The Society for Clinical Child and Adolescent Psychology (SCCAP): Initiative for Dissemination of Evidence-based Treatments for Childhood and Adolescent Mental Health Problems

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Keynote

Evidence-Based Instructional Strategies for Promoting the Development of Early Language and Literacy Skills for Children At-Risk

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Note: Some slides with unpublished data not included in handouts.

Overview of Presentation

- Types of Evidence (a quick review)
- Why this is so important.
- What are the skills on which we need to focus?
- Evidence for Interventions for Children At-Risk
- Response to Instruction (RTI) Models in Pre-K Settings
- Importance of Classroom Curriculum

Types of Evidence

What does it mean for an instructional approach to be "evidence based?

1. Follows from what we know about development.
2. Evidence that using the instructional approach results in the outcomes we want.

Types of Evidence

Evidence that Something "Works"

- Evidence shows an "effect."
  - Desired outcome is achieved when approach is used.
  - Problem with this is that we do not know what would have happened anyway.

Types of Evidence

Evidence that Something "Works"

- Evidence shows an "impact."
  - Desired outcome is achieved in contrast to another approach.
  - Called "counterfactual reasoning"
  - In educational research, typically achieved by comparing outcomes between two or more groups.
  - Best case is when groups are formed intentionally by chance (e.g., randomization).

What is at Stake?

The Importance of Reading

- Reading skills provide the foundation for children's academic success
- Children who read well read more.
- They acquire more knowledge in numerous domains.
- Nagy and Anderson (1984, p. 328) estimated that the number of words read in a year by a middle-school child who is an avid reader might approach 10,000,000, compared to 100,000 for the least motivated middle-school reader.

The Importance of Reading

Children who lag behind in their reading skills…

- receive less practice in reading than other children
- miss opportunities to develop reading comprehension strategies
- often encounter reading material that is too advanced for their skills
- acquire negative attitudes about reading itself.

The Importance of Reading

This may lead to what Stanovich (1986) termed a “Matthew effect,” (i.e., the rich get richer while the poor get poorer).

Children with poor reading skills fall further and further behind their more literate peers in reading as well as in other academic areas, which become increasingly dependent on reading across the school years.

The Importance of Reading

- Children with limited reading-related skills rarely catch-up to their peers without intensive intervention.
- Many continue to experience difficulties throughout their school years and into adulthood.
- Children who are poor readers are frequently referred to special education classes.
- Of those who experience the most serious reading problems, 10 to 15% drop out of high school, and only 2% complete a 4-year college program.

The Preschool Context: Emergent Literacy Skills

Preschool Context

- **Increased recognition that preschool period can be critical for prevention of later reading problems – if opportunity seized**
- **Focus on emergent literacy, not conventional reading**

Emergent Literacy

Interventions in the preschool period need to focus on emergent literacy skills because children are not yet engaging in conventional forms of literacy (i.e., most preschoolers are not yet reading).

Emergent Literacy

Questions that need to be answered about emergent literacy interventions:

- **What skills constitute the domain of emergent literacy?**
- **What are effective ways to intervene on those skills?**

Identifying Emergent Literacy Skills: The Evidence

Identifying Emergent Literacy Skills

National Early Literacy Panel's Meta-analysis of Predictors of Conventional Literacy Skills

- Panel screened over 7,300 published studies.
- Using standard criteria, 300 studies identified.
- All of these studies involved a predictive relation between a skill measured during preschool or kindergarten and a conventional literacy outcome (decoding, reading comprehension, spelling) measured at some later point in time (i.e., from kindergarten forward).

