



Topical Forum I: Applying Responsiveness to Intervention (RTI) to Specific Learning Disability (SLD) Determination Decisions
Research Findings

Hosted by the
National Research Center on Learning Disabilities (NRCLD)
Kansas City, MO • September 29 & 30, 2005



Parameters of Topical Forum

- Purpose of Topical Forum: This forum brought together researchers who are studying SLD identification methods to share data for the purpose of developing superior ways to help school personnel make identification and teaching decisions for students with learning disabilities.
 - Specifically, researchers discussed alternative strategies for identifying and providing services to students with learning disabilities in public school settings.
- Overall Research Question: What do RTI intervention methods tell us about (1) predicting outcomes and (2) SLD identification?

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Parameters of Topical Forum

- Criteria for Data Sets:
 - Grade: Kindergarten through grade 3.
 - Number of RTI tiers: At least two tiers (Tier 1 & 2) with efficacy data for the second tier.
 - Minimum data: Pre-treatment and post-treatment data on effectiveness of RTI. Preferably, also includes data (a) from RTI methods (e.g., weekly progress monitoring data) and (b) on students' pre-treatment cognition, language, demographics, etc.
 - Research design: Data sets should be from studies with a control group, although "control" might be liberally defined (e.g., historical controls).
 - Treatment focus: Reading.

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Topical Forum Research Questions

- How do different RTI measurement and classification procedures affect prevalence, demographics, and severity of risk and disability? Can we define RTI and develop a rubric from the data collected?
 - Do we have additional information besides RTI to help with decision-making process – pre-treatment data, behavioral ratings, cognitive scores?
 - Do we have longitudinal data (follow-up)?

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Topical Forum Research Questions

- How does prevention affect prevalence, demographics, and severity of risk and disability?
 - What are the treatment characteristics?
 - Can we look at the impact of instruction on children classified according to different schemes and the aggregate across studies?

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Topical Forum Research Questions

- How many data points are necessary to distinguish severe underachievers from achievers?
 - What does progress monitoring look like
 - Tier 1 through Tier 3?
 - Can we define severe underachievement (responsiveness vs. limited responsiveness)?

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Participating Researchers

- National Research Center on Learning Disabilities (NRCLD), Vanderbilt University: Doug Fuchs, Lynn Fuchs, & Don Compton
- Center for Early Intervention in Reading & Behavior, Juniper Gardens, University of Kansas (KU): Debra Kamps & Charles Greenwood
- West Virginia Phonemic Awareness Project: Melanie Schuele (Vanderbilt) & Laura Justice (University of Virginia)
- Florida Center for Reading Research, Florida State University: Joseph Torgesen, Richard Wagner, & Carol Rashotte (presented by Chris Schatschneider)
- Southern Methodist University: Patricia Mathes

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Overview of Research Projects

- National Research Center on Learning Disabilities (NRCLD); Vanderbilt University
 - Doug Fuchs, Lynn Fuchs, Don Compton
- Overview of Study
 - Purpose of Study: Use a 2-tier model (not including special education) in 1st grade to explore RTI as a means of preventing and identifying reading disability (RD)
 - 3 purposes across reading and math studies
 - Examine efficacy of 1st-grade preventive instruction
 - Assess RD and math disability (MD) prevalence and severity as a function of method with and without instruction
 - Explore pretreatment cognitive abilities associated with development
 - Random assignment to 1st-grade study conditions
 - Longitudinal follow up to assess development of long-term difficulty (RD: 1st-4th grade; MD: 1st-3rd grade)

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Overview of Research Projects

- NRCLD; Vanderbilt University
 - Design of Study:
 - 42 classes in 16 schools in Tennessee:
 - identified low performers in fall of 1st grade.
 - Randomly assigned students to one of 3 conditions:
 - Fall instruction
 - Spring instruction (if unresponsive to general education during the fall)
 - Control
 - Provided small-group instruction to students assigned to fall instruction.
 - Used fall progress monitoring to identify students unresponsive to Tier 1 general education.
 - Provided small-group instruction to spring instruction students (Tier 2) who were unresponsive to general education.

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Overview of Research Projects

- NRCLD; Vanderbilt University
 - Design of Study (cont.)
 - Collected weekly word identification fluency (WIF) data: 9 waves in the fall and 9 waves in the spring
 - Administered a battery of standardized reading tests at fall, mid-year, end of grade 1, end of grade 2
 - To assess RTI prevention: Contrasted spring instruction and control groups at fall, mid-year (when instruction was initiated for unresponsive spring tutoring), and end of grades 1 and 2.
 - To assess RTI identification: Compared classification rates for spring instruction and control groups at end of grades 1 and 2 (will follow through grade 4).

