Texas Center *for* Learning Disabilities

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The Texas Center for

Learning Disabilities

(TCLD) investigates

the classification, early

intervention, and

remediation of learning

disabilities.

Linking Identification, Assessment, and Intervention in Response to Instruction (RTI) Frameworks: Studies from the Texas Center for Learning Disabilities

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IDA
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Objectives

- 1. Understand the research program at TCLD

- 2. Enhance capacity for identification and intervention of reading disabilities

- 3. Link identification and intervention in a RTI framework

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The Texas Center for Learning Disabilities (TCLD) investigates the classification, remediation , and the cognitive and neural correlates of learning disabilities.

One of four national NICHD-funded (P50 HD052117) multidisciplinary learning disability research centers (J Fletcher, UH, overall PI) evaluating school-based reading interventions (P3; S Vaughn, UTA, PI), executive functions (P2; P Cirino, UH, PI), statistical synthesis/ simulation (D Francis, UH, and G Roberts, UTA, Co-PI), structural and functional neuroimaging (J Juranek , UTH, and J Church, UTA, Co-PI). Supported by Core B (Dissemination, G Roberts, PI); Core C (Data; D Francis, UH, PI); Core D (Recruitment; J Fletcher, PI)

What are Reading Disabilities ?
(how do I know one when I see one?)

- All disabilities have biological and social realities that vary with "disorder" and "person"

- Reading disabilities, including dyslexia, are dimensional-variation on normal development

- Model is obesity or hypertension, not measles and mumps

- "Disability" is a two pronged determination

Reading Disabilities (Dyslexia) is a Hypothetical Construct

- Essential aspect of construct is "unexpected underachievement"

- Constructs do not exist independently of how they are measured; all measures are imperfect indicators of constructs (latent variables)

- Measurement depends on definition

- Definitions and identification criteria derive from classifications

- Classifications are validated by comparisons against variables not used to form the group

- Classifications reflect conceptual models

How RD is Identified and Treated Depends on the Conceptual Model

- Neurological: *"Disorder of constitutional origin"': special signs*

- Cognitive Discrepancy:
  - IQ-achievement discrepancy: cognitive discrepancy
  - Processing strengths and weaknesses: cognitive discrepancy

- Instructional Discrepancy
  - Low achievement: age-based discrepancy
 - Instructional response: intractability

RD (Dyslexia) is a Valid Classification

Learning disabilities are real! Stands up across definitional variation (doesn't help identify individuals)

Children and adults with different forms of LD can be reliably and validly differentiated from each other, typical achievers, and other disabilities on cognitive correlates, response to intervention, and neural correlates. LDs interfere with adaptation. There is a scientific evidence-base on LDs.

