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Assessing Cognitive Processes at the Core of Reading Comprehension: Pre-Kindergarten through Third Grade for the General English Speaking Population

Presented at the 2012 Annual Meeting of the National Council on Measurement in Education
April 12-16, Vancouver, British Columbia

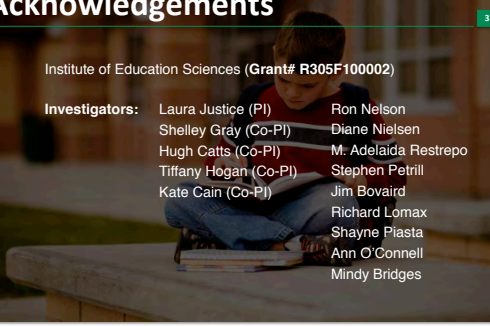




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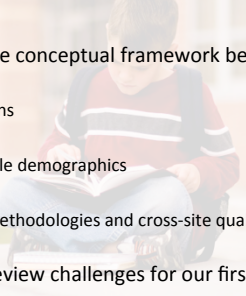



Goals of Our Presentation

To provide:

- An overview of the conceptual framework behind LARRC
 - Research questions
 - Sample Design
 - Preliminary sample demographics
 - Measures
 - Data collection methodologies and cross-site quality control
- Summarize and review challenges for our first year of RFU

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LARRC Overview

- LARRC is a multi-university and interdisciplinary network of researchers
 - The Ohio State University (OSU)
 - University of Kansas (KU)
 - Arizona State (ASU)
 - University of Nebraska-Lincoln (UNL)
 - UK's Lancaster University (LU)
- Theoretical framework:
 - Emphasizes language as a developmental construct that is central to our activities and to our focus on the language bases of reading comprehension

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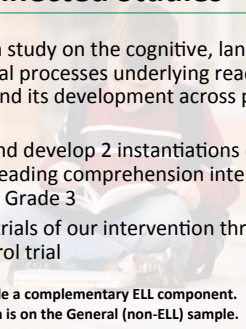


Series of Connected Studies

- *Study 1:* Research study on the cognitive, language, and environmental processes underlying reading comprehension and its development across pre-K through Grade 3
- *Study 2:* Define and develop 2 instantiations of a language-based reading comprehension intervention for Pre-K through Grade 3
- *Study 3:* Efficacy trials of our intervention through a randomized control trial

All studies include a complementary ELL component. Our presentation is on the General (non-ELL) sample.

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Study 1 Focus 7

- Cross-sectional and longitudinal
 - Identify grade-related differences in the relative contribution of lower- and higher-level language skills to children’s listening and reading comprehension in PK through G3
 - Determine the nature of the prospective relationship between children’s lower- and higher-level language skills in the early grades and reading comprehension in G3
 - Which child- and environmental-level attributes are positive, prospective predictors of reading comprehension; do these moderate the relations between language skills and reading comprehension?

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Study 1 Sample per Site, and Total 8

Chart showing number of children assessed/ followed-up per year, per site.

GRADE	PK	K	G1	G2	G3	N (site)	N (total)
Year 1	PK = 100	K = 30	G1 = 30	G2 = 30	G3 = 30	220	880
Year 2		K = 100	G1 = 30	G2 = 30	G3 = 30	190	760
Year 3			G1 = 100	G2 = 30	G3 = 30	160	640
Year 4				G2 = 100	G3 = 30	130	520
Year 5					G3 = 100	100	400

LARRC Data sites: ASU, KU, OSU, UNL <http://larrc.ehe.osu.edu>

Multisite School and Teacher Selection 9

- 69 schools/centers recruited across 4 data collection sites
 - 29 were Pre-school only schools/centers, 4 had both PK and K, and 4 were used for K only
 - 32 schools were used for range of grades PK to G3
 - 73% suburban; 22% urban schools/centers
- 265 teachers
 - 98.5% of recruited teachers are female
 - 70% of PK teachers reported only half-day programs at their center/ school (22.5% both half and full-day programs)
 - Only 2.2% of K teachers reported half-day programs; 2.2% both.
 - For Primary teachers: 12.3% have no college degree; 12.3% have Associates; 39.5% have Bachelors degree
 - For the Elementary teachers (including K), 34% have BA/BS; 58% with a Masters

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Sampling Methods for Child Sample 10

- Schools selected for willingness to work with researchers; many already had an established collaboration
- Sites looked for diversity in school/center size, ethnic/racial composition, poverty rates (FRL)
- After initial principal meeting:
 - All teachers invited; info sent home to parents of consenting teachers
 - Goal was 30 K-G3 children per grade per site, and 100 PK per site
 - random sample taken from those families who returned consents
 - Primary and secondary samples (K-G3: 30 primary, 20 secondary)

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Data Collection Methodology 11

