

Analytic Approaches to Studying Implementation of Early Childhood Programs and Systems

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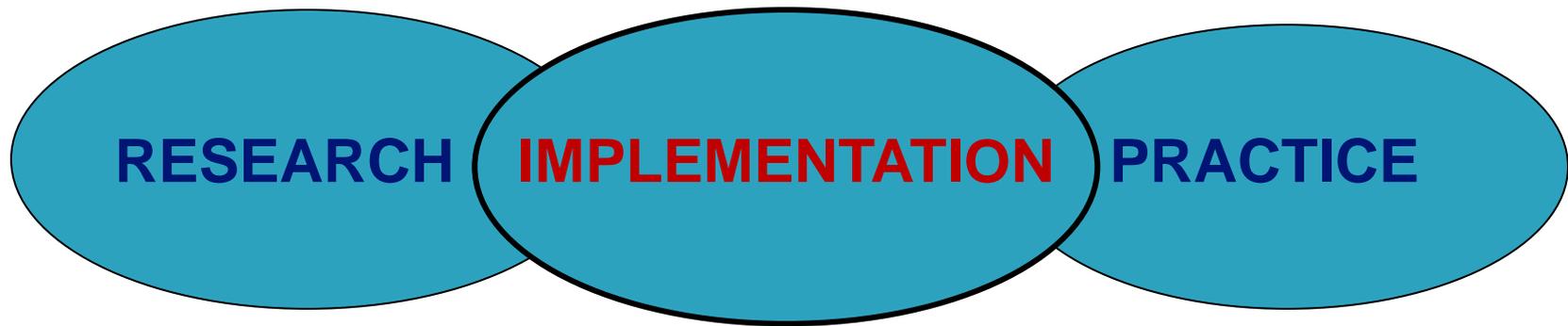
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NIRN Definition of Implementation

Implementation is defined as *a specified set of activities* designed to put into practice an activity or program of known dimensions.



Implementation: Filling the Research-to-Practice Gap

- **What is adopted is not used with fidelity and good outcomes**
- **What is used with fidelity is not sustained for a useful period of time**
- **What is used with fidelity is not used on a scale sufficient to impact social problems**

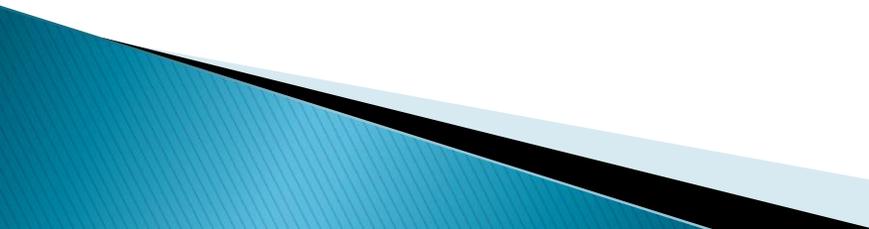
Background

- ▶ The importance of implementation science is growing in the field of early care and education
- ▶ *Working Meeting on the Application of Implementation Science to Early Care and Education Research, September 2010*
 - An edited volume based largely on the meeting proceedings is in progress
- ▶ Implementation Science Working Group
 - Meets quarterly during the year

Research Brief Series

1. Implementation Definitions/Frameworks
 2. Measuring Implementation Fidelity in Early Care and Education: Considerations for Future Measures Development
 3. How Much? The Role of Dosage in Early Childhood Intervention Implementation
 4. Understanding the Interplay of Quality and Quantity of Implementation in Early Childhood Interventions
 5. Measuring Implementation of Early Childhood Interventions at Multiple System Levels
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Purpose of this Session

- ▶ Provide an overview of the forthcoming research briefs
 - ▶ Highlight challenges and opportunities of applying an implementation science lens to ECE research, programs and systems
 - ▶ Provide opportunities for general discussion about:
 - Common definitions
 - Key program and implementation components that need to be measured
 - Methodological and analytic considerations for applying implementation science to ECE research
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Measuring Implementation Fidelity in Early Care and Education: Considerations for Future Measures Development

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Background

- ▶ Growing number of implementation frameworks, measures, and measurement strategies.
 - ▶ Findings are beginning to show that there are links between different aspects of implementation and different outcome variables (Odom, Fleming, Diamond, Lieber, et al, 2010).
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Methodological Gaps

- ▶ Psychometrics of fidelity measures
- ▶ Use of comparable measures

Currently, it is challenging to compare implementation fidelity across interventions, or even across studies of the same intervention.

Guiding Questions

- ▶ What kinds of implementation frameworks are guiding the development of new implementation fidelity measures? Which elements of these *implementation frameworks* are particularly important for early care and education researchers to consider?

