

**Working Meeting on the Application of Implementation Science to Early Care and
Education Research**

September 21-22, 2010

Silver Spring, MD

Meeting Summary

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Meeting Summary

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Sponsored by the U.S. Department of Health and Human Services
Administration for Children and Families
Office of Planning, Research, and Evaluation
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Background

The impetus for a meeting on implementation science was generated by the participants in the 2009 Child Care Policy Research Consortium (CCPRC) meeting. Early care and education researchers who are members of the CCPRC requested that the Office of Planning, Research and Evaluation (OPRE) provide a forum to discuss challenges and benefits of conducting implementation research within the early care and education context. As the idea for a working meeting on the topic of implementation science within early care and education research was being developed, staff within OPRE was also working on convening an interagency meeting in implementation research methodology. The decision was made to convene the two meetings in conjunction with one another in September 2010. The first meeting, entitled *Improving Implementation Research Methods for Behavioral and Social Science*, focused on the topic of implementation research methodology generally within behavioral and social science research. The second meeting was intended to be a more in-depth examination of the application of implementation science within early care and education research in particular. This is the summary of the latter meeting, entitled *Working Meeting on the Application of Implementation Science to Early Care and Education Research*.

Purpose and Goals

There were three main goals of this working meeting: 1) to clarify the definitions and key concepts used in implementation science and thereby to develop a shared understanding of the role implementation science can play in early care and education (ECE) research, 2) to explore the potential lessons learned from applying implementation science principles in early care and education research and evaluation, and 3) to identify products that will assist policymakers and early childhood researchers in applying implementation principles within their research and evaluation work.

The format of the meeting addressed these three main goals. The first few presentations provided key definitions of implementation science, and reviewed frameworks and core components of implementation to assure that all meeting participants had a similar frame of reference for understanding what was meant by implementation science. Panel presentations on the second day of the meeting provided several examples of how researchers have addressed implementation within evaluations of early care and education initiatives at the program level (e.g., the implementation of a professional development program or an early childhood curriculum) or at the systems level (e.g., the implementation of a state-level Quality Rating and

Improvement System). Panelists addressed both the benefits and challenges of using implementation practices and principles in their work. One panel focused on fidelity and formative evaluation, and the other panel focused on ongoing monitoring and scale up. Ample time was provided for moderated group discussion after each presentation, and small-group discussions followed each panel presentation. During these discussions, participants generated ideas for follow-up activities and products that could highlight “lessons learned” for effective implementation of early care and education programs and initiatives. Meeting participants generated suggestions for developing dissemination materials to share knowledge from the meeting more broadly. The products that result from this meeting will be intentionally coordinated with the Implementation Methodology Meeting as well.

Organization and Structure of the Meeting

The working group participants were encouraged to attend the final session of the Implementation Methodology Meeting as a way of bridging the discussion of research design and methodology to a discussion of applications of these methods in early care and education research. The second meeting began with presentations and group discussion aimed at clarifying the key terminology and frameworks used in the study of implementation science as a way of orienting the working group participants to a common starting point for the meeting on applications to early care and education (ECE) research.

For the second day of the meeting, two panel presentations addressed how ECE researchers aligned stage-appropriate evaluation practices with the stages of implementation. The first set of panelists focused on **formative evaluation and fidelity**. The second set of panelists focused on **ongoing monitoring and scale up/replication**. After each panel presentation, there was some group discussion, but in addition meeting participants divided into working groups to address in more detail aspects of their research that are informed by practices related to implementation.

Working group participants, guided by facilitators within the group, were asked to consider a set of questions regarding the use of implementation science principles and practices in their early care and education research during two break-out sessions (one following each of the panel discussions on formative evaluation and fidelity, and ongoing monitoring and scale up). The following set of questions was addressed by each working group:

1. Please discuss the issues of applying implementation principles “on the ground” in your research as they apply to [fidelity and formative evaluation/ongoing monitoring and replication].
 - What are the challenges and successes specific to conducting [formative evaluation and fidelity research / ongoing monitoring and replication] at the program level? What are the challenges and successes specific to conducting [formative evaluation and fidelity research/ongoing monitoring and replication] at the systems level?
 - How do we balance [program fidelity / program replication] with local adaptation and implementation?
 - How do we [measure fidelity / monitor a program] when an intervention is meant to be individualized (e.g., coaching)?