Summary of Predictive Analyses

Predictor Variable	Decoding	Reading Comprehension	Spelling	Multivariate Significance
Alphabet Knowledge	++	+	++	**Yes**
Phonological Awareness	+	+	+	**Yes**
Concepts About Print	+	++	+	**Sometimes**
RAN Letters/Digits	+	+	**NA**	**Yes**
RAN Objects/Colors	+	+	+	**Yes**
Writing/Writing Name	+	+	+	**Yes**
Oral Language	+	+	+	**Sometimes**
Phonological STM	--	+	+	**Yes**
Visual Perceptual	--	--	+	**No**
Print Awareness	--	+	**NA**	**NA**

Secondary Analyses of NELP Results

Secondary Analyses of Oral Language Prediction of Later Reading Skills from NELP

	Average Predictive Correlation		
Predictor Variable	Decoding	Comprehension	
Language Composite	.58	.70	Decoding < Comp
Receptive Language	.52	.63	Decoding < Comp
Expressive Language	.48	.59	Decoding = Comp
Grammar	.47	.64	Decoding < Comp
Definitional Vocabulary	.38	.45	Decoding = Comp
Verbal Knowledge	.36	.45	Decoding = Comp
Verbal-IQ	.35	.35	Decoding = Comp
Receptive Vocabulary	.34	.25	Decoding > Comp
Listening Comprehension	.33	.43	Decoding < Comp
Vocabulary NOS	.33	.31	Decoding = Comp
Expressive Vocabulary	.24	.34	Decoding = Comp
Language NOS	.20	.31	Decoding = Comp

Evidence-Based Instructional Practices for the Promotion of Emergent Literacy Skills

Evidence-Based Instructional Practices

- **Sources of Evidence**
  - **Meta-analyses of Interventions by the National Early Literacy Panel**
    - Code-focused Interventions
    - Shared-reading Interventions
    - Oral language interventions
  - **U.S. Department of Education's What Works Clearinghouse** (http://ies.ed.gov/ncee/wwc/)
    - Code-focused interventions (phonological awareness)
    - Shared-reading interventions
    - Preschool Curriculum

Evidence for Types of Instructional Practices

Results of NELP Meta-analysis for Code-Focused Interventions: Effect Sizes for Different Outcomes

	Effect Sizes for Outcome Variable and (*n*) of Studies Contributing to Effect Size				
Type of Training	**Phonological Awareness**	**Alphabet Knowledge**	**Oral Language**	**Reading**	**Spelling**
PA Training Only	.91***	.04	.09	.19	.59**
	(21)	(6)	(4)	(10)	(4)
PA & AK Training	.70***	.37*	.13	.31*	.50***
	(18)	(7)	(4)	(13)	(6)
AK Training Only	.48	----	.83*	-.52	----
	(1)	(0)	(1)	(1)	(0)
PA & Phonics Training	.74***	.57***	.68**	.66***	.59***
	(19)	(9)	(4)	(17)	(8)

Results of NELP Meta-analysis for Shared-Reading Interventions: Effect Sizes for Different Outcomes

Outcome Measure	N Studies	Effect Size	*p* for ES
Phonological Awareness	2	.11	.42
Oral Language	15	.73	.002
Alphabet Knowledge	2	-.06	.78
Print Knowledge	4	.50	.0001
Readiness	1	-.14	.58
Reading	0	---	---
Spelling	0	---	---
Writing	1	.52	.0005

Results of NELP Meta-analysis for Shared-Reading Interventions: Effect Sizes for Type of Shared Reading

Type of Reading	Effect Size	*p* for ES	*N* Studies
Dialogic Reading	.59	.01	9
Not Dialogic Reading	.41	.11	6

Results of NELP Meta-analysis for Shared-Reading Interventions: Effect Sizes for Type of Language Outcome

Outcome Measure	Effect Size	*p* for ES	*N* Studies
Vocabulary	.60	.008	9
Composite Oral Language	.35	.21	5

Some Evidence of the Efficacy of Small-Group Interventions with Children At-Risk of Academic Difficulties

Evidence for Small-Group Interventions

Two Studies

- **Study 1: "Prevention"**
  - **364 4-year-old children attending either Head Start or District Title I pre-k program**
  - **Classroom Curriculum: High Scope or Creative Curriculum**
  - **Children received small-group (n ~=5) pull-out instruction for vocabulary, phonological awareness, or print knowledge.**
  - **10 to 15 minutes per day for 12 weeks (~10 hours of intervention)**