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Overview of Research Projects

- Juniper Gardens; University of Kansas
 - Debra Kamps and Charlie Greenwood
 - Overview of Study
 - Project Research Questions:
 - How does strength of treatment predict growth in nonsense word fluency and oral reading fluency?
 - What are gains and slopes for 1st grade samples based on the strength of treatment index?

Index = adapted Planning and Evaluation Tool for Effective School-wide Reading Programs (PET; Kame'enui & Simmons, 2000)

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Overview of Research Projects

- Juniper Gardens; University of Kansas
 - Subjects:
 - Cohort 10 - Year 1: 1st grade, $n = 563$
 - 270 females, 293 males
 - 48% minority
 - 42% low SES (13% missing data)
 - 52% at risk (DIBELS and/or SSBD)
 - Cohort 20 - Year 2: 1st grade, $n = 455$
 - 220 females, 235 males
 - 52% minority
 - 55% low SES (7% missing data)
 - 43% at risk (DIBELS and/or SSBD)

DIBELS: Dynamic Indicators of Basic Early Literacy Skills
SSBD: Systematic Screening for Behavior Disorders

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Overview of Research Projects

- Juniper Gardens, University of Kansas

Characteristics of Treatment and Comparison Groups

Group	Low Risk Schools (#)	High Risk Schools (#)
Treatment	Early Interventions in Reading-EIR (3-4)	Early Interventions in Reading (1)
Treatment		Read Well (1)
Treatment		Reading Mastery (1)
Treatment		Programmed Reading (1-2)
Comparison	Open Court (3)	Guided Reading (1)
Comparison	Balanced Literacy (1)	Balanced Literacy (2)

Low risk = suburban, fewer at-risk students, less diversity
High risk = urban, high % low SES, cultural diversity

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Overview of Research Projects

- West Virginia Phonemic Awareness Project
 - Melanie Schuele (Vanderbilt) and Laura Justice (University of Virginia)
 - Overview of Study
 - Project Goals:
 - Train teams of educators to implement model within their school
 - Improve professional staff's knowledge of phonological awareness and ability to teach phonological awareness
 - Improve child achievement
 - Read on grade level by third grade
 - Reduce referrals to special education

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Overview of Research Projects

- West Virginia Phonemic Awareness Project
 - Subjects:
 - Kindergarten, $N=1326$, across 3 years
 - Boys = 50%
 - Caucasian = 92%, Black = 6%
 - Retention history = 6%
 - Special education = 18%
 - Speech/language impaired = 16%
 - Learning Disability (LD) + speech = .3%
 - Developmentally disabled (DD) + speech = 1%

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Overview of Research Projects

Two-Tier Model of Phonological Awareness Instruction and Intervention

September January May

All kindergarten children participate in classroom-based phonological awareness instruction from September through May. The classroom teacher supplements the adopted reading series/curricula with 15-20 min per day of instruction from *Phonemic Awareness in Young Children* (Adams et al., 1998).

TIER 1

Lowest Achievers are identified in each classroom for small group intervention.

TIER 2

Low achievers participate in a 12-week small group intervention (18 hours); *Intensive Phonological Awareness Program* (Schuele & Dayton, 2000).

West Virginia Phonemic Awareness Project

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Overview of Research Projects

- Florida Center for Reading Research; Florida State University
 - Joseph Torgesen (& Richard Wagner & Carol Rashotte)
 - Overview of Study
 - Purpose of Study: To examine the relative effectiveness of two computer supported approaches to teaching beginning reading skills that differed in important aspects of their instructional approach and emphasis.
 - Subjects:
 - All the first-grade children in five elementary schools were initially screened using a test of letter-sound knowledge.
 - Children performing in the bottom 35% of this test were screened with three other tests:
 - phonological awareness
 - rapid automatic naming of digits
 - vocabulary subtest of the Stanford Binet IQ test

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Overview of Research Projects

- Florida Center for Reading Research; Florida State University
 - Subjects: (cont.)
 - 104 children with the lowest combined scores on these predictive measures and an estimated Verbal IQ above 80 were identified.
 - These selection procedures identified the 18% of children most at risk in these schools to develop problems in learning to read.
 - These 104 children were randomly assigned to the Auditory Discrimination in Depth (ADD) group, and the Read, Write, Type (RWT) group (see "instruction conditions" for description).
 - About 34% of the sample were minority children (almost all African-American).
 - 35% of the sample were receiving free or reduced lunch supplements.
 - There was a wide range of SES among the children in the study.

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Overview of Research Projects

- Florida Center for Reading Research; Florida State University
- Project Design:
 - Children were seen from October through May in groups of three children.
 - The children received four 50-minute sessions per week during this time.
 - Approximately half the time in each instructional session was devoted to direct instruction by a trained teacher in skills and concepts that would be practiced on the computer.

