An Overview of the Center For Response to Intervention in Early Childhood - Bringing RtI To Preschoolers

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CRTIEC
A Research Initiative to Promote Early Literacy and Language Development
Overview

- Overview of CRTIEC
- Partnerships
- Local RTI Network

**Today’s handouts** -
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Our Key Partners

- University of Kansas
  - Charles Greenwood & Judith Carta
- Dynamic Measurement Group; Eugene, OR
  - Ruth Kaminski
- University of Minnesota
  - Scott McConnell, Tracy Bradfield, Alisha Wackerle-Hollman, and Michael Rodriguez
- Ohio State University
  - Howard Goldstein
- Division for Early Childhood-CEC
Our Goal

To develop and validate interventions and progress monitoring tools so that pre-kindergarten programs can find and intervene earlier with young children showing the earliest signs of early literacy difficulties

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Background

- Importance of early literacy to later academic success
- Identification of literacy problems is often too late
- Prekindergarten programs need evidence-based approaches for early identification and intervention in literacy and language
- These tools need to fit the reality of early childhood education settings

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Challenges for RtI in ECE

- What is “Tier 1?”
  - Non-universal access
  - Non-standard curricula
  - Varied treatment rigor
- What should be the focus?
  - Age
  - Curriculum/domain
  - Population
- What is the relation to ECSE?
- What will be RtI’s acceptance in ECE?

1. Use of Multiple Tiers of Intervention

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<tr>
<th>ACADEMIC SYSTEMS</th>
<th>BEHAVIORAL SYSTEMS</th>
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<td>Intensive, Individual Interventions</td>
<td>Intensive, Individual Interventions</td>
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<td>Individual students</td>
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<td>Assessment-based</td>
<td>Assessment-based</td>
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<td>High intensity</td>
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<td><strong>TIER 2</strong></td>
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<td>Targeted Group Interventions</td>
<td>Targeted Group Interventions</td>
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<td>Some students (at-risk)</td>
<td>Some students (at-risk)</td>
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<td>High efficiency</td>
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<td>Rapid response</td>
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<td><strong>TIER 1</strong></td>
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<tr>
<td>Core Instructional Interventions</td>
<td>Core Instructional Interventions</td>
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<tr>
<td>All students</td>
<td>All settings, all students</td>
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<tr>
<td>Preventive, proactive</td>
<td>Preventive, proactive</td>
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</table>
2. Use of Evidence-Based Practices at All Tiers

2. Use of Evidence-Based Practices at All Tiers

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3. Use of Progress Monitoring Tools

Olive was below benchmark
Intervention implemented
Olive had 3 quarterly assessments
Provides 'before' and 'after' slope estimates

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4. Use of problem-solving model

What Will CRTIEC Do?

- Develop and validate Tier 2 and Tier 3 interventions in early literacy/language
- Develop and validate progress monitoring measures in early literacy
- Disseminate findings to practitioners, policymakers, and researchers
- Provide national leadership on RtI for young children through the development of a national network

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Intervention & Assessment Focus

- Focus of both interventions and progress monitoring measures will be key skills known to be predictors of reading:
  - Phonological awareness and letter/sound correspondence
  - Oral language/vocabulary
  - Alphabet knowledge and print awareness
  - Comprehension
  - Interventions will focus on increasing opportunities to practice these skills

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Measurement R & D Team

- University of Minnesota
  - Scott McConnell
  - Michael Rodriguez
  - Tracy Bradfield and Alisha Wackerle-Hollman
  - Anthony Albano, Amanda Besner, Kate Clayton, Megan Rodriguez, Laura Potter, Braden Schmitt
- University of Kansas
  - Judy Carta
- Consultants
  - Kristen Missall, University of Kentucky
  - Cary Roseth, Michigan State University

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Measurement Goals

- Goal: To complete a focused series of development and validation studies to produce an assessment system for language and early literacy development that can drive RtI in preschool classrooms
  - Evaluate and improve existing measures
  - Develop and evaluate new measures
  - Produce norms, benchmarks, and other decision rules for all measures
  - Build a usable system and set of efficient procedures
  - Test feasibility and initial efficacy in classrooms