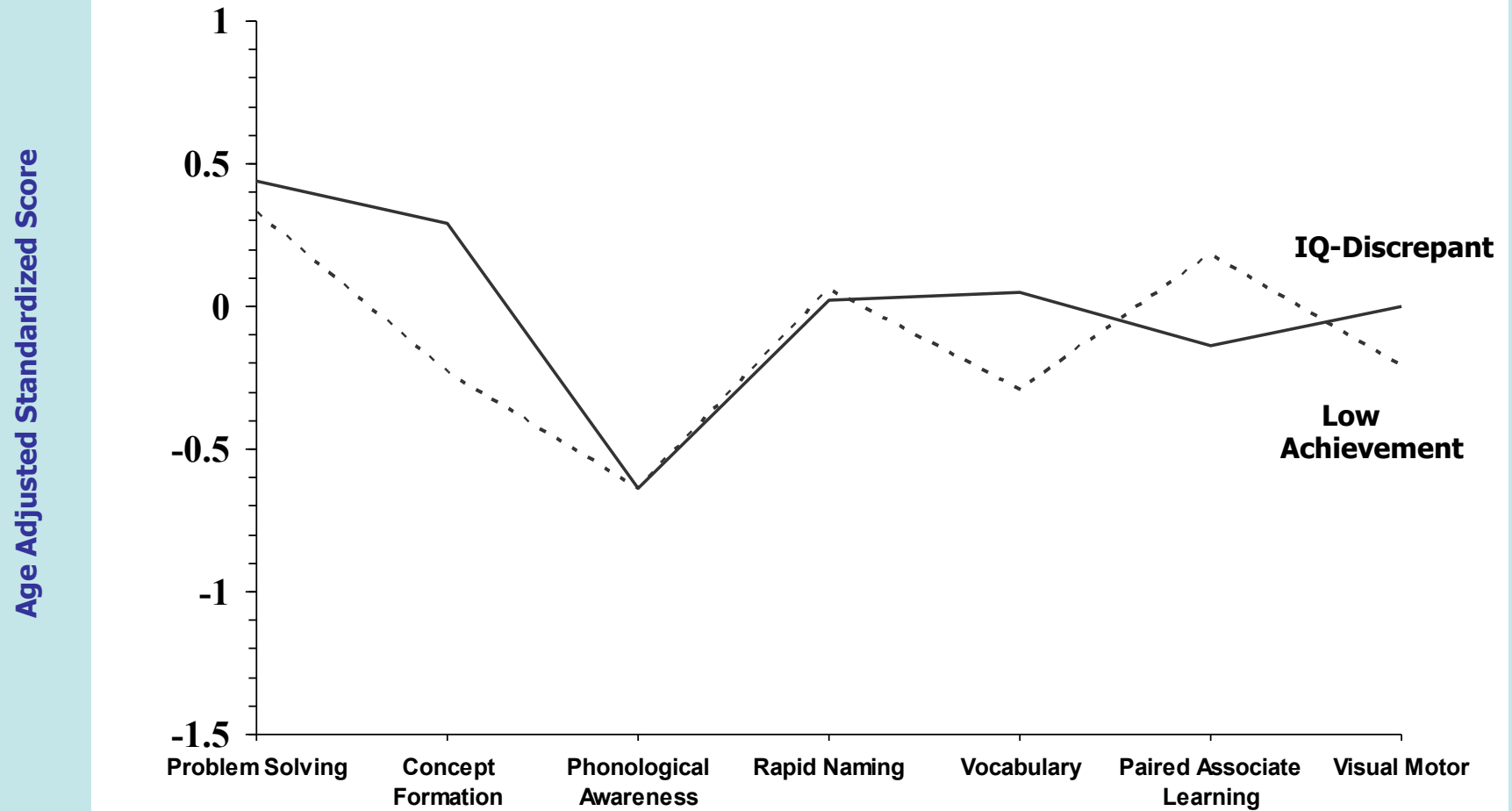*What happens when we apply these criteria to different