Evidence for Small-Group Interventions

- **Study 2: "ELL Bi-Literacy"**
  - **94 4-year-old children who were Spanish-speaking ELLs attending a university Head Start program**
  - **Classroom Curriculum: High Scope**
  - **Children received small-group (n ~=5) pull-out instruction for vocabulary, phonological awareness, and print knowledge in either an English-only or a dual-language approach.**
  - **20 minutes per day for 20 weeks (~30 hours of intervention)**

Effect Sizes in Outcome Domains for Small-Group Interventions

	Study		
Outcome Measures	"Prevention"	ELL English	ELL Trans.
Vocabulary			
Receptive	.20*	.40*	.71***
Expressive	.21**		
Definitional		.41**	.75***
Phonological Awareness			
Rhyme	.22**		
Blending	.32***	.47**	.53**
Elision	.20*	.63**	.62**
Print Knowledge	.18*	.41**	.94***

What Do Impacts of this Size Mean for Children?

Table 4

Descriptive Statistics and Effect Sizes for TOPEL Standard Scores for Intervention Groups at Pretest and Posttest

	Pretest for group			Posttest for group		
TOPEL subtests	Control Adj. *M* (*SD*)	English Adj. *M* (*SD*)	Transitional Adj. *M* (*SD*)	Control Adj. *M* (*SD*)	English Adj. *M* (*SD*)	Transitional Adj. *M* (*SD*)
Definitional vocabulary	74.32 (17.47)	77.22 (18.88)	82.22 (14.00)	80.61 (17.70)	87.61 (14.70)	94.63 (12.94)
Phonological awareness	78.94 (10.10)	81.75 (12.02)	82.26 (12.24)	82.57 (11.19)	88.90 (11.08)	88.45 (11.67)
Print knowledge	87.61 (10.50)	90.08 (11.35)	93.78 (18.04)	92.21 (13.36)	96.66 (13.64)	102.42 (10.29)

From: Farver, J. M., Lonigan, C. J., & Eppe, S. (2009). Effective early literacy skill development for young English language learners: An experimental study of two methods. *Child Development*, *80*, 703-719.

Evidence for Preschool Classroom Literacy Curricula

What Works Clearinghouse Review of Preschool Literacy Curricula

- **Curricula identified by review of literature, search of websites, and nominations.**
- **Reviewed any and all published and unpublished studies of preschool curricula.**
- **Required studies that yielded causally interpretable evidence.**
  - **Group design**
  - **Appropriate comparison group**
- **Limited to evidence from past 20 years.**
- **Initial round completed in 2006/2007; updated continuously (e.g., July 2010).**

What Works Clearinghouse Review of Preschool Literacy Curricula

Curricula with No Studies

Active Early Learning Kit for Pre-K
Beyond Centers and Circle Time
Fast ForWord Preschool
Funsteps
High Reach
Houghton Mifflin Pre-K
Journeys into Early Literacy/Math
LeapDesk Workstation
Lindamood Phoneme Sequencing Prog.
Marazon system
Pebble Soup
ReadingLine Kits
S.P.A.R.K.
Scholastic Early Childhood Program
Sing, Spell, Read & Write
Active Learning
Building Early Literacy and Language Skills
FunShine Express: Fireflies/Sprouts
Growing Readers Early Literacy (High/Scope)
High/Scope Preschool Key Experience Series
Innovations Comprehensive Pre-K Curric.
Kaplan Planning Guide to the Pre-K Curric.
Learninggames
Links to Literacy Curriculum Kit
Open Court Reading Pre-K
Primrose Schools
Reggio Emilia
Saxon Early Learning
School Readiness Express
Sounds Abound
Stepping Stones to Literacy

What Works Clearinghouse Review of Preschool Literacy Curricula

Curricula with No Interpretable Studies

A Beka

Building Blocks for Literacy

Core Knowledge Preschool Sequence

DLM Early Childhood Express

Headsprout Reading Basics

Ladders to Literacy

Lidcombe Program

Opening the World of Learning

Bank Street

Building Language for Literacy (Scholastic)

Early Literacy and Learning Model (ELLM)

High/Scope Curriculum

Learning Experiences: An Alternative Program for Preschoolers and Parents (LEAP)

Montessori Method

Read, Play, and Learn!