- What are the issues around addressing cultural sensitivity and diversity of populations [at the formative stage of evaluation / when bringing programs, curricula or interventions to scale]?
2. Given what you have heard at this meeting so far about Implementation Science, and especially the panel presentations on [fidelity and formative evaluation/ ongoing monitoring and scale up], what, if anything, would you want to incorporate into your current or future implementation research? How has this information changed how you approach your implementation research?
- Please think about issues of measurement, documentation, personnel (e.g., who collects the implementation data), etc.
 - Are there any measures [of fidelity / for monitoring] that are useful across ECE projects?
 - How much data do we need to collect [at the formative stage / for monitoring]? How do we best reduce response burden and evaluation costs? How do we guard against overburdening program staff for monitoring?
 - What sort of guidelines do we need for documentation (e.g., to facilitate fidelity or replication)?
 - How do we determine effective implementation? (e.g., what makes for a successful implementation – fidelity to the model or getting the intended effects?)
 - Advantages/disadvantages of doing implementation and impact studies at the same time (i.e., do we need to build the knowledge first – efficacy then implementation? How can we disentangle “what works” from a multi-pronged intervention? What are the funding implications?)
 - What next steps would you recommend with regard to measures, data collection, documentation, etc.?
3. What resources would you find most helpful to do this type of implementation research in the future? How can we best help programs and states with implementing programs and initiatives effectively?
- What sort of ongoing technical assistance is needed for successful implementation? What tools do we need for monitoring and replication?
 - What are the priorities for building knowledge in implementation research (e.g., translation of research to practice, building common implementation frameworks, common measures)?

Following each break-out session, a report-back period occurred in which meeting participants shared their group's findings, and discussed next steps for research and dissemination.

In the remainder of this summary document, key issues addressed at the roundtable are outlined, key themes from each of the meeting sessions are summarized, and follow-up steps from the roundtable are delineated.

Tuesday, September 21, 2010

Summary of Implementation Methodology Meeting

Lauren Supplee, OPRE, Administration for Children and Families

Tammy Mann, Frederick D. Patterson Research Institute, UNCF

Naomi Goldstein, OPRE, Administration for Children and Families

Molly Irwin, OPRE, Administration for Children and Families (Moderator)

The meeting began with an overlap session intended to be both a review of the topics addressed during the previous meeting entitled *Improving Implementation Research Methods for Behavioral and Social Science* as well as an introduction to the present meeting on the applicability of implementation science to the early care and education field. Dr. Lauren Supplee highlighted several key themes that emerged at the *Improving Implementation Research Methods* meeting regarding the implications of implementation science for research.

- Implementation science is multi-dimensional, multi-level, and complex
- Implementation research should be situated within an ecological framework
- There is a need for common language to discuss issues relating to implementation science
- There are multiple stages of implementation: decision-making, ongoing (training, management), sustained use (long-term support, alignment, resources), and open questions
- Issues related to the measurement of implementation include the timing of measurement, the importance of using mixed methods, and capturing things that are salient but hard to measure
- There are at least three forms of implementation science study design: implementation as description for theory building, implementation to interpret impact, and implementation as the dependent variable
- It is important to work with multi-disciplinary teams to generate theories across disciplines

Dr. Tammy Mann presented the following key themes related to the implications of implementation science for practice:

- Practitioners will always be faced with “in-the-moment decisions” and they should have access to support when making small or fundamental changes

- The field must operate under the premise that most practitioners come to their work with a commitment to do right by the population that they serve and practitioners should be engaged based on this premise
- Practitioners should not be prevented from tailoring an intervention
- Implementation research presents an opportunity to impact continuous program improvement
- Limited funds exist and we must ensure that programs are supported
- There are opportunities to move this work forward through collaboration across agencies and by making knowledge accessible to practitioners

Dr. Naomi Goldstein provided the final summary of the first meeting. She emphasized that implementation research is an emerging field. She also mentioned that this is a timely topic given the number of current federal initiatives working to bring small evidence-based programs to scale. Dr. Goldstein suggested that implementation research is where practice and research can “collide” and is an opportunity for constructive partnerships.