classifications?*
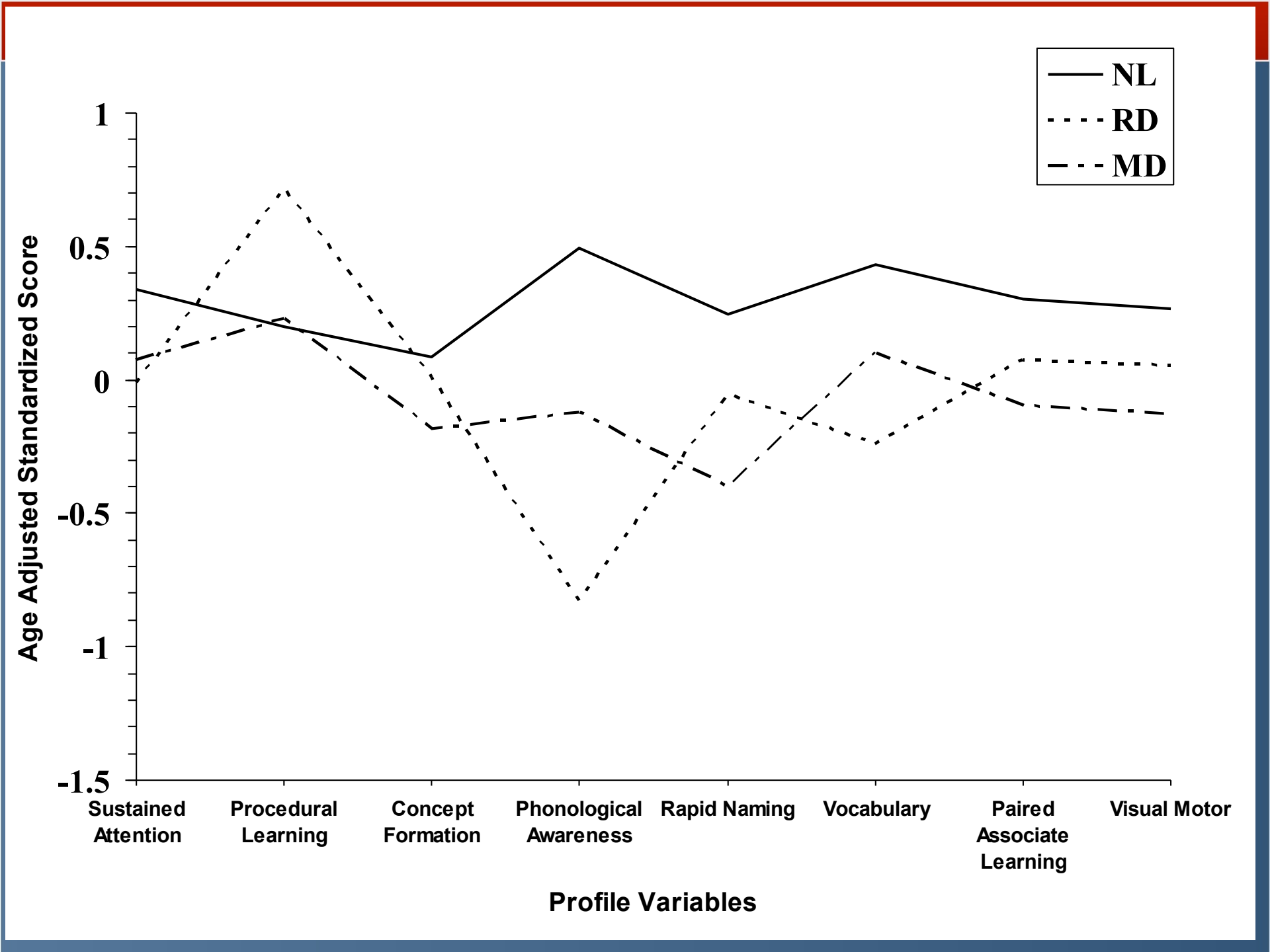
What's Wrong With IQ- Discrepancy?