Summary of What Works Clearinghouse Review of Preschool Literacy Curricula (curricula with interpretable studies)

Curriculum	Emergent Literacy Outcome			
	Oral Language	Print Knowledge	Phonological Awareness	Early Reading/ Writing
Bright Beginnings	**0**	**+**	**0**	**---**
Creative Curriculum	**0**	**0**	**0**	**0**
Curiosity Corner	**0**	**0**	**0**	**---**
Doors to Discovery	**+**	**+**	**0**	**---**
Let's Begin (Letter People)	**0**	**0**	**0**	**---**
Literacy Express	**++**	**++**	**++**	**---**
Ready Set Leap	**0**	**0**	**0**	**0**
Tools of the Mind	**0**	**---**	**0**	**---**
Waterford Early Reading	**0**	**0**	**---**	**---**

Notes: "---" No Data; "0" = No Effect; "+" Likely Positive Effect; "++" Positive Effect

Summary So Far

- Several Key Emergent Literacy Skills Amenable to Instruction
  - Alphabet Knowledge
  - Phonological Awareness
  - Oral Language (vocabulary and beyond!)

Summary

- A number of empirically supported instructional practices
  - Teaching Phonological Awareness
    - Better when combined with print
    - Better when combined with early reading
    - Evidence for impacts on conventional literacy outcomes
  - Shared-reading
    - Better when Dialogic Reading
    - Most effective for vocabulary
    - No current evidence for impacts on conventional literacy outcomes

Summary

- Key characteristics of instructional practices with empirical support
  - No evidence that effective practices have an impact when done with whole class
  - Evidence comes from use of small-group instruction or one-on-one instruction
  - Scaffolded instruction (activities keyed to children's current developmental level)

Summary

- Classroom Curricula
  - Most commercially available preschool curricula have **no** evidence of positive impacts (including all of the most commonly used curricula).
  - Some preschool curricula have evidence for positive impacts (or lack of impacts)
  - Even among these curricula, most have evidence for impacts on only a limited number of emergent literacy domains

Response to Instruction Models

- Two Overlapping Models
  - Response To Instruction (RTI) as tool for identifying children eligible for special education
    - "dual discrepancy" children must be substantially below average in the skill area and making little progress within the context of a high quality educational program

Response to Instruction Models

- Two Overlapping Models
  - Response To Instruction (RTI) as tiered educational programming
    - Educational content increases in intensity (greater frequency, smaller group size) as children demonstrate poor response to lower tier.
    - Based on idea that Tier 1, general classroom education, will meet the needs of at least 75% of the children in a classroom

Response to Instruction Models

- Two Overlapping Models
  - Both models rely on frequent, progress monitoring of skill development
  - Both models assume an evidence-based, effective Tier 1 classroom curriculum and that evidence-based interventions are available to those for whom that is not sufficient

Efficacy of Tier 2 Interventions in Preschool

Tier 2 Interventions in Preschool

- Two studies conducted in school district's preschool program.
- Due to an earlier study in the district, all preschools in the district were using a classroom curriculum with evidence of effectiveness (i.e., good Tier 1 Instruction).
- Study Question: In the context of an RTI Model, can we improve upon high quality general education for bottom 20% of children?