Guiding Questions

- ▶ What issues in *measurement development* need to be attended to when designing implementation measures for early care and education interventions? What measurements strategies should be considered, including the development of measures that can be used across studies?
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Strategy

▶ Review at least 3 frameworks

- Gearing, R.E., El-Bassell, N., Ghesquiere, A., Baldwin, S. Gillies, J. Ngeow, E. (2011). Major ingredients of fidelity: A review and scientific guide to improving quality of intervention research implementation. *Clinical Psychology Review, 31* , 79–88.
- Nelson, M.C., Cordray, D.S., Hulleman, C.S., Sommer, E.C., Darrow, C.L. (under review). A procedure for assessing intervention fidelity in experiments testing education and behavioral interventions.
- Fixsen, Naoom, Blasé, Friedman, & Wallace (2005). Implementation Research: A Synthesis of the Literature. National Implementation Research Network.
http://www.fpg.unc.edu/~nirn/resources/publications/Monograph/pdf/Monograph_full.pdf

Synthesis

- ▶ **Description**
 - Measurement strategy
 - Procedures
 - Key Implementation Constructs
- ▶ **Strengths and Weaknesses / applicability for early care and education**
 - Conceptual simplicity/relevance
 - Feasibility
 - Methodological rigor
 - Potential products

Potential Conclusions

- ▶ Suggestions for choosing a framework
 - ▶ Development and use of project-specific and general measures (e.g., domain-specific measures, standard measure across interventions), including the advantages and disadvantages of each.
 - ▶ Standards for measurement of implementation fidelity
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Dosage and Early Childhood Interventions: It's Complicated

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Why Focus on Dosage?

- ▶ In the search for the “active ingredients” driving effectiveness of evidence-based programs, stakeholders want to know how much intervention is enough
- ▶ Many assumptions drive practice and research
 - More is better
 - One size fits all
- ▶ Despite the services required/recommended, participants get less
 - Setting a threshold is important

Different Definitions of Dosage

▶ Medical definitions

- Dosage refers to what is prescribed for a patient
- Patient compliance or adherence is what is actually received by the patient

▶ Behavioral intervention working definitions

- *Services recommended/required* by purveyor, intervention developer, or funder
- *Services offered* by the program on the ground
- *Services received* by parents and children (also referred to attendance or uptake)

What Does the Research Say?

- ▶ Dosage requirements are intervention- and context-specific
 - Intensity and comprehensiveness of the program matters
 - Across different types of classroom-based interventions (kindergarten, Head Start, and child care) dosage seems to relate differently to targeted outcomes
 - ▶ The interaction between dosage and service quality needs to be explored further
 - ▶ Information about dosage can be used to inform program management and improvement
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The Interplay of Quality and Quantity of Implementation in Early Childhood Interventions

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The Issue

- ▶ Prolific increase in early childhood interventions, but lack of understanding of how and why interventions work
- ▶ The critical next step toward answering the “how” and “why” questions is improving the measurement of implementation
- ▶ The research brief we are developing explores one area related to improving measurement

Definitions

- ▶ Note: *These are preliminary. We are still grappling with these and will cross-check with others working on measurement briefs to ensure coherence.*
- ▶ Quantity of implementation: any aspect of either interventionist or participant behavior that is quantified.
 - Examples include dosage (services offered), density (amount of intervention during a session), frequency (how often intervention is delivered), exposure (services received, attendance, uptake), intensity (length of a session), adherence (proportion of intervention components delivered)

Definitions (continued)

- ▶ Note: *These are preliminary. We are still grappling with these and will cross-check with others working on measurement briefs to ensure coherence.*
- ▶ **Quality of Implementation: aspects of interventionist**
 - (e.g., coach/mentor, supervisor, teacher) behavior that indicate how skillfully the intervention is delivered. Examples include ability to engage, pacing, developmental appropriateness, ability to individualize, generalization to other types of tasks

Methodology

- ▶ Conduct a limited review of recent work to identify current practices in measuring quality and quantity of implementation
 - Review intervention articles in *Child Development*, *Early Childhood Research Quarterly*, and *Early Education and Development* published since 2006
- ▶ Code articles
- ▶ Select two studies that illustrate what can be learned from measuring both quality and quantity of implementation

Coding Scheme

- ▶ Measures implementation fidelity (quality; quantity)
- ▶ Age range covered (0–3, preschool, K)
- ▶ Classroom vs. family focus
- ▶ How fidelity measures are used (descriptively in methods; predicted by child, family, teacher, classroom characteristics; fidelity predicting changes in child, family, teacher outcomes)

Preliminary Results

- ▶ Fifty-eight intervention articles identified
- ▶ 32 of 58 articles included measures of implementation (55%)
- ▶ 14 of the 32 included quality measures (44%)
- ▶ 31 of the 32 included quantity measures (97%)
- ▶ 12 of the 32 included BOTH quantity and quality measures (38%)

Preliminary Results (continued)

- ▶ 23 of the 32 included implementation measures as part of procedures/descriptive info only (72%)
- ▶ 10 of the 32 included implementation measures as predictors of fidelity (31%)
- ▶ 4 of the 32 included implementation measures as predictors of outcomes (13%)

Discussion Questions

- ▶ Are we missing any key underlying assumptions that researchers and practitioners make about these implementation components?
 - ▶ How have you tried to measure dosage and fidelity in your research and evaluation projects?
 - What are the pros and cons of different methodologies (e.g., observation, logs, etc.)?
 - ▶ What types of measures have you used to measure quantity and quality of implementation fidelity?
 - ▶ What challenges have you faced in using both quality and quantity measures of implementation in your research?
 - ▶ Which type of implementation data – quantity and quality – is more useful for providing continuous feedback loops to interventionists, and why?
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Discussion Questions (continued)

- ▶ What are the key components of implementation that need to be measured?
 - How do we prioritize the collection of implementation data, given finite time and other resources?
 - ▶ What is our role as researchers? How should data be used?
 - When implementation data are used for continuous program improvement, are we purveyors rather than evaluators?
 - ▶ What would be the most beneficial topics to focus on during a hands-on analytical workshop?
 - Workshop planned for summer 2012
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