- IQ- discrepant and non- discrepant low achievers do not differ significantly in behavior, achievement, cognitive skills, response to instruction, and neurobiological correlates once definitional variability accounted (Siegel, 1992; Stuebing et al., 2002).

- IQ does not predict intervention response (Stuebing et al., 2009).

- No difference in brain activation profiles (Tanaka et al., 2011; Simos et al., 2014)

- Status methods for identification are not reliable based on a single assessment or cutpoint (Macmann et al., 1985; 1989; 1997; Francis et al., 2005)

RD Groups

Age Adjusted Standardized Score

IQ-Discrepant

Low Achievement

Problem Solving | Concept Formation | Phonological Awareness | Rapid Naming | Vocabulary | Paired Associate Learning | Visual Motor

Low Achievement method does not address unexpectedness

- Designate a cut point on the achievement dimension

- Strengths: Strong validity, linked to intervention, easy to implement

- Weaknesses: Cut point, does not measure the underlying construct (can't differentiate subgroups of poor readers when the cause is known to be related to emotional difficulty, economic disadvantage, and inadequate instruction)

- Necessary but not sufficient: *Status models based on cutpoints for dimensional disorders may never be reliable for individuals*

Alternative Views: The "Third Method"

- Evaluate strengths and weaknesses in cognitive processes for inadequate responders to determine best Tx (Aptitude by Treatment Interactions [ATI] framework)

- Multiple "research-based" methods based on cognitive and achievement batteries:

- 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; empirical studies don't support validity or reliability

- 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.