Welcome and Orientation to the Purpose of the Meeting

Ivelisse Martinez-Beck, Office of Planning, Research, and Evaluation (OPRE)

Tamara Halle, Child Trends

Dr. Ivelisse Martinez-Beck opened the meeting by welcoming meeting participants and provided a brief introduction to the purpose of the meeting. This meeting was convened by the Office of Planning, Research, and Evaluation (OPRE) in response to the interest expressed by members of the Child Care Policy Research Consortium in discussing topics related to the challenges of conducting implementation and evaluation research.

Dr. Tamara Halle highlighted the importance of considering implementation science in relation to early care and education research. She outlined the goals of this meeting as follows:

- To clarify what we mean by implementation science in early care and education
- To explore the potential lessons learned by applying implementation science, methodology, and design to early care and evaluation research
- To brainstorm about next steps and what the field needs to know about implementation science and its application in early care and education

Implementation Science: What Do We Know and Where Do We Go From Here?

Robert Franks, Connecticut Center for Effective Practice

The purpose of this session was to develop a shared understanding of terminology and concepts related to implementation science. The session presenter was Dr. Robert P. Franks, director of the Connecticut Center for Effective Practice (CEEP) in Farmington, Connecticut. In partnership with other state agencies that serve children, the Center disseminates evidence-based models of cognitive behavioral therapy and emergency mobile psychiatric practices.

Dr. Franks began his presentation by stating that the definition of implementation is “to put into effect according to or by means of a definite plan or procedure.” He suggested that, historically,

early care and education (ECE) programs have not been implemented in a thoughtful or systematic way, but that we are on the cusp of a paradigmatic shift to examining programs by looking through the lens of implementation science. Dr. Franks argued that the field often gets stuck on whether something is an evidence-based model, (i.e., does the model work, is it being implemented with fidelity), rather than whether the model or practice will lead to sustainable outcomes. Implementation research, Franks suggested, is not the validation of evidence-based models, but is a way to bridge the gap between science and practice to ensure that program models work in the “real world.”

Dr. Franks then discussed the importance of using an implementation framework as a conceptual guide to utilizing effective implementation practices. He introduced several frameworks, including Fixsen et al.’s (2005) six stages of implementation, Simpson’s (2002) theory of “technology transfer,” Greenhalgh, Robert, MacFarlane, Bate, and Kyriakidou’s (2004) conceptual model of innovation, and Wandersman, Duffy, Flaspohler, Noonan, Lubell, Stillman, Blachman, Dunville, and Saul’s (2008) “Strategic Prevention Framework.”

The presentation also included a discussion of the issues related to aligning early care and education research design with the stages of implementation. This alignment is often challenging for researchers because implementation can be a cyclical process that occurs over time and the field is still struggling to develop a shared language to use in this work. There are also few validated measures of implementation to work with, and the development of observational tools is expensive. In addition, an organization’s “readiness to change” is a factor in the successful implementation of a model. Dr. Franks suggested that it may be helpful to have organizations assess how they can build capacity for implementation. This can be done by operationalizing all the elements of the model, assessing current capacity and readiness, and then assessing change over time.

Dr. Frank’s presentation was followed by a moderated group discussion led by Dr. Martha Zaslow of SRCDC and Child Trends.

The following topics were discussed:

- The need for a clearly defined model in order to do implementation research
 - To understand where a program is within the implementation process, researchers need to be able to measure something with defined parameters. If you are trying to measure something not well-defined, doing implementation research would be a challenge.
- Lack of valid measures to examine implementation
- How to systematically study innovations or adaptations of a model and how that relates to planned variation studies
 - Innovation is almost inescapable, there is always going to be some kind of innovation that results from the ecology of the setting interacting with the desired outcome and the model itself.
 - Variations to a model may need to be discussed with the treatment developer to determine whether or not the innovation is interfering with the core components of the model.

- When the model spreads and doesn't look like the original anymore, it may be necessary to examine which components are working and which components aren't working.
- For interventions that have not articulated the core components, is there a process of fully articulating what are required components of the model vs. what might be optional components?
- When a program seems ready to scale up, is it incumbent upon whoever is implementing it to make necessary adaptations, or is it the responsibility of the developer to test the model out on all different groups?
 - Putting the onus on developers is unrealistic. Leaving all adaptations up to the providers themselves is also too big a responsibility. The purpose of implementation research is to address these challenges.

What are the Key Components of Successful Implementation?

Allison Metz, National Implementation Research Network

“Core Components for Successful Implementation: Applying Core Implementation Components in ECE Research, Evaluation, and Technical Assistance”

This session, led by Dr. Allison Metz, outlined the core implementation components and the role they play in implementation evaluation, specifically exploring how these core components could contribute to the development of early care and education programming.