Measurement Design Objectives

- Match measures to functions of assessment
  - Screening and progress monitoring measures
  - General Outcome Measures and Mastery Monitoring Measures
- Maximize efficiency and feasibility
- Incorporate psychometric “best practices” in design, evaluation, implementation
- Build on existing infrastructure, expanding and improving as needed
  - IGDIs, DIBELS, ggg.umn.edu

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**Domains of Assessment**

- Language and Early Literacy for Four-Year Old children
  - Oral language/vocabulary
  - Phonological awareness and letter/sound correspondence
  - Alphabet knowledge and print awareness
  - Comprehension

**Major Functions of Assessment**

- Screening – Identify children in Tier 1 who might benefit from additional intervention
  - Quarterly assessment of entire class
  - Multiple gating approach
- Diagnostic assessment for Tier 2/Tier 3 services – Identify domain(s) for additional intervention
- Progress monitoring – For Tier 2 and Tier 3 students to identify best match to intervention service
- Fidelity of intervention at all tiers
Purposes of Assessment System

- Identify T1 children who would benefit from T2 or T3 intervention
  - Identify domain(s) of intervention needed – oral language and vocabulary; phonological and phonemic awareness, print awareness and alphabet knowledge; comprehension
- Monitor progress for T2 and T3 students
  - Make “hold” or “move” decisions: T2 to T1, T2 to T3, T3 to T2
- Expand knowledge of GOMs and ECE–to–K-12 assessment

Design Principles for Measures

- GOM-ness
  - Efficient, repeatable, related to long-term outcome (what?)
  - Indicator-level assessment (not necessarily diagnostic for intervention)
- Sensitivity
  - Screening – Err in direction of false positives
  - Identification – Quarterly status
  - Progress Monitoring – Biweekly progress
- Psychometric rigor
- Feasibility
Multiple validity relations

- Concurrent validity viz ‘criterion’ measures
- Treatment validity viz T1, T2, and T3 interventions
- Predictive validity viz DIBELS, other language and literacy measures (K-3)
- Face validity
  - Teachers (but clarity about relation to treatment)
  - RtI advocates

IRT and GOMs

- Core, underlying metaphors are similar, and key assumptions are compatible
  - IRT: Trajectory that is invariant across individuals and populations, with items and locations located on it
  - GOM: Growth toward long-term, common outcome, with variations at individual (and nested) level in status, rate of growth
  - Both efforts – locate individual at single point in time and repeated measures on trajectory (and estimate rate of growth)
Quick Review: Item Response Theory

- Assumes an “ability” that is invariant in characteristics across individuals and time
- Assumes that items and individuals can be located on this ability
  - Thus, items and individuals vary across ability – an implicit “absolute” scale
- Assumes that item and test statistics are invariant across samples
- GOM: Sum of “item information functions” across selected items

FIGURE 3. Relationship between ability and true score
Sound Identification: Item Map

Advantages/Assets

- Increased precision in item and scale construction
  - More analytic tools, and more analytic colleagues
  - Item-level analyses for reliability, item information function
  - Greater facility for adding, evaluating items and constructing scales
- Expanding item pools
- Increasing knowledge of methodological and logistical requirements for design, testing, refinement, implementation
**Measurement Research**

- **Phase I**
  - Explore possible measures (item characteristics, reliability, validity)
- **Phase II**
  - Expand item pools
  - Set initial cut scores using teacher judgments
- **Phase III**
  - Field-test in real-world settings

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**Phase I**

- Evaluated measures in oral language, alphabet knowledge, phonological awareness, comprehension
- Selected measures in OL, AK
  - Picture Naming, Sound Identification
- Working on selection in PA, Comp

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**Phase II**

- **Expand items**
  - Increase precision, location through item revision
  - Write to specific “locations”

- **Set initial cut-ranges**
  - Teacher judgments – “Tier-level Descriptors”
  - Standard-setting score analysis
  - Current status – Cut ranges

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**Tier-Level Descriptors**

- With intervention design teams and thorough review of theoretical and empirical literature, crafted descriptions of child performance “by tier”

- Tier-Level Descriptors (TLDs) asked teachers to rate performance of each student, based on operational definitions of each early literacy domain
  - Teachers placed students in Tier 1, Tier 2 or Tier 3
  - Teachers indicated to what extent they were confident about the placement
TLD Description of Oral Language

