



TEXAS CENTER
for
LEARNING
DISABILITIES



Texas Center *for* Learning Disabilities

Learning for SUCCESS
www.texasldcenter.org

The Texas Center for Learning Disabilities (TCLD) investigates the classification, early intervention, and remediation of learning disabilities.

Identification of LD in the Context of RTI

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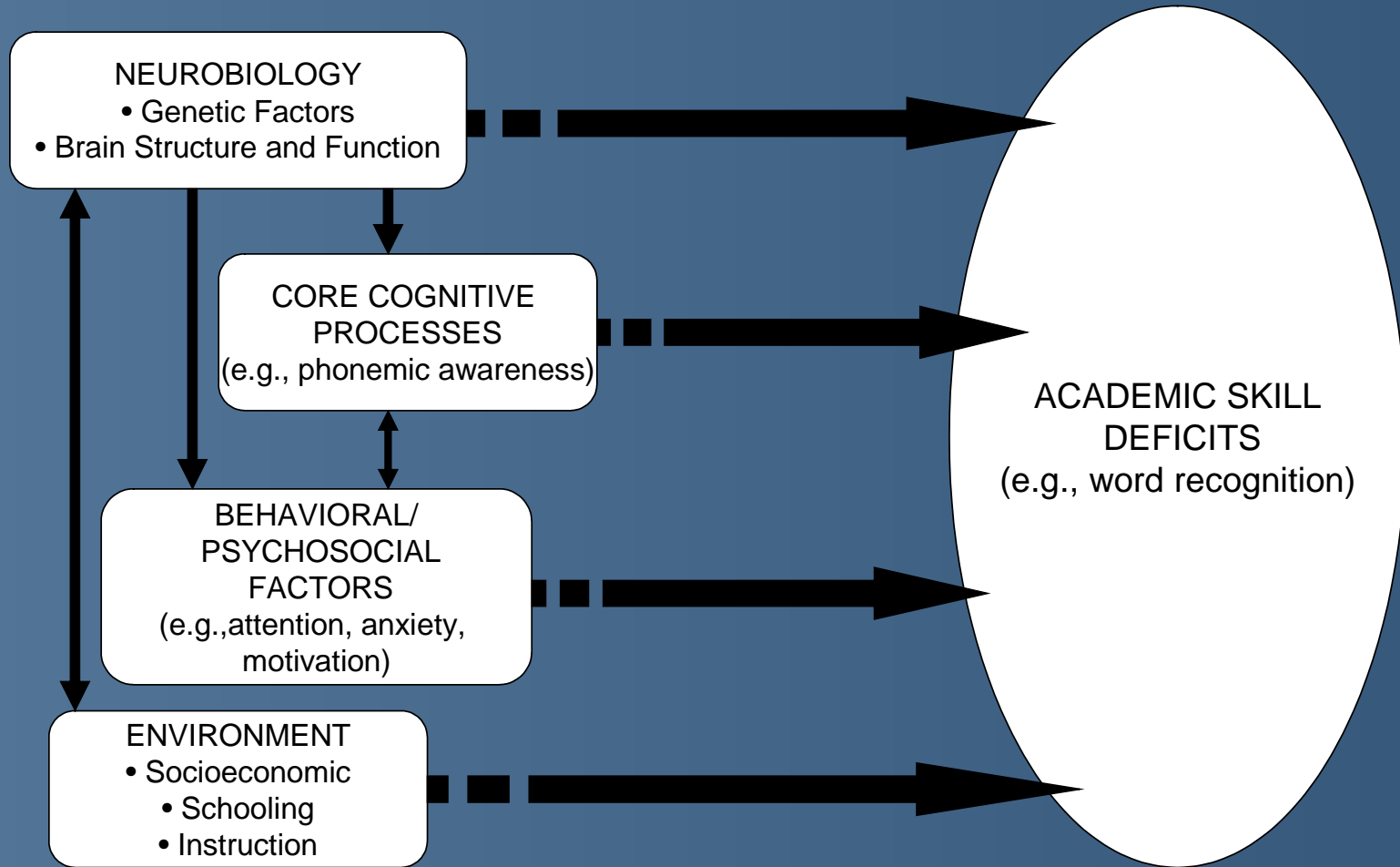
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A Model of LD (Fletcher et al., 2007); Identification to Intervention





Why focus on achievement?