Instructional Alternatives: Response to Instruction (Intervention)

- Universal screening and serial curriculum-based assessments of learning in relation to instruction

- As one criterion, student may be LD if they do not respond to instruction that works with most students (i.e., unexpected underachievement)

- May identify a unique subgroup of underachievers that reflects an underlying classification that can be validated (Al- Otaiba & Fuchs, 2002; Vellutino et al., 2003)

- School-wide change- not just enhanced pre-referral services and an identification method by itself
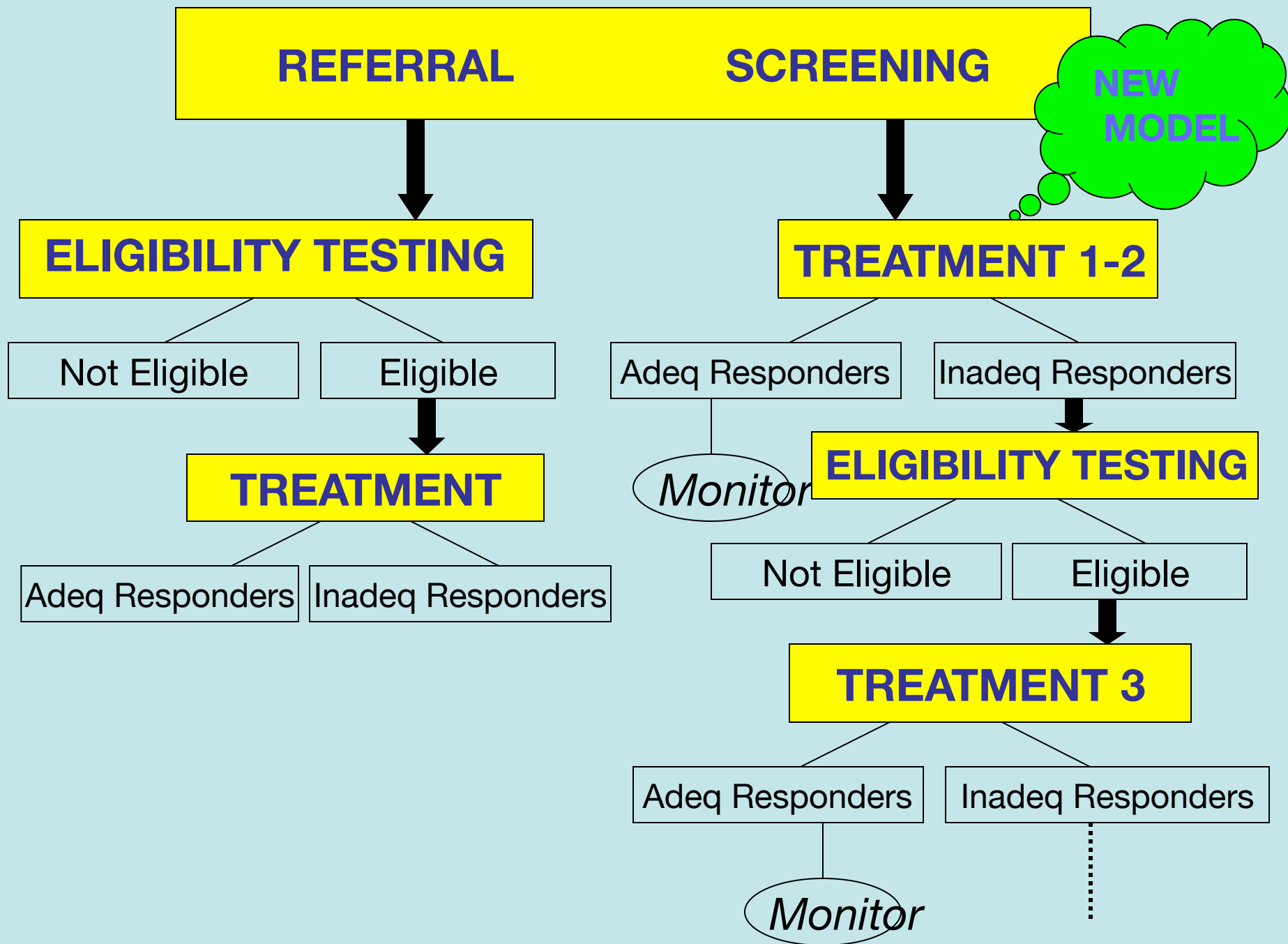
# LD Summit: Hybrid Method (Triangle Approach) to Identification (Bradley et al., 2002)