Tier 2 Interventions in Preschool

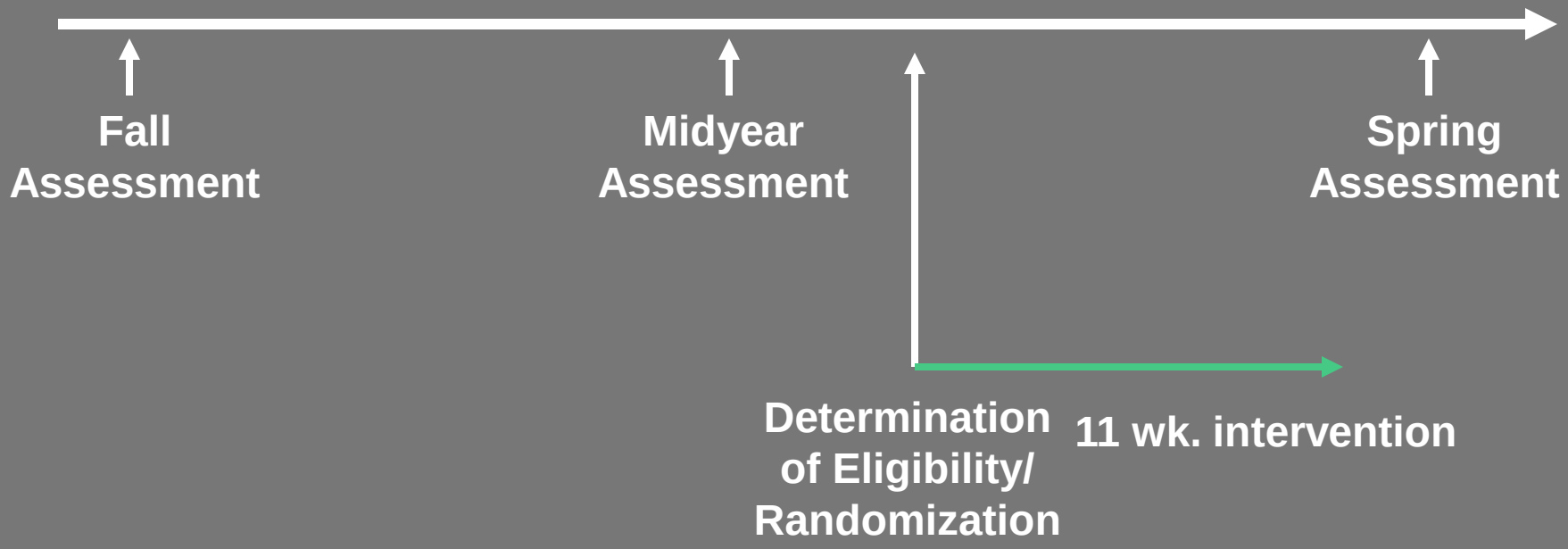
RTI STUDY 1

- Identified children who were not making adequate progress with classroom instruction.
  - Within domain, children who scored below the 20th percentile on the relevant midyear assessment were included in the randomization pool (*N* = 89 eligible)
  - Could qualify on the basis of Language, Print Knowledge, Phonological Awareness, or any combination.
  - Children above the 20th percentile not eligible.

Tier 2 Interventions in Preschool

- Identified children were given small-group (n = 5) pull-out interventions from February to May.
- Interventions were nearly identical to those used in earlier studies (“prevention,” ELL Bi-Literacy).

Study Timeline



Effect Sizes in Outcome Domains for Small-Group Interventions

	Study			
Outcome Measures	"Prevention"	ELL English	ELL Dual	**RTI #1**
Vocabulary				
Receptive	.20*	.40*	.71***	
Expressive	.21**			
Definitional		.41**	.75***	
Phonological Awareness				
Rhyme	.22**			
Blending	.32***	.47**	.53**	
Elision	.20*	.63**	.62**	
Print Knowledge	.18*	.41**	.94***	

Tier 2 Interventions in Preschool

- Little to no impact of Tier 2 Intervention Evaluated
- Tougher to obtain impacts with better quality Tier 1 instruction
- Need to Try More Intensive Interventions
  - Smaller groups
  - Time allocated on basis of specific qualifications
  - More time devoted to each skill area
  - Increased depth of instructional activities (fewer skills, more repetition)—more scaffolding

Tier 2 Interventions in Preschool

RTI STUDY 2

- As in Study 1, identified children who were not making adequate progress with classroom instruction—those scoring at or below the 20th percentile at midyear assessments.
- 256 children identified as eligible for Tier 2.
- Tier 2 intervention made more intense.