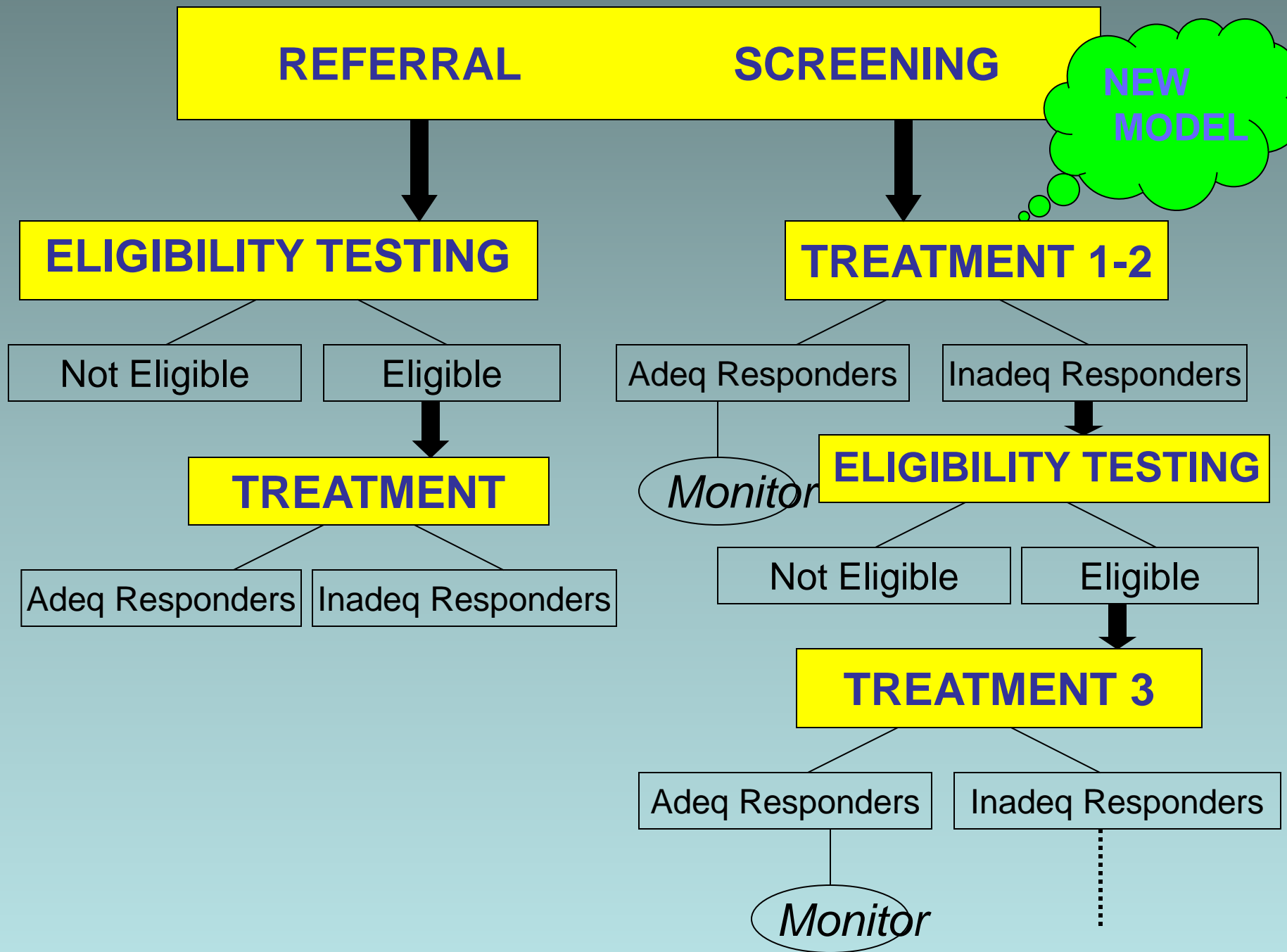
- *The most important markers of learning disabilities are achievement related*
- Classification hypotheses are validated **only** at the level of achievement
- Cognition and brain function are intrinsically linked to LD, but the path is through academic deficits
- If components of reading, math, and written expression are assessed, what else is needed for identification and intervention?

Achievement, adaptive behavior, and behavior differentiate children with high incidence disabilities



IDEA 2004: RTI or Discrepancy?