Dr. Metz highlighted the importance of focusing on the core components of implementation, which the National Implementation Research Network refers to as “drivers.” Her presentation began with differentiating between implementation research and intervention research, in that implementation research focuses on specific issues related to the implementation of a model (e.g., scaling up, what are the various elements of an intervention, etc.) and is not simply about replicating an evidence-based practice. Dr. Metz mentioned the gap existing between science and service, with implementation as the missing link between the two. She suggested that the field build the science of evidence-based implementation so it can be used to reduce this gap.

Successfully implemented programs, innovations, and system changes have common core implementation components, all of which have best practices associated with them. These practices involve developing, improving, and sustaining practitioners' ability to implement an intervention or any practice to benefit children and families (competency drivers); ensuring sustainability and improvement at the organizational level (organizational drivers); and guiding leaders to use the right leadership strategies for the situation (leadership drivers). Some examples of specific best practices include pre-service and in-service training and performance assessments. Additionally, decision support data systems, which house information from the program planning stages, can be used to measure both the fidelity of implementation as well as the outcomes of the intervention. Lastly, Dr. Metz explained that though implementation is not linear, there are different stages in which core implementation components need to be applied. In order to ensure the transportability of a model, it is important to focus on the core implementation components and to operationalize them.

Dr. Metz's presentation was followed by a moderated group discussion led by Dr. Caroline Ebanks of the Institute of Education Sciences.

The followed topics were discussed:

- Defining the difference between program quality and fidelity
 - The way you achieve program effectiveness is through fidelity to the intervention (i.e., was the intervention delivered as originally designed – what has been called in the literature Fidelity of Implementation or FOI) as well as fidelity to the core components of implementation (e.g., staff recruitment, training, ongoing coaching, monitoring, etc. – the competency, organizational and leadership “drivers” that support replication and sustainability of an intervention). The intervention components are connected to the implementation components, but you need to implement well to have an effective and sustainable program.
- The most effective way to conduct trainings
 - There needs to be evidence that the training works, such as a pre- and post-test showing that practitioners have increased knowledge and skill.
 - Debriefing sessions may also be helpful in understanding how comfortable practitioners are with what they learned and how well they feel that they would be able to move forward with the intervention themselves.
- The concept of “readiness to change”
 - We have looked at transtheoretical models of change demonstrating that people think about change before actually changing. For this reason, it is important to figure out implementation timelines, but this is not linear. Thus, in the event that interventions need to be implemented quickly, there should still be work done on personalizing it so that people can move through change in their own way. Often, using data can be a persuasive way to encourage people to change.
- The importance of in-service training
 - We have to make sure people have more than a one-time workshop in order to ensure that they are actually learning the information and then performing the actions of the interventions. Often coaching is needed to encourage people along the right path.

Wednesday, September 22, 2010

Welcome

Tamara Halle, Child Trends

Dr. Halle provided information on the Child Care Policy Research Consortium work-group on Implementation and invited anyone interested to sign up. The format of the presentations for Day Two of the meeting was also reviewed. Researchers would be presenting examples of the application of implementation science to their individual research initiatives. The intention was for their experiences to inform future implementation evaluations in early care and education interventions.

Aligning Stage-Appropriate Evaluation with the Stages of Implementation: Formative Evaluation and Fidelity

Douglas Powell, Purdue University

“Measuring Implementation of a Coaching-based Professional Development Program”

Dr. Powell discussed a professional development intervention focused on early language and literacy development. He and his team explored several implementation questions:

- Can we implement with Head Start teachers key features of the intervention with a high degree of fidelity?
- How do our implementation data help us interpret the results of our intervention outcome study?
- What are implications of the implementation data for the design of a subsequent professional development intervention?