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Overview of Research Projects

- Florida Center for Reading Research; Florida State University
- Instruction Conditions:
 - Read, Write, Type (RWT) condition
 - "Warm up" activities outlined in the teacher's manual
 - Remainder of time was spent with children working individually on the computer, with the teacher in a support role.
 - Occasionally, if a particular child was having difficulty with a specific skill, the teacher would provide additional individualized instruction while the other two children in the group were working on the computer.

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Overview of Research Projects

- Florida Center for Reading Research; Florida State University
- Instruction Conditions (cont.):
 - Auditory Discrimination in Depth (ADD) condition
 - Provides very explicit instruction and practice in acquiring phonological awareness and phonemic decoding skills.
 - Children spend a lot of time practicing word reading skills out of context, but they also read phonetically controlled text in order to learn how to apply their word reading skills to passages that convey meaning.

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Overview of Research Projects

- Patricia Mathes, Southern Methodist University, contributed research results from projects on which she has collaborated with colleagues from the University of Texas and University of Houston.

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Topical Forum Research Question One (R1)

- How do different RTI measures and classification procedures affect prevalence, demographics, and severity of risk and disability?
 - Median Split (Vellutino et al., 1996)
 - Low, Moderate, High Risk (< 40 WIF end of 1st grade) (Good et al., 2001)
 - Dual Discrepancy (Fuchs & Fuchs, 1998)

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NRCLD: Vanderbilt University R1

- Measures, Options & RD Criteria
 - Definitional Options in First Grade
 - Woodcock Reading Mastery Test - Word Identification (WRMT-WID), Test of Word Reading Efficiency - Sight Word Efficiency (TOWRE-SWE), Curriculum Based Measurement - Word Identification Fluency (CBM-WIF), and CBM-Passage Reading Test (PRT)
 - Considered Initial Low Achievement, Discrepancy, Normalization, Benchmark, Slope, Dual Discrepancy
 - RD Criterion at End of Second Grade
 - Composite Score
 - WRMT-WID and Word attack (WA) (one-third weight)
 - TOWRE-SWE and Phonemic Decoding Efficiency (PDE) (one-third weight)
 - WRMT- Passage Comprehension (PC) (one-third weight)

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NRCLD: Vanderbilt University R1

- Criteria for Judging Definitional Options
 - Sensitivity with respect to end of grade 2 RD ~ .80
 - Specificity with respect to end of grade 2 RD ~ .80
 - Severity effect sizes (ES) (RD vs. non-RD) at end of grade 1 and at end of grade 2 ~ 1.00, across various reading measures (but excluding measure used in definition)
 - Sensitivity: probability of positive identification of SLD
 - Specificity: probability of negative identification of SLD
 - Severity: the magnitude of the difference between the group of students' scores and the benchmark

Note: Which first-grade definitional options identify children who are RD one year later, while yielding severe reading deficits and expected prevalence?

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NRCLD: Vanderbilt University R1

- Options that Meet Criteria
 - Initial Low Achievement using WIF (< -1 SD)
 - Normalization using SWE (< 90 Standard Score (SS))
 - Slope using WIF (-1 SD)
 - Dual Discrepancy using PRT (< 40) and WIF Slope (< -1 SD)

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NRCLD: Vanderbilt University R1

- Observations/Summary
 - Poor sensitivity associated with low prevalence
 - Poor specificity associated with high prevalence
 - None of the classification options performed well
 - Sensitivity, specificity, severity, and prevalence change as a function of which RTI definitional option is used, suggesting the need to become clear on which options "work"
 - Could the answer be as simple as poor initial performance on a measure that provides fine discriminations, like WIF?

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Center for Early Intervention in Reading & Behavior; Juniper Gardens; KU R1

- Median Split on Growth
 - Calculated median split using data from Guided Reading group as an "index of improvement"
 - Formula = post minus pre (median gain score)
 - RTI calculation = percent of students within groups who are below cut point (non-responders)

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Center for Early Intervention in Reading & Behavior; Juniper Gardens; KU R1

- Median Split Results
 - Median gain score for *Guided Reading* comparison group
 - 16 Nonsense Word Fluency (NWF) for Cohort 10
 - 21.5 NWF for Cohort 20
 - Prevalence: % below comparison group
 - Early Intervention in Reading*
 - C10: 12%, 19%, 17%, 0%
 - C20: 44%, 18%, 0%, 33%, 12%
 - Read Well* C10: 6%
 - C20: 30%
 - Reading Mastery* C10: 29%
 - C20: 27%
 - Programmed Reading* C10: 38%, 40%
 - C20: 32%

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Center for Early Intervention in Reading & Behavior; Juniper Gardens; KU R1

- Prevalence: % below comparison group (continued)
 - Open Court* C10: 0%, 23%
 - C20: 22%, 33%
 - Balanced Literacy* C10: 63%, 53%
 - C20: 64%
 - Balanced Literacy* C10: 11%
 - (suburban) C20: 22%