- (2)(i) The child does not make sufficient progress to meet age or State-approved grade-level standards in one or more of the [8 domains of achievement] when using a process based on the child's response to scientific, research-based intervention; 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, using appropriate assessments, consistent with § § 300.304 and 300.305;





Comprehensive evaluation is required no matter what method is employed

- Data gathering process that includes child observation and may or may not use standardized tests
- In the context of RTI, goal not only special education eligibility, but to understand why the child has not responded to instruction
- In the context of RTI, instructional response data is routinely obtained (must be added to other identification methods in IDEA)
- Exclusionary criteria require consideration of other factors and may involve additional evaluation for other disabilities and language proficiency
- I think norm referenced assessments of achievement and behavior rating scales for screening are very helpful



RTI Adds:

- Documentation of parental notification and right to request an evaluation at any time
- Specification of learning strategies used to accelerate progress
- Some states add additional criteria for number of interventions, duration, and fidelity



Comprehensive Evaluation (IDEA)

1. Use a variety of assessment tools and strategies to gather relevant functional, developmental, and academic information about the child, including information provided by the parent (comprehensive data gathering process)
2. May not use any single measure or assessment as the sole criterion
3. Must use technically sound instruments



Comprehensive Evaluation (IDEA)

Selected instruments must be:

- racially and culturally fair, administered in native language
- used for purposes for which they are reliable and valid
- administered *as designed* by trained and knowledgeable personnel
- tailored to area of educational need, adapted to physical and sensory disabilities



Comprehensive Evaluation (IDEA)

4. The child is assessed in all areas related to the *suspected* disability (i.e., it's a data gathering process)
5. Coordinated with assessments of other LEAs
6. Evaluation is sufficiently comprehensive to identify child's special education and related services needs, whether or not commonly linked to the identified disability category
7. Assessment data directly assists persons in determining the educational needs of the child (IQ scores are composites and not indicators of intervention goals)

Comprehensive Evaluation

8. Additional requirements (review existing relevant data and determine what additional data is needed- formal testing may not be needed)

9. Additional requirements for LD:

- Lack of adequate achievement in 8 areas of eligibility based on RTI process **or** alternative for which the state writes rules
- Not due to exclusionary criteria (Sensory or intellectual disability, behavioral problems, cultural/linguistic diversity, English proficiency)
- 10. Adequate instruction is inclusionary



IDEA 2004: Inadequate instruction is inclusionary

To ensure that underachievement...is not due to lack of appropriate instruction in reading or math, the group must consider...

- (1) Data that demonstrate that prior to, or as a part of, the referral process, the child was provided appropriate instruction in regular education settings, delivered by qualified personnel; and
- (2) Data-based documentation of repeated assessments of achievement at reasonable intervals, reflecting formal assessment of student progress during instruction, which was provided to the child's parents.

Comprehensive Evaluation

10. Additional requirements for RTI:

- Documentation of parental notification and right to request an evaluation at any time
- Specification of learning strategies used to accelerate progress
- Parent may request an evaluation at any time
- Consent may be obtained while the child is in RTI process (starts data gathering process), but not possible to evaluate instructional response/LD without adequate opportunity and no reason to evaluate if growth is adequate



LD Summit: Hybrid model

- 1. Evaluate Response to Instruction
- 2. Establish Low Achievement
- 3. Apply the Exclusions

(Demonstrate that the difficulty is a disability and that special education is the best intervention)

- www.air.org/ldsummit

TN SLD Definition Made Easy

Condition 1

Underachievement in:

Basic Reading Skills
Reading Fluency
Reading Comprehension
Written Expression
Mathematics Calculation
Mathematics Reasoning



Condition 2

RTI:

Insufficient response to
scientific, research-based
intervention.



Condition 3

Exclusionary Factors:

Conditions 1 and 2 are not primarily due to:
Visual, Hearing, or Motor Disability;
Intellectual Disability;
Emotional Disturbance;
Cultural Factors;
Environmental or Economic Disadvantage;
Limited English Proficiency; or,
Excessive Absenteeism.