The intervention, Classroom Links to Early Literacy, promoted teachers’ use of evidence-based practices for literacy and language development. Dr. Powell and his colleagues were interested in the extent to which teachers would carry out the instructional practices emphasized in the professional development intervention as well as the extent to which features of the professional development would be implemented as originally designed. The intervention involved individualized coaching with teachers for one semester. Teachers were randomly assigned to one of two coaching conditions: one was traditional on-site coaching and the other was technologically-mediated delivery of coaching (remote) wherein teachers submitted videotapes of targeted instructional practices that coaches reviewed. In both conditions, teachers received written comments from teachers about instructional practices that were implemented well and suggestions for instructional improvements. The experimental outcome study, which employed use of standardized measures in classroom observations of teachers and individualized assessments of children’s literacy and language skills, found strong positive effects of the intervention on teaching practices and on 4 of the 6 child outcomes tested. Dr. Powell and colleagues found no differential effects when comparing remote technologically-mediated forms of coaching to traditional on-site coaching. (Outcome results are reported in a 2010 article in the *Journal of Educational Psychology*.)

Dr. Powell then described findings related to the implementation of the professional development intervention. Data showed that the majority of teachers in both coaching conditions participated in the specified amount of coaching sessions. There was greater variability in the remote (technologically mediated) than in the onsite coaching condition regarding teacher participation in coaching. In both conditions the vast majority of coach recommendations pertained to the literacy and language instruction emphasized in the intervention. One interesting aspect of the study pertained to an analysis of web log data regarding teachers’ use of a case-based hypermedia resource that included more than 100 video exemplars and other materials related to evidence-based instructional practices. Results indicated that teacher use of hypermedia resource, which was part of the remote coaching condition, suggested that teachers used the website in ways that exceeded coach recommendations. Dr. Powell and his colleagues used the results of this study to inform his present research on a successor professional development intervention.

Lisa Knoche, Nebraska Center for Research on Children, Youth, Families and Schools
“Getting Ready: A Relationship-Focused Intervention to Support Parent Engagement Birth to Five”

Dr. Knoche discussed The Getting Ready Intervention, which focuses on promoting children’s school readiness through enhancing parent engagement for children from birth to age five. The project examined children’s social-emotional, behavioral, and cognitive development (school readiness). The intervention was implemented as part of an efficacy study within Early Head Start and Head Start programs. The base of the intervention was grounded in family-school partnerships as a systems approach to readying families and children for school and readying schools to work with families. Parent engagement with children in this model is characterized by warmth, support for child’s autonomy, and active and meaningful participation in learning. Dr. Knoche and her colleagues found that parents participating in the intervention exhibited greater warmth and increased support for children’s autonomy. Additionally, children displayed greater levels of social-emotional competence and improved literacy skills.

Dr. Knoche then explained that there were several core implementation components that informed this work: in-service training, on-going coaching and consultation, and staff performance assessment. Taking an individualized approach to these components was particularly important to provide flexibility and specificity for each individual teacher participant. She noted several lessons that were learned through conducting The Getting Ready Intervention:

- Individualized intervention poses unique challenges for implementation research, which is something to consider when considering developing measures.
- Research and agency teams must be on the same page, as staff is accountable to the agency not to the research team. Measures of administrative support for intervention implementation would be beneficial.
- It is useful to collect implementation data across all conditions (both the control and intervention conditions) to understand what is happening when intervention is not in place.
- Initially investigating the intervention in the context of an efficacy trial, particularly issues of fidelity, helped in thinking about scale up and transportability.

Kathryn Tout, Child Trends

“Evaluating Implementation in a Quality Rating and Improvement System (QRIS) Pilot”

Dr. Tout presented on Minnesota’s Parent Aware program, a voluntary Quality Rating and Improvement System (QRIS) pilot that involved multi-level initiatives focused on school readiness, parents, cultural sensitivity and diversity, and the involvement of the business community as a key stakeholder in early care and education programs. Dr. Tout and colleagues documented implementation successes and challenges and worked closely with the implementation team to help plan for state-wide implementation of Parent Aware. They found that having a pilot QRIS led to a focus on quality and gained the attention of legislators. However, ongoing problems still exist such as recruitment, incentives for voluntary participation,

concerns about the diversity of participants, and helping parents to access higher quality programs once they are made available.

Dr. Tout then discussed plans for program improvement and further research. The Parent Aware pilot started in 2007, so not enough time has passed to know if providers will stay in the program, though there has been generally positive feedback. Most of the pilot areas have a very low density of participation, so the program has a work-group now to look at recruitment issues. Lastly, Dr. Tout mentioned several concerns surrounding the integrity of the rating process and quality improvement supports as well as outreach and marketing:

- No obligation currently exists in documenting contact with providers
- There are challenges with observations of providers who don't speak English
- Issues arise regarding data management
- There is only limited success with parents even knowing about the program

These presentations were followed by a moderated group discussion led by Dr. Jason Downer of the University of Virginia.