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Center for Early Intervention in Reading & Behavior; Juniper Gardens; KU R1

- Summary: Median Split Results
 - Estimates 0-30% non-responders in effective intervention groups
 - Outliers- one Programmed Reading group, one Early Intervention in Reading group (small n sizes)
 - Open Court intervention in low risk schools as effective as intervention
 - 50-60% non-responders in Balanced Literacy (limited small group intervention)

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Center for Early Intervention in Reading & Behavior; Juniper Gardens; KU R1

- DIBELS Risk Scores for NWF

Fall:

High risk = 12 or less words per minute (wpm)

Moderate risk = 13-23 wpm

Low risk = 24+ wpm

Spring:

High risk = 29 or less wpm

Moderate risk = 30-49 wpm

Low risk = 50+ wpm

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Center for Early Intervention in Reading & Behavior; Juniper Gardens; KU R1

DIBELS Method - Pre (fall) & Post (spring)
C10; n = 72

Early Interventions in Reading
% At Risk

Risk Level	Pre (fall)	Post (spring)
1 high	0.54	0.06
2 moderate	0.26	0.47
3 low	0.20	0.47

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Center for Early Intervention in Reading & Behavior; Juniper Gardens; KU R1

DIBELS Method - Pre (fall) & Post (spring)
C10; n = 58

Balanced Literacy
% At Risk

Risk Level	Pre (fall)	Post (spring)
1 high	0.52	0.57
2 moderate	0.27	0.28
3 low	0.21	0.16

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Center for Early Intervention in Reading & Behavior; Juniper Gardens; KU R1

DIBELS Method - Pre (fall) & Post (spring)
C10; n = 32

Read Well
% At Risk

Risk Level	Pre (fall)	Post (spring)
1 high	0.22	0.00
2 moderate	0.53	0.38
3 low	0.25	0.63

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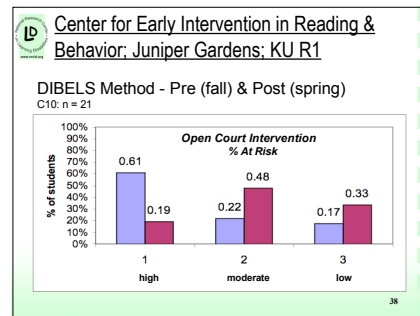
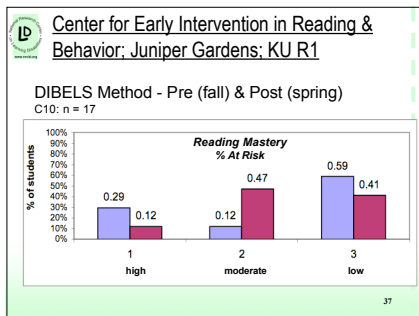
Center for Early Intervention in Reading & Behavior; Juniper Gardens; KU R1

DIBELS Method - Pre (fall) & Post (spring)
C10; n = 54

Guided Reading
% At Risk

Risk Level	Pre (fall)	Post (spring)
1 high	0.18	0.33
2 moderate	0.38	0.31
3 low	0.45	0.35

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- Center for Early Intervention in Reading & Behavior: Juniper Gardens: KU R1**
- Notes/Summary for DIBELS Method of pre-post risk change
 - Few improvements with *Programmed Reading, Guided Reading/Balanced Literacy* except in suburban schools
 - If use high risk group as indicator, 10-30% of group are non-responders
 - If use high and moderate risk groups, 37-60% of effective intervention group are non-responders
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- Center for Early Intervention in Reading & Behavior: Juniper Gardens: KU R1**
- Prevalence Based on Dual Discrepancy
 - Dual discrepancy based on end point and slope
 - Slope is 25+ gain from fall to spring (benchmark = 24 fall and 50 spring)
 - Benchmark = 50 + NWF spring
 - Adequate response to treatment = sufficient gain (25+) and/or 50 NWF
- 40