1. Establish Low Achievement

2. Evaluate Response to Instruction (Is underachievement expected?)

3. Apply the Exclusions

What is the validity of this hypothetical classification? (Low achievement is necessary, but not sufficient).
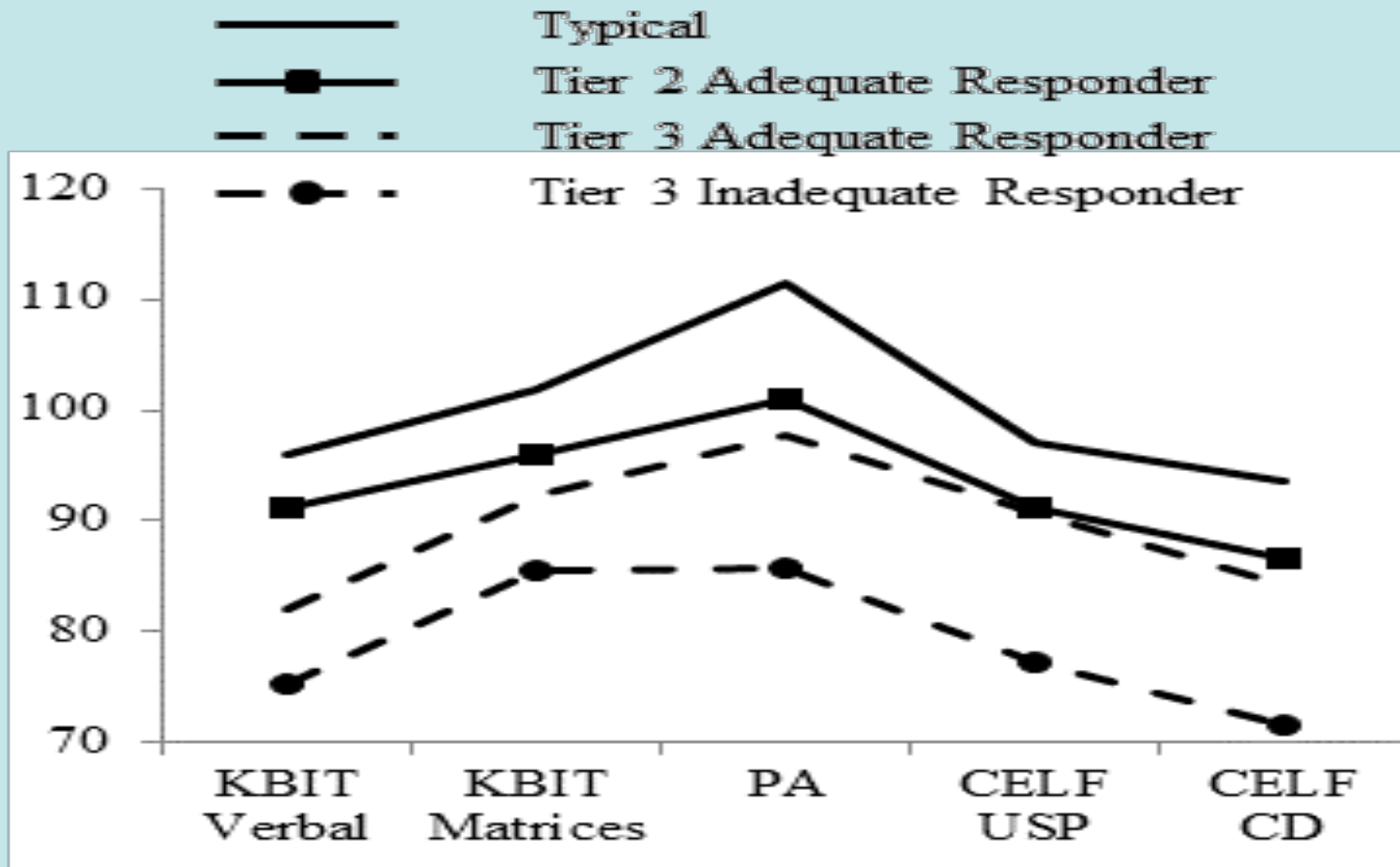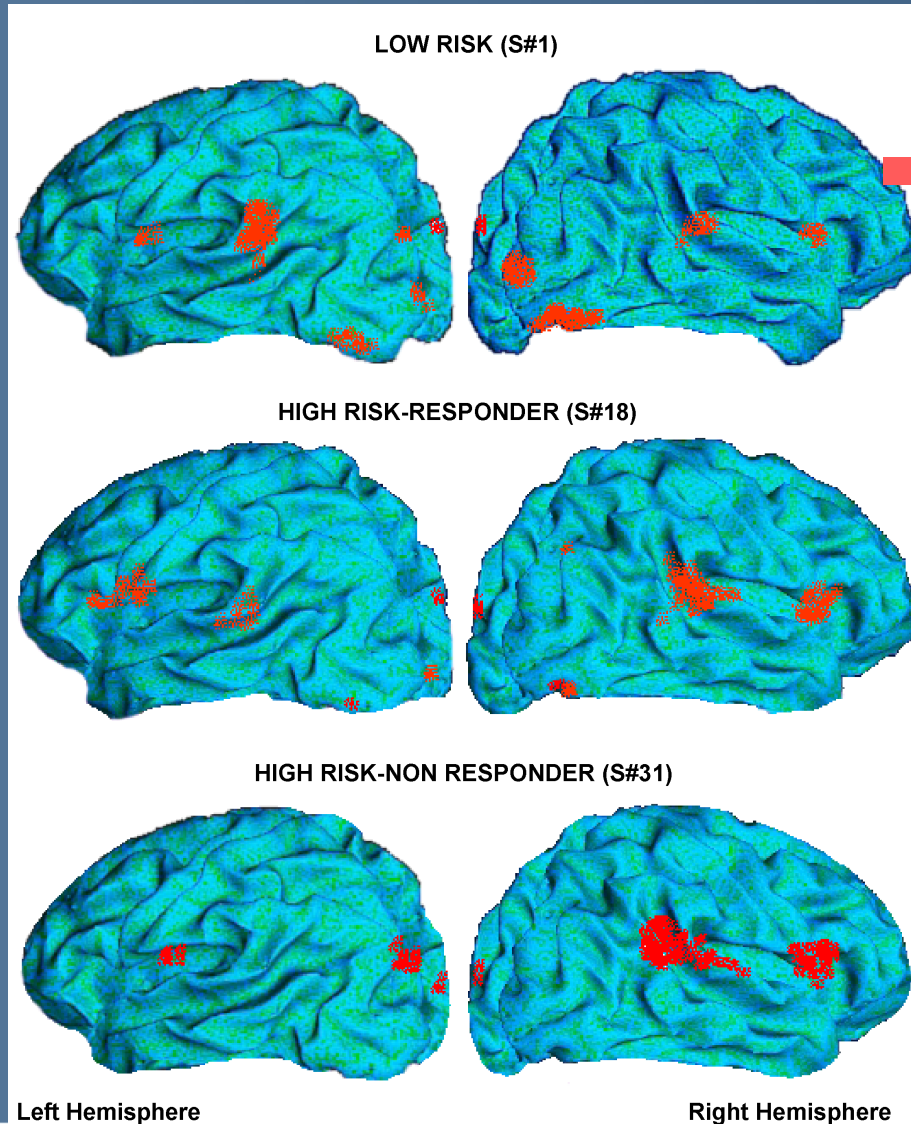
- www.air.org/ldsummit

