New Scoring Mechanisms for the ECERS-R

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Early Childhood Environment Rating Scale-Revised (ECERS-R)

- The ECERS-R is one of the most widely used early childhood environmental assessments.
- The goal of the measure is to provide a reliable and valid measure of global quality in early learning environments.
- The scale contains 43 items within 7 subscales.

ECERS-R Subscales

- Space and Furnishings
- Personal Care Routines
- Language-Reasoning
- Activities
- Interaction
- Program Structure
- Parents and Staff

Current ECERS-R Scoring Procedures

- Individual items scored on a Likert-type scale from "1" to "7"
- "1" represents low quality; "3" represents moderate quality; "7" represents highest quality
- Each item is anchored by a set of indicators.
- Midpoint scores of "2," "4," and "6" also are possible.
- Subscale scores and total score derived by calculating the simple mean

Example Item #22: Blocks

1.1 Few blocks are accessible for children's play.

3.1 Enough blocks and accessories are accessible for at least two children to build independent structures at the same time.

3.2 Some clear floor space used for block play.

3.3 Blocks and accessories accessible for daily use.

5.1 Enough space, blocks and accessories are accessible for three or more children to build at the same time.

5.2 Blocks and accessories are organized according to type.

5.3 Special block area set aside out of traffic, with storage and suitable building surface.

5.4 Block area accessible for play for a substantial portion of the day.

7.1 At least two types of blocks and a variety of accessories accessible daily.

7.2 Blocks and accessories are stored on open, labeled shelves.

7.3 Some block play available outdoors.

Need for Revised Scoring of the ECERS-R

- Increased number of children enrolled in public pre-kindergarten programs

- Emergence of Quality Rating and Improvement Systems (QRIS)

- Increased emphasis on valid and reliable measures in early childhood that accurately predict child outcomes

Public Pre-Kindergarten Programs

- Designed to improve child outcomes, particularly for children from disadvantaged backgrounds

- Provide enhanced opportunities to acquire key skills with an emphasis on language/literacy

- Research shows that high-quality early childhood programs improve outcomes related to: language development, cognitive functioning, social-communication, and emotional adjustment.

Quality Rating and Improvement Systems (QRIS)

- Essential components of QRIS:
  - Quality standards
  - Process for monitoring standards
  - Process for supporting quality improvement
  - Provision of financial incentives
  - Dissemination to parents and public about program quality
- Environmental assessments, such as the ECERS-R, are used to measure, monitor, and support program improvement.

Increased Attention on Improving Validity and Reliability of Existing Measures

- Researchers in the field argue that environmental assessments, including the ECERS-R, do not demonstrate adequate validity.

Why revise the ECERS-R and its scoring system?

- Current ECERS-R may be too broad and lack sufficient detail

- ECERS-R is related to child outcomes, but the relationship is modest (Aboud, 2006; Burchinal et al., 2000; McCartney, Scarr, Phillips, & Grajek, 1985; Phillips, McCartney, & Scarr, 1987).

- Current scoring procedures may lead to incomplete findings regarding program quality.

  - "Stop" scoring approach may lead to the loss of important information.
  - Subscale scores miss including indicators from other items that are relevant to the construct.

Loss of Information When "Stop" Scoring is Used

10. Meals/Snacks

1.1 Meal snack schedule is inappropriate.	3.1 Schedule appropriate for children.	5.1 Most staff sit with children during meals/snacks.	7.1 Children help during meals/snacks.
1.2 Food served is of unacceptable nutritional value.	3.2 Well-balanced meals/snacks.	5.2 Pleasant social atmosphere.	7.2 Child-sized serving utensils used by children.
1.3 Sanitary conditions are not usually maintained.	3.3 Sanitary conditions are usually maintained.	5.3 Children are encouraged to eat independently.	7.3 Meals and snacks are times for conversation.
1.4 Negative social atmosphere.	3.4 Non-punitive atmosphere during meals/snacks.	5.4 Dietary restrictions of families followed.	
1.5 No accommodations for food allergies.	3.5 Allergies posted.		
	3.6 Children with disabilities included at table with peers.		

Subscale Scores and Loss of Information

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Previous Studies of ECERS-R

- There is an underlying factor structure in the ECERS-R, beyond the subscale level (e.g., Clifford & Rossbach, in press; Early, et al., 2005; Sakai, Whitebook, Wishard, & Howes, 2003).

- Most commonly, two factors have emerged: (1) Teaching and Interaction, and (2) Provisions for Learning

Focus of Our Current Work

- Our hypothesis is that a new scoring system, using the indicator information, can improve the predictive power of the ECERS-R.

- Goals of our current work:

  1. Develop a new scoring system using indicator level information

  2. Test the predictive power of this new scoring system

Procedures for Analyzing the Data

1. Establish a new set of factors to characterize each indicator
2. Conduct preliminary factor analyses
3. Conduct confirmatory analyses
4. Test the new factors to determine their predictive power

Characterizing Each Indicator

ITEM	INDICATOR	PRIMARY	SECONDARY	TERTIARY
17. Using language to develop reasoning skills	17.5.2 Children encouraged to talk through or explain their reasoning when solving problems (Ex. why they sorted objects into different groups; in what way are two pictures the same or different).	Literacy Language Concepts	Social Emotional	Engagement
	17.3.1 Staff sometimes talk about logical relationships or concepts (Ex. explain that outside time comes after snacks, point out differences in sizes of blocks child used).	Social Emotional	Literacy Language Concepts	Teaching
	17.7.2 Concepts are introduced in response to children's interests or needs to solve problems (Ex. talk children through balancing a tall block building; help children figure out how many spoons are needed to set table).	Engagement	Social Emotional	Literacy Language Concepts