- Center for Early Intervention in Reading & Behavior: Juniper Gardens: KU R1**
- % of students making inadequate progress based on dual discrepancy
 - Early Intervention in Reading:
 - C10: 14%, 35%, 41%, 22% (* Includes some students in Read Well)
 - C20: 32%, 14%, 18%, 39%, 29%
 - Reading Mastery
 - C10: 24%
 - C20: 29%
 - Programmed Reading
 - C10: 73%, 50%
 - C20: 40%
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- Center for Early Intervention in Reading & Behavior: Juniper Gardens: KU R1**
- % of students making inadequate progress based on dual discrepancy (cont.)
 - Open Court
 - C10: 48%, 31%
 - C20: 36%, 29%
 - Balanced Literacy
 - C10: 78%
 - C20: 72%
 - Balanced Literacy (suburban)
 - C10: 26%
 - C20: 24%
 - Guided Reading
 - C10: 69%
 - C20: 58%
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- Center for Early Intervention in Reading & Behavior: Juniper Gardens: KU R1**
- Summary – Dual Discrepancy Method
 - Estimates 14-40% non-responders in effective intervention groups
 - Outliers- Programmed Reading group, one Open Court group
 - 58-78% non-responders in Balanced Literacy (limited small group)
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- Center for Early Intervention in Reading & Behavior: Juniper Gardens: KU R1**
- Comparisons across methods
 - Highest numbers of non-responders occur using DIBELS pre-post risk change method if use intensive & strategic risk groups
 - Middle group is the dual discrepancy method
 - Least numbers in the median split if comparing to Guided Reading reading intervention
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Center for Early Intervention in Reading & Behavior: Juniper Gardens: KU R1

Comparison of Methods – % unresponsive by intervention - C10

RTI Measure-ment Method	EIR -Early Interventions in Reading	Read Well	Read Mastery	Balanced Literacy	Guided Reading
Median	14%	6%	29%	63%	50%
DIBELS post intensive	13%	0%	12%	57%	33%
Dual discrepancy	29%	---	24%	78%	69%

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Florida Center for Reading Research;
Florida State University R1

- Median Split on Growth (MSG)
 - Estimated OLS growth on WRE during treatment year and labeled bottom 50% as identified.

Condition	Word Reading Efficiency								
	Sept			Jan			May		
	Mean	Std	N	Mean	Std	N	Mean	Std	N
RWT	2.64	2.46	51	11.06	5.47	51	21.61	9.60	51
ADD	2.71	2.33	50	12.51	7.36	50	24.68	11.73	50
Control							20.98	11.36	41

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Florida Center for Reading Research;
Florida State University R1

- Below 25%tile on Nationally Normed Test (25%)
 - Kids were identified if they fell below the 25th percentile on WRMT-WID in May

Condition	WRMT-WID								
	Sept			Jan			May		
	Mean	Std	N	Mean	Std	N	Mean	Std	N
RWT	85.35	9.45	51				105.12	13.37	51
ADD	86.56	10.14	50				107.06	14.28	50
Control							100.56	15.60	41

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Florida Center for Reading Research;
Florida State University R1

Crosstabs
25%

MSG	Not ID	ID	
Not ID	51	0	50.5%
ID	43	7	49.5%
	93.1%	6.9%	101

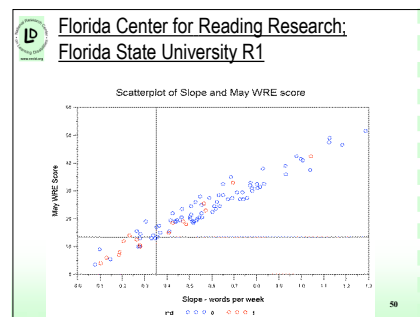
Percent agreement=57.4%

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Florida Center for Reading Research;
Florida State University R1

- Low-No Grow (LNG)
 - Identified if they were below the 25th percentile (based upon sample) on slope of WRE and below the 25th percentile at the May assessment of WRE. (See graph next slide)

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Florida Center for Reading Research;
Florida State University R1

Crosstabs
LNG

MSG	Not ID	ID	
Not ID	51	0	50.5%
ID	31	19	49.5%
	81.2%	18.8%	101

Percent agreement=69.3%

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Florida Center for Reading Research;
Florida State University R1

Crosstabs
LNG

25%	Not ID	ID	
Not ID	81	13	93.1%
ID	1	6	6.9%
	81.2%	18.8%	101

Percent agreement=86.1%

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Florida Center for Reading Research;
Florida State University R1

Summary of Findings:
Research Question One

- Dual discrepancy works well to
 - Correctly identify children "at risk," without incorrectly identifying and
 - Not obtain large amounts of false positives (children who do not have reading disability - later read normally)
- Some measures administered at only one point in time appear to do as well as multiple assessments of growth for identifying first-graders who would be RD 1 year later
 - CBM-WIF, (what other measures?)
- Median split on growth identifies large amounts of students with RD—many of these are false positives

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Florida Center for Reading Research;
Florida State University R1

Topical Forum Research Question Two (R2)

- How does prevention affect RD prevalence? How does the nature of the prevention affect prevalence, severity of risk, etc.