The following topics were discussed:

- Whether observations were conducted in control groups
- Whether the same coaches should conduct on-site as well as remote coaching
- At what point those components that you use to implement the intervention become part of what is causing the change
 - How do we know that the differences between an intervention condition and the control condition are due to intervention? When do these come together and how do we keep them separate?
- In a coaching intervention where the control group receives supervision and support of a different nature (i.e., "business as usual"), is it simply being exposed to coaching that causes changes? The active process of reflecting on practice may be just as beneficial as the features of the intervention.
- The appropriate number of observations when sampling, such as how many videotapes should be viewed in a remote coaching setting or how many coaching sessions should be conducted
- Recommendations for how to improve program participation rates

Dr. Downer concluded the session by noting the following key points:

- It is useful to incorporate qualitative data into these intervention analyses.
- Using existing records as part of the intervention itself may improve research.
- It is necessary to measure fidelity within the intervention condition as well as within the control group.
- The field needs to figure out a way to get the intermediaries talking with the developers early on in the implementation process so that transportability of a model is not something that needs to be worked out later.

Small group work and full group discussion

For this session, meeting participants were asked to join one of four small break-out groups. The groups then reconvened and representatives from each group summarized their discussions for all participants. The following topics were discussed in the small group sessions:

- Developing fidelity measures during the formative stages of program development
- Using larger samples in implementation research
- The importance of learning from mistakes and moving forward productively
- Collecting data on control groups
- Knowing when it is appropriate to use existing data or when it is necessary to develop new measures
- Negotiating the responsibilities of all parties involved in the implementation of the intervention
- Following up one intervention with a second intervention with more constrained goals
 - This may work in a progression of studies aimed at a particular goal
- The importance of maintaining a key focus on implementation despite pressures from funders and legislators to cut expenses

This session concluded with a discussion of potential products that could come out of this meeting. These products include:

- A book outlining successful implementation research techniques and unsuccessful processes
 - Important to include a portion where key aspects of implementation are defined for the purposes of consistency in the field
- Website focused on implementation science
- Implementation evaluation guide
- Compendium of measures of coaching, including models and theories of coaching
- Guidelines for users regarding planned variations and unplanned variations (i.e., the differences between targeting and tailoring)
- More information on the various methodologies that are being used for program delivery and implementation

Aligning Stage-Appropriate Evaluation with the Stages of Implementation: Ongoing Monitoring and Scale Up/Replicability

Doug Clements, University at Buffalo, SUNY
“Building Blocks of Early Math”

Dr. Clements’ presentation focused on the use of a research-based model for scaling up an intervention focused on early childhood mathematics. The TRIAD model (Technology-enhanced, Research-based, Instruction, Assessment, Professional Development) includes collaboration of teachers, administrators, children, parents, and communities to establish and maintain all the components of the Building Blocks curriculum (including a teacher’s manual, demonstration videotapes, manipulatives, software, teaching strategies, assessments, and

professional development), based on a common understanding of the learning trajectories through which children develop. TRIAD also includes professional development for teachers, on-site support for teachers during the school year, and materials for parents.

In a randomized trial, Dr. Clements and colleagues evaluated a full implementation of the TRIAD intervention model. The goal of the project was to increase knowledge of scaling up by investigating the effectiveness of a mathematics education intervention implemented in pre-k settings with diverse student populations. Dr. Clements and his colleagues developed two observational instruments to measure the fidelity of implementation: Fidelity of Implementation and the Classroom Observation of Early Mathematics-Environment and Teaching (COEMET). What they found was that children participating in the TRIAD intervention classrooms made greater gains in mathematics during the pre-k year and that teachers implemented the curriculum with acceptable fidelity across the measurement periods.

In his presentation, Dr. Clements emphasized the importance of following through on an intervention. In his work he found that when children in the TRIAD intervention group received follow-through support (treatment facilitators worked with kindergarten and 1st grade teachers to build on the children's prior skills in mathematics) the children continued to make greater gains than both the control group and the TRIAD group that did not receive this support. Dr. Clements stressed that when creating programs for early care and education, developers should plan ahead for the stage after scale-up and consider follow-through as an essential program element.