Tier 2 Interventions in Preschool

RTI STUDY 2

- Smaller groups (usually 3 children).
- More intervention time each day.
- Increased depth of instructional activities (fewer skills taught, more repetition)
- Children received intervention in domain only if they qualified in that domain, but children received intervention in all domains in which they qualified.
- 70% of children had to achieve 50% or better score on progress monitoring measure to move on (e.g., to 2-syllables).

Effect Sizes in Outcome Domains for Small-Group Interventions

	Study				
Outcome Measures	"Prevention"	ELL English	ELL Dual	RTI #1	**RTI #2**
Vocabulary					
Receptive	.20*	.40*	.71***		
Expressive	.21**				
Definitional		.41**	.75***		
Phonological Awareness					
Rhyme	.22**				
Blending	.32***	.47**	.53**		
Elision	.20*	.63**	.62**		
Print Knowledge	.18*	.41**	.94***		

Effect Sizes for Target and General Outcomes for Small-Group Interventions

Outcome	General Measure	Target Forms
Letter Names		
Letter Sounds		
Vocabulary		
Language Forms		

Tier 2 Interventions in Preschool

- Significant impacts of of Tier 2 Intervention when intensified.
- In context of high-quality and empirically supported Tier 1 instruction, very intensive Tier 2 instruction is required.
- Largest impacts on specific targets of intervention—more work on producing gains in generalized skills is needed.

RTI's Broad Efficacy in Preschool

- The presumption of effective, broadly used core Tier 1 curricula has not yet been realized in most preschool settings.
- Most widely used curricula have no evidence of efficacy (positive impacts), and most preschool programs do not use the few programs with this level of evidentiary support.
- Effectiveness of Tier 2 interventions for the highest risk children seems to depend on the quality of Tier 1 instruction.

RTI's Broad Efficacy in Preschool

- Even with effective curricula, many children from at-risk populations demonstrate need for additional instruction in key emergent literacy skills (oral language, phonological awareness, print knowledge).

Children at-risk for literacy problems: Where do we go from here?

- We know that many things work.
- We know that preschool teachers, with adequate support, can do these things effectively.
- Understand that different children have different needs because they bring a unique pattern of strengths and weaknesses with them to their earliest educational experiences.
- Other issues…

For more information, please go to the main website and browse for workshops on this topic or check out our additional resources.

Additional Resources

Online resources:

1. Florida Center for Reading Research: www.fcrr.org
2. Society of Clinical Child and Adolescent Psychology website: http://effective childtherapy.com
3. U.S. Department of Education's What Works Clearinghouse : http://ies.ed.gov/ncee/wwc/
4. Literacy Information and Communication System: http://lincs.ed.gov/

Books:

1. Neuman, S.B. & Dickinson, D.K. (2010). *Handbook of Early Literacy Research.* New York: Guilford Press.

Peer-reviewed Journal Articles:

1. Farver, J. M., Lonigan, C. J., & Eppe, S. (2009). Effective early literacy skill development for young English language learners: An experimental study of two methods. *Child Development, 80,* 703-719.
2. Lonigan, C. J., Allan, N. P., & Lerner, M. D. (2011). Assessment of preschool early literacy skills: Linking children's educational needs with empirically supported instructional activities. *Psychology in the Schools, 48(5),* 488-501.
3. Shanahan, T., & Lonigan, C. L. (2010). The National Early Literacy Panel: A summary of the process and the report. *Educational Researcher, 39,* 279-285.

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