12.5 | 18.8 | 20.1 | 15.1 | 17.2 |
| 25 points | 6.7 | 6.0 | 9.5 | 11.4 | 6.4 | 10.7 |
| Full scale IQ 110 – 119 | | | | | | |
| 10 points | 45.7 | 50.8 | 56.9 | 56.9 | 55.9 | 54.0 |
| 15 points | 31.2 | 27.9 | 38.8 | 35.9 | 30.6 | 37.5 |
| 20 points | 17.3 | 15.1 | 24.2 | 24.2 | 15.9 | 24.5 |
| 25 points | 8.8 | 8.0 | 13.0 | 15.4 | 8.8 | 15.4 |
| Full scale IQ >120 | | | | | | |
| 10 points | 53.5 | 54.0 | 59.5 | 59.0 | 52.5 | 42.0 |
| 15 points | 35.5 | 32.5 | 39.5 | 37.5 | 31.0 | 35.5 |
| 20 points | 18.5 | 16.0 | 28.0 | 26.5 | 16.0 | 22.0 |
| 25 points | 9.5 | 9.5 | 16.0 | 16.0 | 5.5 | 15.5 |



**Prevalence of low subtest scores on the WAIS-III/WMS-III across different cutoffs.**

Iverson & Brooks, 2008

## Misinterpretation of normal variability in performance

- Zakzanis & Jeffay (2011) showed that, depending on tests given, up to half of tenured university professors have at least **two** cognitive subtest scores below average
- Conclude that cognitive variability (and even a few impaired scores) alone cannot be used to determine disability or impairment.

## Conclusion?

- *Having a few subtest scores on any flexible test battery that fall within the impaired range is neither unusual nor unexpected, and certainly not diagnostic of any type of disability.*

Binder et al., 2009; Iverson & Brooks, 2008; Brooks & Iverson, 2010

## Conclusion

- Many individuals have impairments in some areas of cognitive processing, so not proof of a disability.

- An impairment only becomes disabling when it interferes substantially with an individual's ability to carry out a regular or routine task that rely on the use of skills or knowledge in that area (Barnartt & Scotch, 2001).

## Out of date tests

- Some tests have either been discontinued or discredited in the literature, yet many clinicians still use them when diagnosing LD.
  - e.g. Monroe Sherman Test (1966).
  - e.g. Currently using WISC-III or WAIS-III (or lower)
  - e.g. WRAT-III or lower

## Clinical vs statistical significance

- Lots of reports note that two scores are "significantly different"
- Does not mean "clinically meaningful".
- Statement only means that the difference between the two scores did not occur by accident- i.e. it is a real difference.
- **Does not mean it is diagnostic**

## Clinical vs statistical significance

- Because of large sample size for many tests, small group differences are found to be "statistically significant".
- Eg. 15 point difference between VCI and PRI on the WAIS is "statistically significant" for someone with IQ of 120, but clinically meaningless- 36% of normal, unimpaired people have this difference.

### Clinical vs statistical significance

- Clinical significance is the practical or applied value of the effect/difference.
- At what point does it cause noticeable impairment in functioning relative to most people?

### IQ not a strong predictor of achievement

- While best predictor we have, IQ only predicts about 25% of achievement. Hence, cannot assume all people should achieve exactly at IQ score in all areas.
- All individuals have strengths and weaknesses. No expectation all scores same.
- Regression to mean effects scores outside of average range.

### Challenges to accurate dx

- Low or avoidance motivation (Adelman et al, 1989)
- Performance anxiety (Cassady & Johnson, 2002)
- Diagnosis Threat (Suhr et al., 2008)
- Parental pressure on clinician to diagnose (Goldberg, 2011)
- Desire to obtain access to provincial bursary monies or accommodations (Chafetz, Prentkowski, & Rao, 2011; Harrison, Green & Flaro, 2012)

### Conclusion

- Purpose of assessment is to provide *impartial, objective evaluation*
- Demonstrate actual functional impairment vs most other people
- Symptom presentation and level of impairment can change over time
- Students can become functionally disabled by accommodations they don't actually need
- Always employ empirically supported dx methods.