Tier 3
Describes a student that:
Has limited verbal skills
Uses primarily 1 to 2 word utterances and short phrases to communicate
Does not tell or talk about stories.
May exhibit frustration or challenging behavior related to limited communicative skill

Tier 2
Describes a student that:
- Primarily uses nouns and verbs in simple sentences during conversation.
- Tends to use nonspecific words (e.g., “this, that, stuff”) describing objects, people and places.
- Struggles to engage in conversation about unfamiliar topics.
- Struggles to engage in conversation about topics not in their immediate environment.
- Struggles to tell or talk about stories.

Tier 1
Describes a student:
That does not meet criteria for Tier 2 or Tier 3.
For whom you have no concerns in this area.

Setting Benchmarks
Picture Naming

Analysis yielded a cut score between Tier 1 and Tier 2/3 at 1.90 logits.
Phase III (Next 2 Years)

- Develop CRTIEC “model”
  - Complete decision rules for identification for tiers, progress monitoring in T2 and T3
  - Develop “systems” that help teachers manage administration, scoring, decision-making
  - Put into action with interventions
- Test feasibility
- Test effects

What Do We Have?

- We have
  - Item banks, identification bundles, and preliminary cut-ranges based on teacher judgments for Oral Language, Alphabetic Knowledge/Print Awareness
  - Concurrent validity relations for measures in all four domains with standardized measures, classroom characteristics, observational measures

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We Will Have

- We will have:
  - Item banks, identification bundles, and preliminary cut-ranges based on teacher judgments for Phonological Awareness, Comprehension
  - Progress monitoring measures, both GOM and mastery-monitoring
  - Classroom management systems
  - Training for staff, program leads

Tier 2 Intervention Examples

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Skill Focused Listening
Center Activities: Tier 2

- Skill Focused Activities - Tier 2 (SFA – T2) are designed to be independent of teacher instruction. Monitoring can be done by a paraprofessional.
- Supplemental, rather than substitute for Tier 1 curriculum in 4 major domains
  - Phonological Awareness
  - Print Awareness/Alphabet Knowledge
  - Vocabulary
  - Comprehension
- Follow a generalized developmental/hierarchical process based on previous evaluation of curricular skill implementation timelines.
  - For example, in the PA area, Storybook Script 1 would focus on “Listening for Sounds: Same and Different,” whereas Storybook Script 10 would focus on “Identification of First Sounds in Words.”

How is the Tier 2 Intervention Delivered?

- Activities are designed to be administered in “listening centers” for which scripts are pre-recorded onto compact discs.
- Children listen using headphones and respond to the embedded interactive activities. Familiar characters (e.g., Sally the Sound Seal, Luke the Letter Lion) serve as the teaching “guide.”
- Pre-recorded scripts contain visual and auditory cues to increase children’s ability to complete the listening center each day with minimal adult assistance.
  - For example, a bell sound prompts children to turn the book pages
  - Pictures/icons (e.g., kitten) appear in the reading books and on written materials to serve as orienting cues, so when children are asked to follow along they can check whether they are in the right place.

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How is learning maximized?

- All scripts require active participation and responding from children by modeling answers, asking questions, and providing time for spoken, manipulative play, and drawn or printed responses.
- Feedback is provided within the context of the recorded scripts so children can monitor whether they are responding correctly
  - (e.g., "Beetle. The first sound in beetle is /b/. Say beetle. (pause) What is the first sound you hear in the word beetle? (pause) /b/. Great job. Tell me again, What is the first sound in beetle? (pause) /b/. Now back to our story... ")
- Multiple embedded opportunities to respond
  - Each script will have 10 embedded opportunities to respond
  - Script is repeated 4X per week
  - Child has 40 practice opportunities practice per week

Listening Center Video

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How do we know T2 is effective?

- Tier 2 are ~ 12 to 15 minutes and can be repeated over the course of the week. More than one domain can be used per week.
- Mastery monitoring probe - designed to track progress of the skills being taught that week
- We routinely see students become more proficient with their responses as the week progresses

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Tier 3 Intervention Examples

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Tier 3 Intervention Development

What do we know from the research?