Hypothesized New Subscales/Factors

- Access to materials
- Creativity
- Diversity
- Engagement
- Families
- Fine motor
- Grouping
- Gross motor
- Health
- Independence
- Individualization

- Literacy/language/concepts
- Physical environment
- Routines
- Safety
- Science/math/reasoning
- Social-emotional
- Special needs
- Staff
- Supervision
- Teaching
- Use of time

Sample Used in Data Analysis

- 8500 cases, from 6 different studies, in which all the indicators were scored

- States included: California, Iowa, Minnesota, Nebraska, North Carolina, Georgia, Illinois, Kentucky, New York, Ohio, Massachusetts, New Jersey, Texas, Washington, and Wisconsin.

- Issue with skewed distribution, few low scoring programs

Preliminary Factor Analyses

- Half of sample was randomly selected to be included in these analyses.

- All indicators for the Parents and Staff subscales were dropped.

- Multiple factor analyses were conducted to test the hypothesized subscales.

- Some models included multiple factors.

Confirmatory Model

- Models were confirmed using other half of the sample.

- EXAMPLE : New "Education" factor was a combination of three previous factors: Teaching, Literacy, Math/Science
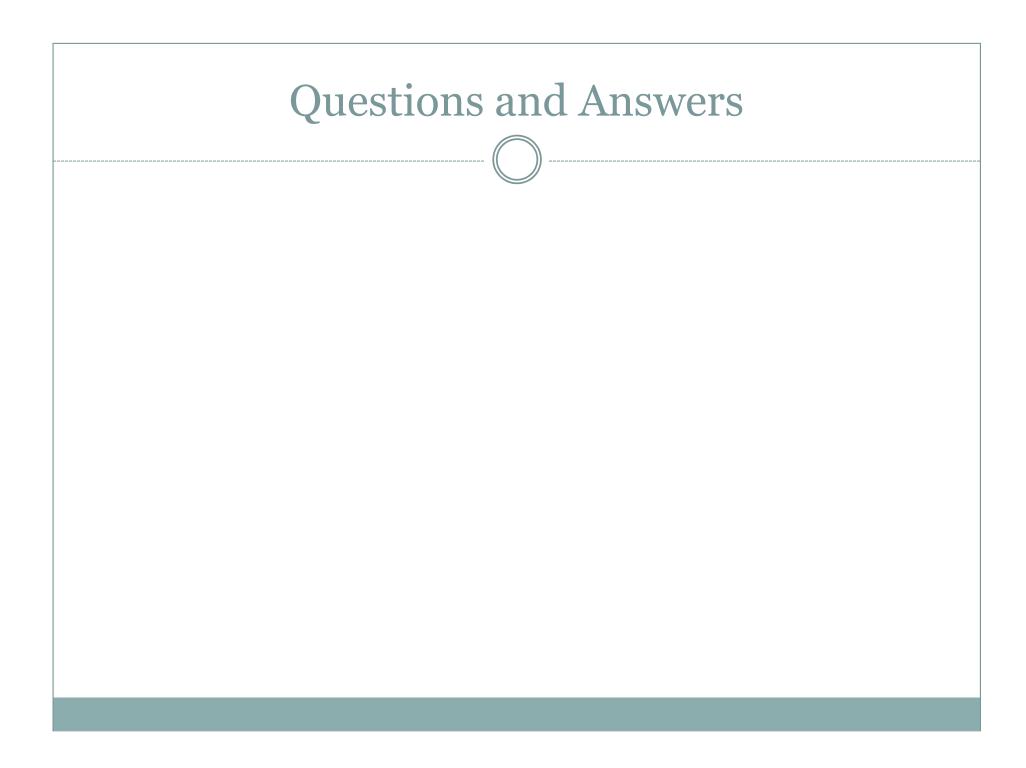
New Proposed Subscales/Factors

- Creativity
- Diversity
- Engagement
- Fine Motor
- General Health and Safety
- Gross Motor
- Grouping
- Independence
- Individualization

- Individualization
- Language/Literacy
- Physical Environment
- Routines
- Science/Math
- Social-Emotional
- Supervision
- Supervision to Promote Health and Safety
- Teaching
- Use of Time

Proposed New Scoring System

- Score all indicators on the scale
- Group indicators into new factor scores
- Calculate individual scores for each factor/subscale by summing the indicators within each factor

Questions and Answers

Large Group Activity

- Look at ECERS-R score sheet using traditional scoring procedures
- Look at scores for Social-Emotional factors using the new scoring approach

Discussion Questions

1. What kinds of information do each of the scoring approaches provide?

2. How does the new scoring approach help you address specific aspects of the classroom that are related to the social-emotional domain?

Small Group Activity

- Look at ECERS-R score sheet using traditional scoring procedures
- Calculate score for Creativity factor using new proposed scoring system:
  1. Add up the indicators that are marked "Yes"
  2. Divide the sum score by the total number of indicators
  3. Then divide the sum score by 7

Small Group Discussion Questions

1. What kinds of information do each of the scoring approaches provide?

2. How does the new scoring approach help you address specific aspects of the classroom that are related to creativity?

Wrap-Up Q&A

Conflict of Interest Disclosure

Richard Clifford has a financial conflict of interest as a result of receiving royalty and consulting payments in connection with use of the ECERS-R. His work on this effort is conducted under IRB approval from the University of North Carolina at Chapel Hill which includes a management plan for dealing with the conflict of interest noted here.