1. Assessing Response to Instruction

- Universal screening of all students for reading (and behavior) problems
- Monitor progress of at-risk students: establish a surveillance system
- Introduce multi- tiered intervention programs that begin in the classroom
- Evaluate the fidelity (and quality) of different instructional programs (fidelity- done in any significant research study; should be at least 80%)
- Increase intensity for those who show inadequate response



Criteria for Inadequate Response

- Can be norm- referenced or criterion-referenced benchmark; all repeatable
- Benchmarks can be “national” or local
- End point, slope, or both? Evidence supports both
- Key for intervention is to account for change-treatment response gets confused with identification;
- May be resource driven
- Operates to move students through tiers and as a data source for identification
- Watch out for rigid cut points



2. Establish Low Achievement: IDEA 2004 Domains of SLD

- Hypothetical classification of LD: Marker variables involving:
 - 1. Word Recognition (Dyslexia)
 - 2. Reading Fluency
 - 3. Reading Comprehension
 - 4. Math Computations (Dyscalculia)
 - 5. Math Problem Solving
 - 6. Written Expression (Handwriting, Spelling, Text Generation?)

Occur in isolation and concurrently, but basis for defining samples and interventions



3. Evaluate Contextual Factors and Related Disorders

- General principle: assess in the same way that the factors and conditions would be assessed in the absence of concerns about LDs
- Assessments depend on the question
- Routine use of behavior rating scales (home and school): BASC, CBCL (broadband), Connors, SNAP-IV (narrowband for ADHD: www.adhd.net)
- Consider oral language and limited English proficiency (Bateria-3 is best instrument)



Alternative Views: The “Third Method”

- Evaluate strengths and weaknesses in cognitive processes for inadequate responders to determine best Tx (ATI framework)
- Multiple “research-based” methods based on cognitive and achievement batteries:

Ability-Achievement Consistency (Flanagan);
Concordance-Discordance (Hale);
Discrepancy/Consistency (Naglieri)

- Hanson et al. (2008): “Research-based methods” recommended for Oregon schools
- Hale et al. (2010) survey of LD professionals: PSW methods needed not just for diagnosis, but also for treatment; mandated by statute



Problems with PSW Approaches

- Statute does not mandate that cognitive skills be assessed- just their manifestations
- Little research on how PSW methods actually work and are related to instruction
- Predicated on a straw person view of RTI (no standalone RTI identification method, comprehensive evaluation always required)
- Psychometric issues with discrepancy scores of any kind are well known, especially the use of rigid cut points, profile interpretations, difference scores, etc.



Simulation of PSW Methods (Stuebing et al., SPR, 2012)

- Created data sets where status of child as LD or not known; asked how well 3 PSW methods captured latent data at multiple differences
- For all 3, number of children identified as LD low (about 2-3% depending on size of discrepancy)
- Specificity was generally higher than .85 and NPV was uniformly above .90. Sensitivity varied from poor (.17) to excellent (.91) across conditions and PPV was usually very low and never better than moderate

For "not LD," highly accurate (high specificity and few false negatives), but low PPV



Of 10,000 assessments:

- CDM: 1,558 identified as LD (8,436 as not LD); 25 correct, so 1,533 are false positives and get the wrong treatment
- DCM: 362 identified as LD (9,638 not LD); 89 correct, so 273 are false positives and get the wrong treatment
- XBA: 678 would be identified as LD (9,322 not LD); 353 correct, 325 are false positives and get the wrong treatment
- Misinterpretation of significance tests; need to account for the test correlations; preoccupation with Type I error at the cost of significant risk for Type II errors; arbitrary cut points for discrepancy and low achievement