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NRCLD: Vanderbilt University R2

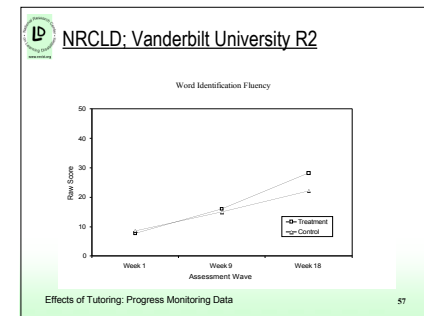
- Group Comparability
 - Tier 1 unresponsive students (in spring instruction and control groups) comparable on:
 - IQ
 - Vocabulary
 - Comprehensive Test of Phonological Processing (CTOPP) - Rapid Digit Naming, Elision, Memory for Digits
 - WRMT - WID and WA
 - TOWRE - SWE and PDE
 - Teacher Ratings of Effort and Distractibility
 - They were:
 - ~ 2/3 SD < mean on WIF local norms
 - ~ 2/3 SD < national norms on IQ, Vocabulary, CTOPP
 - 1/3 to 2/3 SD < national norms on reading measures
 - Teachers' mean effort rating ~ 60%
 - Teachers' mean distractibility rating between "sometimes" and "very often"

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NRCLD: Vanderbilt University R2

- Effects of Instruction: Progress Monitoring Data
 - Multi-level modeling with HLM (time was nested within the child; child was nested within Tier 2 instruction condition)
 - 2-piece model: an intercept (at mid-year) and two slope terms (fall and spring)
 - WIF was adequately modeled with 2-piece model
 - Spring instruction and control groups showed similar growth from fall to mid-year, prior to tutoring (slope 1).
 - Spring instruction group had greater growth from mid-year to end-year, during tutoring (slope 2).

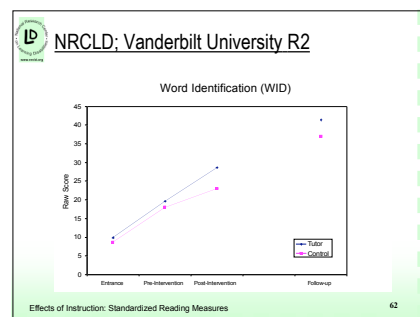
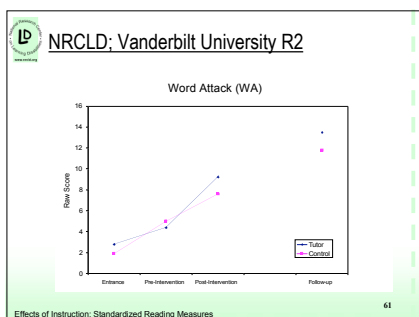
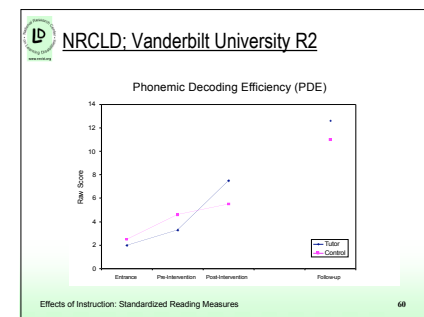
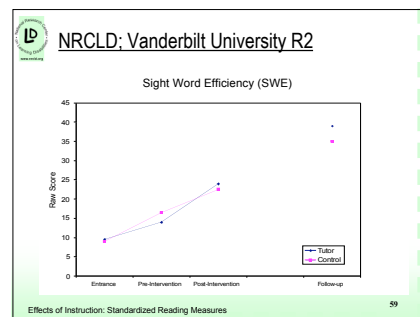
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NRCLD: Vanderbilt University R2

- Effects of Tutoring: Standardized Reading Measures
 - 2-way ANOVAs
 - Condition (Spring Instruction/Control) as between-subjects factor
 - Time (pretest vs. mid-year; mid-year vs. posttest) as within-subjects factor
 - Outcome measures: SWE, PDE, WA, WID (see graphs on following slides)
 - For 3 of 4 measures (all but SWE): interaction between condition and time, whereby
 - Contrast from pretest to mid-year was comparable for spring instruction and control groups and
 - Contrast from mid-year to posttest was significant, with spring instruction group outperforming control group.

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NRCLD: Vanderbilt University R2

- Maintenance of Effects at End of Grade 2:
 - ANOVAs on posttest to end of grade 2 (condition; time)
 - Main effect for time, but not for condition or interaction; so, effects maintained to end of grade 2

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NRCLD: Vanderbilt University R2

Effect Sizes for Instruction and Control Groups at Posttest and One-Year Follow-Up

Measure	Pretest to Posttest	Pretest to Follow-up
Word ID	.34	.28
Word Attack	.28	.40
Sight Word	.45	.41
Phonemic Decode	.55	.42

Note. Word ID = Woodcock Reading Mastery Test – Revised/NJ; Word Identification subtest; Word Attack = Woodcock Reading Mastery Test – Revised/NJ; Word Attack subtest; Sight Word = Test of Word Reading Efficiency: Sight Word Efficiency subtest; Phonemic Decoding = Test of Word Reading Efficiency: Phonemic Decoding Efficiency subtest; d = Cohen's d corrected for the correlation between pretest and posttest.