- Lowest performing children benefit the most from language and early literacy intervention that is:
  - Focused on a few priority skills
  - More explicit
  - More comprehensive
  - More systematic

e.g., Biemiller & Slonim, 2001; Foorman & Torgesen, 2001; Justice & Vukelich; National Reading Panel, 2000; Snow et al., 1988; Stahl, 2003

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Tier 3 Intervention

Children served:

- Children who display significant delay in language and early literacy compared to peers
- Children who are not making adequate progress in T2

Activities:

- Teacher-led
- Increase in intensity of instruction
- More restricted focus on prerequisite and high-priority skills

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Tier 3 BRIEF Activities

**Brief, Reading-related activities that are Intense, Engaging, and Focused**

- Brief 5 - 20 minute small-group activities
- Reading-related activities in the domains of:
  - phonological awareness
  - alphabet knowledge
  - vocabulary and oral language
  - comprehension

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Tier 3 BRIEF Activities

**Intense**

- Teacher-led
- Smaller group size (1-3 children per group)
- High specificity of instructional design
  - Explicit instruction
  - Systematic scope and sequence of skills
  - Carefully designed instructional examples
- Increased opportunities for guided practice with immediate teacher support
- Accommodations specified for individualizing for children with identified disabilities

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Tier 3 BRIEF Activities

- **Engaging**
  - Inclusion of movement, songs, games appropriate for preschool children
  - Inclusion of extension activities for additional practice and integration of newly acquired skills/competencies in center activities

- **Focused**
  - Restricted scope and sequence of skills
  - Focus on prerequisite and high-priority skills

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Tier 3 Intervention: Example

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Tiered Curricula

Multiple Levels of Support in Preschool Language and Literacy RTI

- Tier 1 – Curriculum experiences provided all children
- Tier 2 – Children with performance below benchmark
- Tier 3 – Children below benchmark, with an IEP for language and early literacy concerns, and/or not responsive to Tier 2

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Tier 1 Curriculum Issues

- Improving results for all children is a bootstrapping effort where program improvements are made based on children’s results and evidence of effectiveness.
- Preschool RTI seeks to rule out children’s lack of opportunity to learn by providing key experiences.
- RTI assumes use of evidence-based curricula, however, the current state of preschool affairs suggests this may not be assumed.

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Tier 2 and 3 Intervention Issues

- The Tier 2 and 3 language and early literacy interventions for use in a comprehensive preschool RTI model remain to be developed and tested for efficacy.
- These interventions will be needed for use in preschool RTI models.
- Interventions initially developed in the early years of CRTIEC subsequently will need strong evidence of efficacy for use in preschool RTI.

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Producing Strong Evidence

- Use of rigorous study designs
- Participation of real preschool programs (PreK; Head Start)
- Participation of multiple programs, teachers, and children in multiple sites in the country (KS, MN, OH, OR)
- Initial findings where CRTIEC staff are the key implementers (Year 4)
- Replication of findings where Preschool staff are the key implementers (Year 5)

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What We Expect to Learn

- We will understand the feasibility of the RTI approach to preschool with respect to language and early literacy learning
- We will know how to adapt RTI to preschool
- We will understand how to align preschool RTI with K-5 RTI services
- We will know how to best blend Part B services with Preschool instruction in all Tiers, including Tier 3

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What We Expect to Learn

- We will know the best progress monitoring architecture to use for decision making in preschool
- We will estimate effect sizes for Tier 2 and Tier 3 interventions with respect to readiness for Kindergarten
- We will learn which delivery models are best for Tier 2 and 3 interventions in preschool
- We will understand how aspects of implementation fidelity mediate children's outcomes and how to better prepare teachers

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National Early Childhood RtI Network

- Up to date information on RtI in early education
- Learn about current research on progress monitoring and interventions in early literacy
- Join the network at [www.crtiec.org](http://www.crtiec.org)

[http://www.crtiec.org](http://www.crtiec.org)
MN Partnerships: Local Network

- CRtIEC/ School District Partnerships:
  - Connection with others implementing RtI in EC settings
  - Exchange of information on practical issues related to application in real world settings
  - Up to date information on new strategies and procedures
  - Problem solving, mentorship

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- Email us at the U: crtiec@umn.edu

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