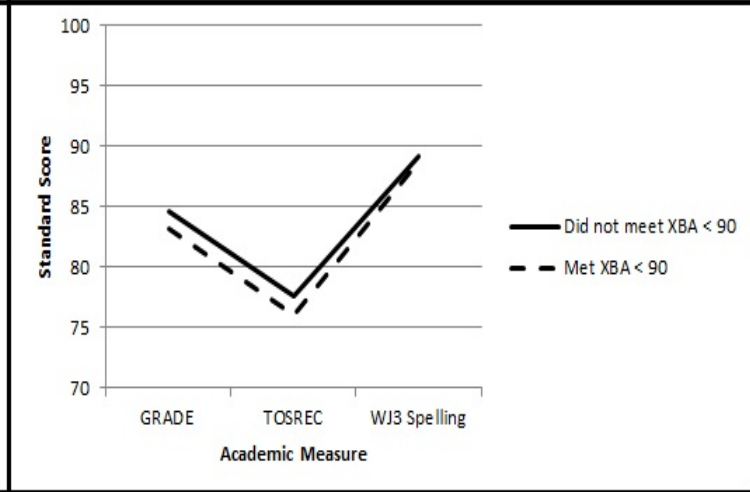
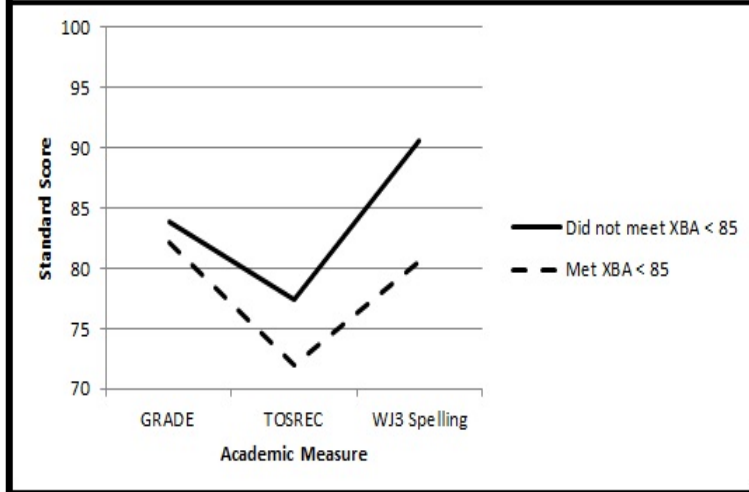
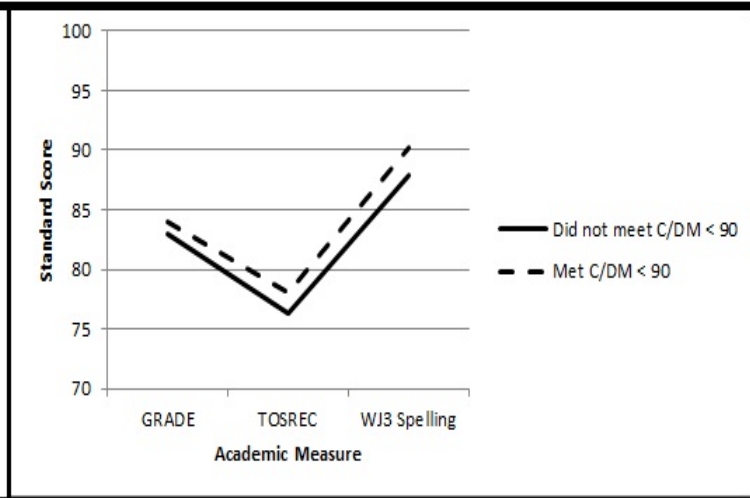
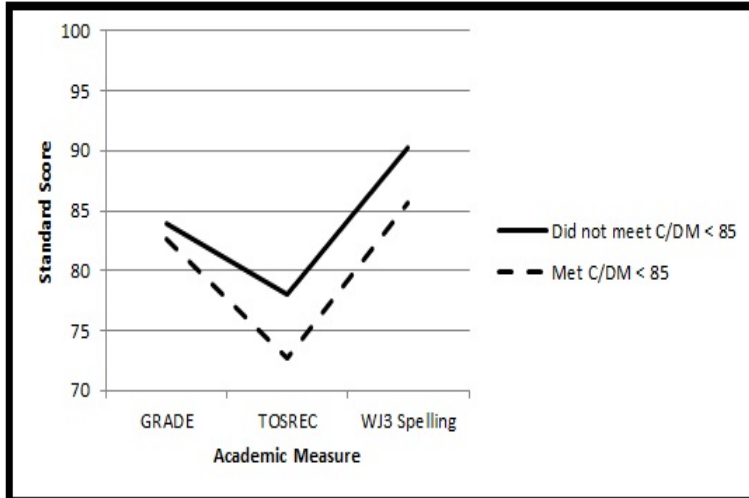
Agreement on LD identification between the C/DM and XBA methods at different low achievement cut points (Miciak et al., 2013)

	Approach			
Approach	C/DM < 85	C/DM < 90	XBA < 85	XBA < 90
C/DM < 85	-	62.1	30.0	13.6
C/DM < 90	0.63	-	20.0	20.5
XBA < 85	0.31	0.11	-	23.4
XBA < 90	-0.04	0.03	0.22	-

Below diagonal = kappa; above diagonal = percentage overlap (total identified by both approaches/ total identified).



Performance on external reading variables of groups that met and did not meet PSW LD identification criteria





What do cognitive assessments add?