Validity of the hybrid method(Fletcher et al., SPR, 2011)
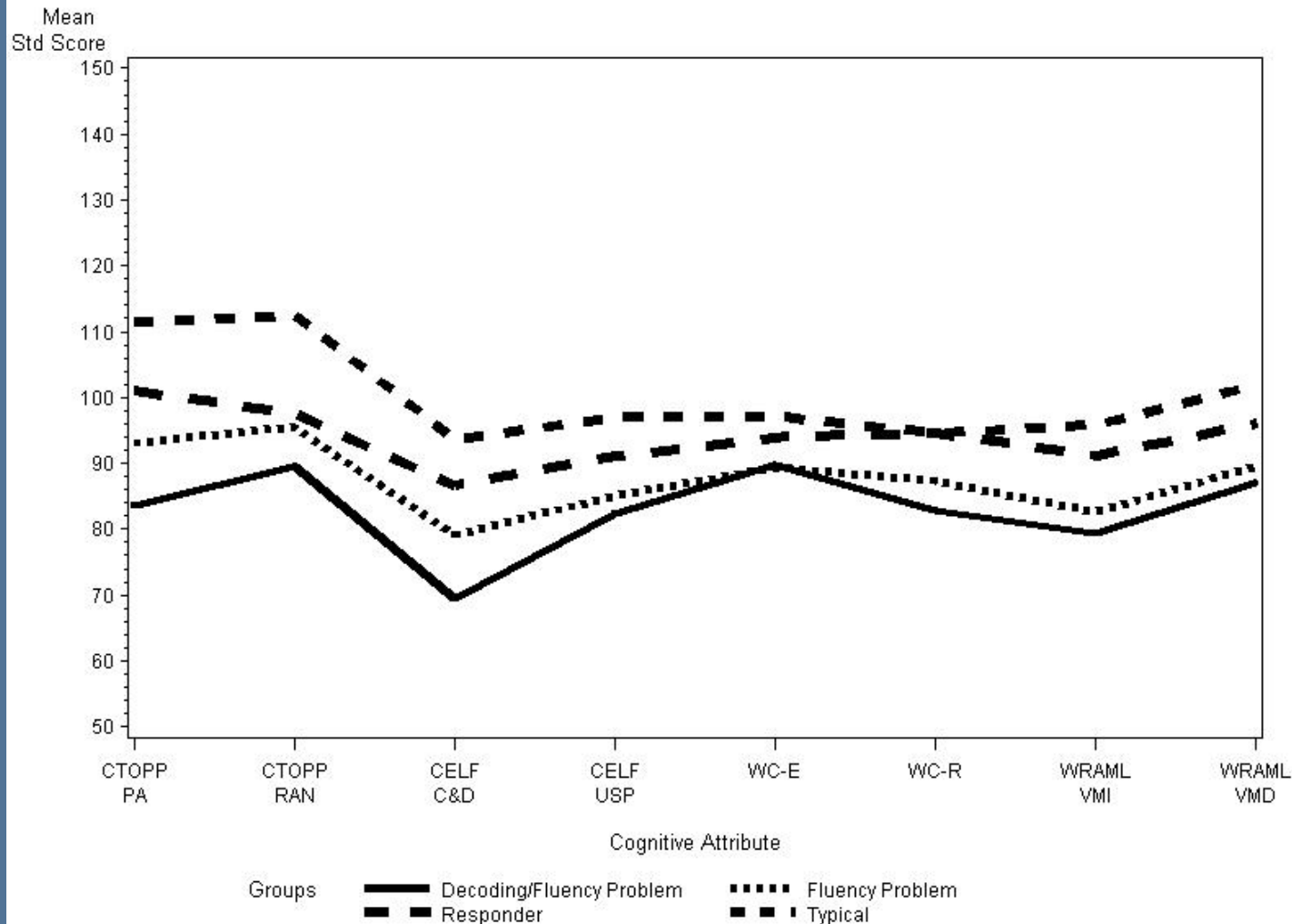
Inadequate Responders: Tier 3 (baseline cognitive characteristics; Denton et al., 2013)
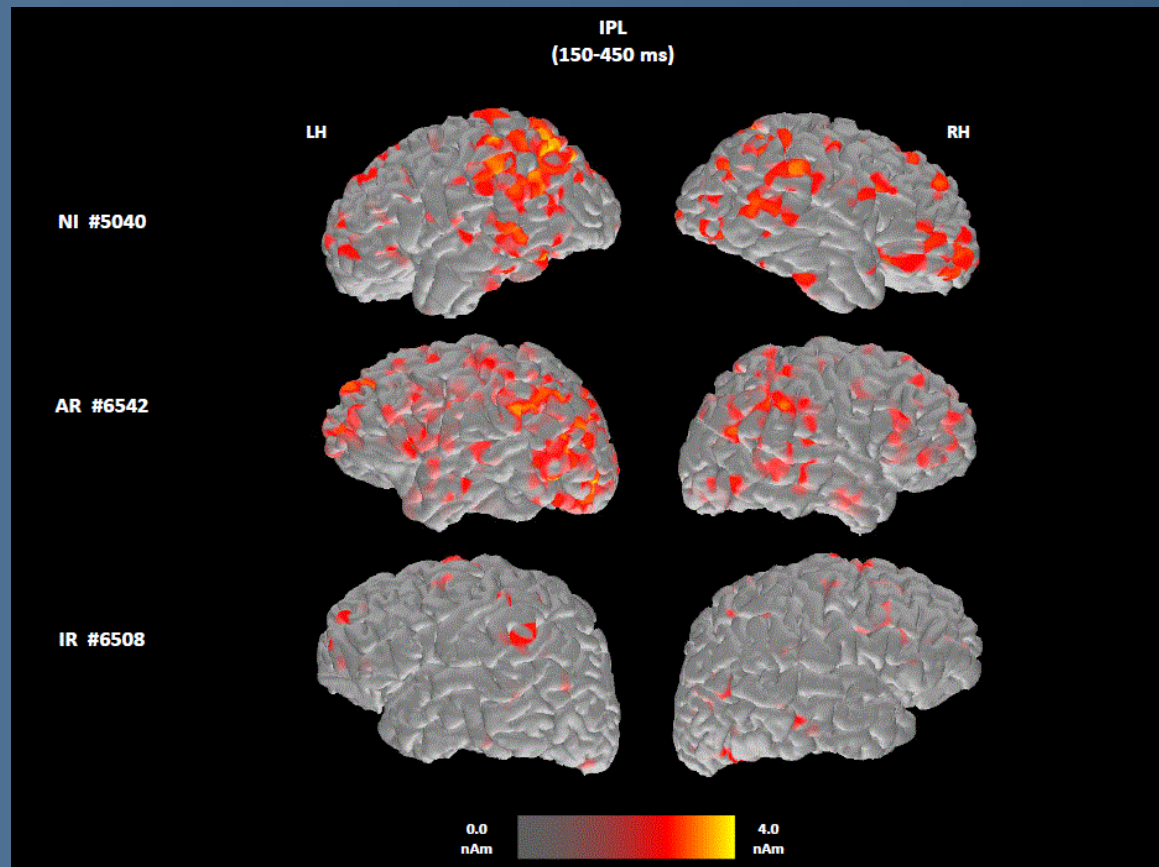
Grade 1 Intervention (pseudoword task)