- NRCLD: Vanderbilt University R2**
- Did spring instruction (in Tier 2) decrease RD prevalence at end of 1st grade?
 - Defining RD = 1st-grade WID slope < .75 SD below normative mean slope
 - Yes: RD rates significantly lower in spring instruction (Tier 2) (43.5%) than control (81.8%)

West Virginia Phonemic Awareness Project R2

Experimental PAYC/IPAP	Comparison Typical Instruction
- N=177 33% sped 2.3% retained	- N=41 49% sped 5% retained

PAYC: Phonemic Awareness in Young Children
IPAP: Intensive Phonological Awareness Program

West Virginia Phonemic Awareness Project R2

Group Comparisons: Sub-sample > 50 points
Mean Scores (SD)

	Experimental	Comparison
T1 PALS:K	15.18 (9.4)	13.75 (6.6)
T2 PALS:K	35.11 (10.8)	32.05 (12.4)
T3 PALS:K	66.67 (17.1)	54.41 (19.6)
Dev. Spelling	17.53 (10.3)	12.16 (10.2)

T1: Assessment Time 1; T2: Assessment Time 2; T3: Assessment Time 3
PALS: Phonological Awareness Literacy Screening

West Virginia Phonemic Awareness Project R2

T3 Outcomes: Group Means (SD) by T2 Sum

T2 Sum	T3 PALS:K Sum		Dev. Spelling	
(Score)	Exp.	Comp. Exp.	Comp.	
0-28	48.3 (19.2)	38.1 (16.8)	8.3 (7.5)	6.5 (6.9)
29-39	69.1 (13.3)	53.5 (15.0)	19.11 (9.3)	5.1 (4.7)
40-49	75.0 (8.7)	71.5 (7.3)	21.35 (9.1)	20.2(8.9)
50-59	81.1 (8.4)	73.68 (7.3)	28.1 (8.1)	19.6(6.8)

West Virginia Phonemic Awareness Project R2

Severity of Risk: Below 60 points at T2 who failed to meet T3 benchmark

T3 Sum Points	Percent Change Of Total Sample	
	Experimental	Control
Substantially Below 50	2.05%	6.25%
Moderate 50 to 69	6.5%	10.7%
Mild 70 to 73	3.1%	1.8%
TOTAL	11.65%	18.75%

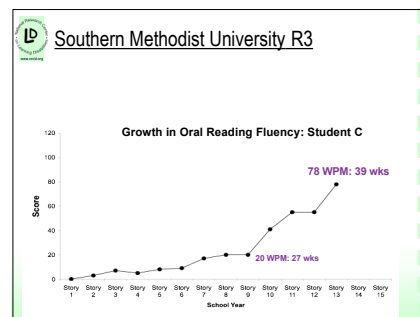
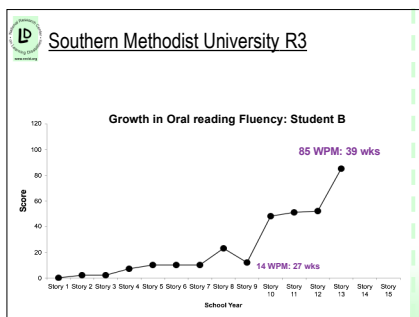
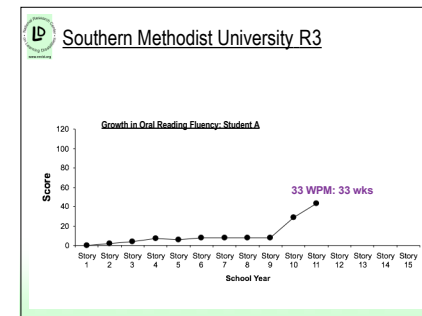
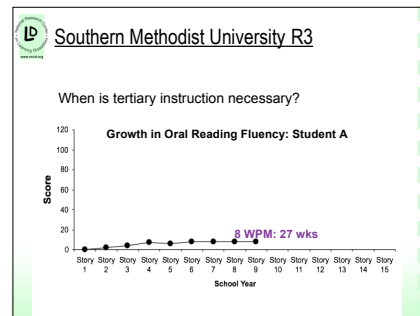
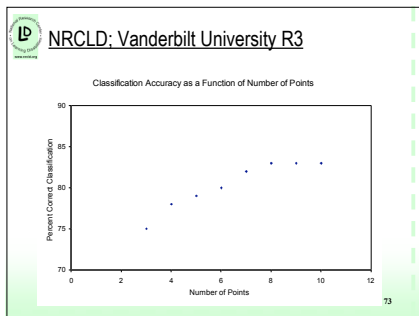
- Summary of Findings: Research Question Two**
- Students who received Tier 2 interventions vs. students not receiving Tier 2 interventions:
 - performed better on assessments and
 - had lower reading problem rates
 - Multi-tiered phonological awareness interventions that begin in kindergarten differentiate children who are responsive to instruction/intervention and those who are not and thus are likely to continue to have reading difficulties

- Topical Forum Research Question Three (R3)**
- How many data points are necessary to distinguish severe underachievers from achievers?