- Initial screeners for Parents were used to exclude children with severe/profound developmental disability (ELL children assessed in ELL study)
- Teacher Background Questionnaire and Parent Background Questionnaire for capturing classroom, home environment characteristics
- Annual assessments each Spring, following children up to G3
- Assessments divided into 9 blocks of 25-35 minutes each
 - Total Assessment time: approximately 4.5 hours
- Classroom observations: for the 400 children in the PK entry sample, classroom observations are collected longitudinally until G3
 - CLOP, CLASS, ISI

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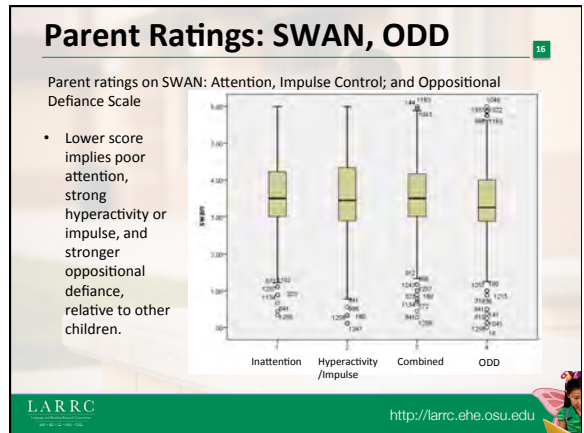
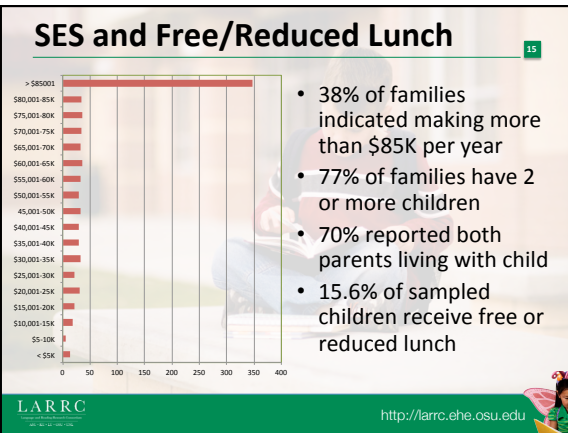
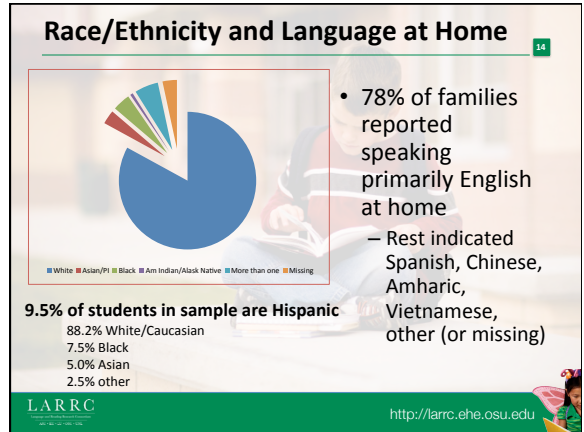
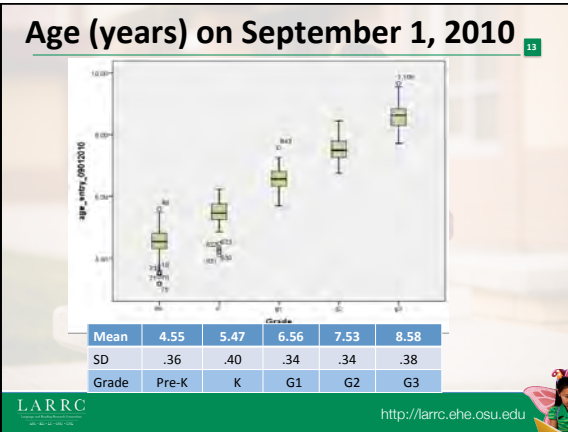
Primary Sample (N = 915) 12

Sample Size by Grade and Gender

Gender

Sample Sizes	PK	K	G1	G2	G3
Boys	239	70	54	64	57
Girls	174	61	71	59	66
Total	413	131	125	123	123

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Match with General US Population 17

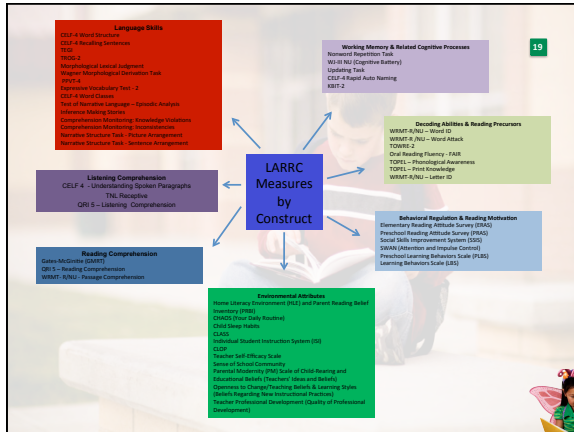
- Our General English sample is racially and ethnically diverse, and includes children with IEPs (9.6%) and from families below poverty level (15.6% receiving free or reduced lunch).
- Schools across the four data-collection sites capture between-school differences representing a range of schools in the US.