LOW RISK (S#1)

HIGH RISK-RESPONDER (S#18)

HIGH RISK-NON RESPONDER (S#31)

Left Hemisphere   Right Hemisphere

Simos et al (Neuropsychology, 2005)- after Grade 1 intervention in Mathes et al. (RRQ, 2005)

Baseline MEG Patterns for Adolescent Adequate and Inadequate Responders Rezaie et al., 2011

Misconceptions of RTI

- Goal of RTI is to identify students as LD (RTI is a service delivery framework and identification is a by product of the process)

- Inadequate instructional response equates to special education eligibility (Instructional response is just one criterion for LD)

- Evaluation procedures fundamentally different (a comprehensive evaluation is required and most components of evaluation/eligibility are universal)

- What you do before a cognitive assessment… treat and test, not test and treat.

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 identification issues, but:

- RTI provides an alternative to cognitive (or even older neurological) conceptualizations of RD

- Directly linked to instruction and enhanced outcomes

- Cognition is related to RD and there are prominent neurological and genetic factors, but this knowledge does not yet facilitate identification or intervention

- RTI makes RD a real construct. We can argue about how to measure LD, but underlying constructs are real and survive definitional variability

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)

"

Who is RD/Dyslexic?

- 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

Reading Sculpts the Brain, But Must Be Taught!!

- "We are all born with dyslexia. The difference among us is that some are easy to cure and others are not."

  - Liberman, 1996

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