- Processing subtypes weakly related to intervention outcomes; little evidence that knowledge of cognitive strengths and weaknesses facilitates intervention (Pashler et al., 2010)
- No additional information not found in achievement profiles
- Cognitive deficits DO NOT reliably indicate biological causation; LD is an interaction of biological and environmental factors
- IQ when there is an issue about intellectual disability, autism spectrum disorder, or other disorder where IQ is directly relevant



Agreement is a General Problem

- If approach is to take a single assessment and set a cut point, identification of individual students will still be inadequately reliable
- Attributes of LD (low achievement, inadequate instructional response) are dimensional (continua)
- Difficult to assess people in relation to set cut point
- May be improved if multiple criteria are used and confidence intervals
- How many resources should be devoted to finding the right student? Treat, then test



Simulation of Agreement (10,000 Cases)

- Consider WJIII Basic and TOWRE composite in Fletcher et al. (2011); $r = .88$ (.94 if corrected for unreliability). Set cut points at 25th %tile: agreement (k) = .76
- If correlation = 1.0, $k = 1.0$
- 50th %tile, $k = .77$; 10th%, $k = .71$
- If actual reliability ($<.90$), $k = .76$
- Adjust for normative differences (sample mean above normative mean for WJ and below on TOWRE, $k = .39$)
- Sample size of 257, $k = .27-.51$



Actual Agreement

- WJ-TOWRE: $k = .38$
- WJ-CBM benchmark: $k = .25$
- CBM benchmark-TOWRE: $k = .61$
- Dual Discrepancy: $k = .21$ with WJ, $.58$ with CBM benchmark, $.60$ with TOWRE



Coverage

- Consider 104 inadequate responders as pool to be detected. How many *not* detected by each indicator?
- WJ: .72
- TOWRE: .14
- CBM benchmark: .30.
- Dual Discrepancy: .11 (but increases pool to 134, adding 29 inadequate responders and 1 typical (i.e., higher achievers))



Multiple Criteria

- CBM benchmark alone identified 14 children with reading scores on TOWRE, WJ, and other tests well above the average range (false positives?); this number increased dramatically with dual discrepancy
- TOWRE and CBM benchmark agreed on 90/104 children, excluding those only identified by CBM or the 30 added by dual discrepancy (about 5' of assessment time)
- Think about a pool; use multiple assessments; prioritize Type II over Type I errors (i.e., set the cut point high).



Identification issues are universal across methods

- No qualitative markers of LD (dimensional disorder)
- Measurement error (why do we persist with rigid cut points?)
- Instructional response may be a continuum; no qualitative markers of inadequate responders
- Specific issues in RTI are more than cut points and don't equate to the adequacy of the measurement of instructional response
- How does the field move to informed decision making using multiple criteria and stop relying on psychometric methods?



RTI is not a panacea for problems with identification and intervention

- Key issue is implementation, especially enhanced instruction- it's a scaling problem
- Linking general and special education/other entitlement programs is hard
- Identifying inadequate responders- still a continuum with potential cut point issues
- Resources must be redeployed
- Need more research on core instruction in math and written expression and tier 2/3 in math
- Knowledge base on inadequate responders is weak

Research is Evolving!!



But:

- RTI provides an alternative to cognitive (or even older neurological) conceptualizations of LD
- Directly linked to instruction and enhanced outcomes
- Cognition is related to LD and there are prominent neurological and genetic factors, but this knowledge does not yet facilitate identification or intervention
- RTI makes LD a real construct. We can argue about how to measure LD, but underlying constructs are real and survive definitional variability



Who is LD?

- The student who does not respond to quality instruction: *hard to teach, not unable to learn*
- Low achievement and inadequate instructional response
- Often preventable with early intervention
- Heritable, but neural systems are malleable



Can We "Psychometrize" Individual Identifications of LD? Not a New Question!

"Even though the psychometric difficulties may never be completely resolved, classification systems should at least be based on a coherent psychology of helping...there is no shortage of children who experience problems...Assessments and classifications can be guided by principles of intervention design with expected errors of judgment and measurement partially moderated through a recursive {sequential} system of recursive and empirical practices... (Macmann et al., 1988, p. 146)

"The real dilemma may be that procedures no more technically adequate than {formula-based procedures} are in wide use today. One wonders if a technically adequate solution to the problem of LD identification exists" (Danielson & Bauer, 1978, p. 175)