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Measures Selection 18

- Three guiding principles for selections
 - Multiple constructs, enable use as latent variables
 - Important for reading comprehension
 - Need for different modalities of measurement
 - Need for variability in task demand.
 - Battery developmentally appropriate in content and length, still able to address multidimensional study aims
 - Measures skills that span pre-reading to conventional reading

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Higher and Lower Level Language Measures

Language Skills

- Lower-level Language: Grammar**
 - CELF-4 Word Structure
 - CELF-4 Recalling Sentences
 - TEGI
 - TROG-2
 - TNL Receptive
 - Morphological Lexical Judgment
 - Wagner Morphological Derivation Task
- Lower-level Language: Vocabulary**
 - PPVT-4
 - Expressive Vocabulary Test - 2
 - CELF-4 Word Classes
 - Test of Narrative Language – Episodic Analysis
- Higher-level Language**
 - Inference Making Stories
 - Comprehension Monitoring: Knowledge Violations
 - Comprehension Monitoring: Inconsistencies
 - Narrative Structure Task - Picture Arrangement
 - Narrative Structure Task - Sentence Arrangement

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Measures: Experimental Measures

- Generalizable versus Experimental Measures
- Limited availability of quality assessments of certain study constructs, specifically higher-level language skills
 - Detecting inconsistent information in short narratives
 - tests of knowledge of narrative structure

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Measures: Psychometric Properties

- Process
 - Reliability
 - Validity
 - Reliability assessments for 70% of measures done to date
 - Process is on-going

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Measures: Organization/Administration

- Codebook
 - For each measure, a codebook entry was created to provide detailed records of the measures' psychometric qualities, as well as any modifications made to the measure for project purposes.
- Training of assessors
 - Assessors-in-training undergo comprehensive measurement training and in-lab observations to ensure consistent field assessor training, measurement administration, and fidelity.
- Scoring protocols
 - For those measures scored during administration, assessors are trained in scoring procedures as part of the training protocols.

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Cross-Site Data Collection: TeleForm

- Teleform
 - After data is collected at each site, it is entered into a general database via Teleform® scans.
 - In order to capture high quality data, all hard-copies of data being entered into the database via TeleForm® are thoroughly checked to eliminate any errors prior to scanning

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Cross-Site Data Collection

Data Cleaning Step	Tasks Involved
Teleform Scan Verification	<ul style="list-style-type: none"> Identify errors on scans (i.e., missing values) Communicate correction needs to sites Scan corrected forms into database
Data Audit	<ul style="list-style-type: none"> Identify random selection of 10 assessment forms (2 children per grade) for audit <ul style="list-style-type: none"> Compare item-level data in database to hard copy Compare total scores in database to hard copy Compare computed/derived standard scores in assessment manuals to hard copy Compare any hand-written data (e.g., those with 'other' options and constrained number variables such as birth date) on assessment scans to database
Data Check	<ul style="list-style-type: none"> Check item-level data and sum scores against plausible ranges Identify missing data (between and within measures) Verify ID's (child, teacher) and check for duplicates

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Cross-Site Data Collection

Type of Release	Given To	Completion Date	Description
Limited Release	Statisticians/ Site responsible for experimental measure	Varying dates before General/Technical release date	Used prior to the general release for those measures that require some preliminary work to determine summary scores. Limited releases include a subset of relevant variables or items. Additionally, as limited releases are for a specific use, analyses resulting from use of this data are not publishable.
Technical Release	Statisticians	General/Technical release date	Item-level data only, released only to statisticians, used for establishing psychometrics or for other analyses. The technical release will be the largest from which the general release is merely a subset thereof. The final technical release will be the summation of limited releases. There is only one technical release.
General Release	Released for general use	General/Technical release date	Summary scores only and no item-level or classroom data.
Requested Release	Interested party	Any time after General/Technical release date	Requests for item-level data (i.e., a subset of the Technical Release) from specific measures may be made by interested parties. Requests with justifications must be approved by the Steering Committee.

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Summary

- Challenges and Considerations
 - Measure selection versus time
 - Data cleaning etc., cross site
 - Post scoring and time required (training and scoring)
 - Primary /secondary sample
 - Communications across site
 - Incentives for children to keep them engaged in completing the lengthy battery
 - Treasure maps, encouragement to continue
 - Teacher videotaping concerns
 - Verify our sample characteristics for teachers/families who consented versus those who did not (ongoing)

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Contacts

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- Or, visit our LARRC website:

<http://LARRC.ehe.osu.edu>

Thank you!

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