NRCLD: Vanderbilt University R3

Correlations Among Slope Terms Based on 3-18 Data Points

Slope Estimates	Slope 9 points	Slope 18 points
Slope 3 points	.31	.19
Slope 4 points	.72	.53
Slope 5 points	.82	.63
Slope 6 points	.88	.68
Slope 7 points	.95	.73
Slope 8 points	.98	.78
Slope 9 points		.82
Slope 10 points		.86
Slope 11 points		.90
Slope 12 points		.93
Slope 13 points		.95
Slope 14 points		.97
Slope 15 points		.98
Slope 16 points		.99
Slope 17 points		.99



West Virginia Phonemic Awareness Project R3

- Who benefits from classroom instruction in kindergarten?

	T1 Below 28	T2 Below 50	T3 Below 74
Exp.	39%	15%	12%
Comp.		18%	21%

T1 to T2 change on PALS:K
n = 689 children (Y1, Y3)

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- Summary of Findings: Research Question Three**
- Slope calculated after 5 data points (5 wks) will predict well the slope at 9 points.
 - Students who are not responding adequately after 9 weeks need to be referred for more intense instruction.
 - Some students may need more time than 9 weeks in Tier 2 before showing an adequate response to intervention (i.e., 27 weeks).
 - In kindergarten, 3 points of measurement across the year may be used to examine growth rate to differentiate nonresponders from responders.
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- Overall Additional Results**
- Responsiveness to Tier 2 Instruction
 - What percentage of children do not respond adequately to quality secondary intervention?
 - What criteria should be used?
 - Group 1 (Intervention A):
W-J III Basic Reading or TOWRE 92 SS and below
Proactive: 2.0% < 0.5% total population
Responsive: 13.0% 2.0%
 - Group 2 (Intervention B):
Oral Reading Fluency (ORF) less than 15 words correct per minute
Proactive: 10.0% < 2.0% total population
Responsive: 8.0% < 2.0%
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- Overall Additional Results**
- Fidelity of Instruction
 - How does strength of treatment predict growth in nonsense word fluency and oral reading fluency?
 - What are gains and slopes for 1st grade samples based on the strength of treatment index?
- Note: Index = adapted Planning and Evaluation Tool for Effective School-wide Reading Programs (PET; Kame'enui & Simmons, 2000)
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 Overall Additional Results

- Strength of Treatment Index
 1. Core curriculum is evidence based
 2. Fidelity score of core curriculum (86%+)
 3. Small-group reading intervention is provided for at-risk students (secondary interventions)
 4. Fidelity score for intervention (86%+)
 5. Data based decision making for intervention
 6. Reading coach/instructional leader manages reading intervention

** In schools with higher index ratings - students performed better **

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 Conclusions: RTI Implementation

- Effective use of RTI requires strong commitment from general education
 - Tier 1 (General Education): Students receive research-based curriculum and high-quality instruction.
 - Tier 2 (general education & special education collaboration): Students receive more intensive instruction targeting specific area of weakness.
 - Tier 3 (special education): Students receive individualized instruction targeting specific area of weakness.

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 Conclusions: RTI Implementation

- RTI can be used for prevention of SLD *and* as a significant role in SLD identification
 - Topical forum research results can provide state and local education agencies with measures and procedures to make SLD identification based on RTI data
- Special education (special education-like) services have an important contribution to make in RTI implementations
 - The role of special education needs to be more clearly defined

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 Conclusions: RTI Implementation

- When the RTI process is implemented effectively
 - It eliminates poor instruction as a viable explanation for students' failure
 - It increases the likelihood that a student who is not responding adequately does have a learning disability

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 Further Research Needed

- In an RTI Model, students will move among tiers, i.e., from Tier 1 to Tier 2 and back again
 - Further consideration regarding management of this movement is warranted
 - What data need to be collected and used to determine this student movement?
- Most of current research (and research presented at the topical forum) has focused on reading decoding skills.
 - There is concern that reading comprehension is not being addressed and that reading comprehension deficits may not appear until later in child's education.
 - RTI research needs to expand into other academic areas (math, science, etc.)

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 Further Research Needed

- The success of RTI models relies heavily on the use of research-validated interventions to address students' needs.
 - Currently, such interventions exist for some academic areas (i.e., reading) at some instructional levels (K & 1st grade).
 - The considerable lack of interventions in some key areas may mean RTI implementations are not practical for all students.

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