*David Olds, Prevention Research Center for Family and Child Health, University of Colorado
"Improving Implementation of the Nurse-Family Partnership"*

Dr. Olds is a professor of pediatrics, psychiatry, public health, and nursing at the University of Colorado Denver, where he directs the Prevention Research Center for Family and Child Health. The focus of his presentation was on the development, testing, and refinement of the Nurse Family Partnership (NFP), a prenatal and infant home-visiting program that serves socio-economically disadvantaged women caring for their first children. The goals of the program are to improve pregnancy outcomes, improve child health and development during the first two years of life, and to improve parents' economic self-sufficiency.

The NFP has been tested and refined in randomized control trials since its creation over 30 years ago. Dr. Olds explained that the development and adaptations to the NFP model have largely taken place in research settings in order to ensure that the components function as intended and can be used with diverse populations. According to Olds, it took many years before program developers felt that the core components of the model were sufficiently articulated and that the program could be replicated reliably. Replication trials in different contexts have shown several outcomes to be consistent across settings including improved prenatal health, reductions in injuries in the child's first two years of life, reductions in subsequent pregnancies, and an increase in father involvement in the child's life. Program effects that have not been replicated include reductions in welfare use and reductions in children's arrests by the time the children are 15 years old.

Dr. Olds explained that the success of the NFP's replication and scale-up efforts are largely due to the model's infrastructure which includes:

- A non-profit organization separate from the university that manages technical assistance and training for replication work
- In-person and online training for nurses
- Detailed visit-by-visit guidelines to help nurses structure their program
- Organizational commitment to entering data into a web-based system so programs can be monitored on an individual basis
- Key benchmarks that have to be met to assure the program is being delivered with fidelity

Dr. Olds emphasized that improvements to the model have been made after extensive data analysis showed that the program was not working for a particular population or in a particular context. He also stressed that the NFP is a work in progress and that it is the developer's job to understand the model's vulnerabilities so they can be systematically improved and augmented over time.

Noreen Yazejian, Frank Porter Graham Child Development Institute

"Aligning Stage-Appropriate Evaluation with the Stages of Implementation: Ongoing Monitoring and Scale Up/Replicability of the Educare Model"

Dr. Yazejian is a scientist at the FPG Child Development Institute at the University of North Carolina-Chapel Hill. Her current work includes a large-scale evaluation of the Bounce Early Learning Network, a consortium of 11 Educare centers across the United States. Dr. Yazejian's presentation focused on the replication of the Educare model.

Dr. Yazejian noted that Educare began as a field-initiated project developed at the Ounce of Prevention Fund in Chicago and was not initially intended for replication. However, in response to requests from states for new programming to improve the lives of children, the model is being developed and used in other locations. Yazejian explained that there is now planful cultivation of new Educare sites and support for replication is provided by the Ounce of Prevention Fund. The implementation evaluation, which began in 2005, was designed to provide data for program improvement, to answer site-specific questions, and to provide technical assistance to sites throughout the implementation process. In addition, the study aims to document the implementation of core features of the model, to showcase high-quality ECE programming, to contribute to the literature on enhancing child outcomes, and to provide data and a place for advocacy.

In her presentation, Dr. Yazejian described the evaluation process and the data collection tools, which include an implementation checklist that programs complete. The implementation study is also getting reports on the effectiveness of the Educare model, but a randomized control trial is currently being developed to more fully capture the efficacy of the model.

Dr. Yazejian also discussed several challenges researchers have encountered. These challenges are largely related to the fact that Educare sites are at different stages of implementation, and

researchers must find measures that serve multiple purposes. Dr. Yazejian ended her presentation by highlighting future opportunities for research on Educare replication, including an exploration of the effects of individual components of the model and an examination of local innovations and adaptations to the model.

Following these presentations, Dr. Amy Madigan of ASPE led a moderated group discussion. The following issues were addressed:

- The length of time it takes to fully develop a model, using the NFP as an example
- Replication as a consideration from the beginning of model development
- Infrastructure that is underlying all facets of implementation
- The need for partnerships between stakeholders in order to replicate models
- Feedback loops between fidelity and formative evaluation and the model
- Innovation and adaptation
 - Are RCT clusters needed for instances of adaptations to the model or is a general conceptual model sufficient?
 - The need to know vulnerabilities in program design and implementation
 - The use of qualitative work to better understand what's happening "on the ground"
 - Quasi-experimental or cluster-based trials can be done inexpensively if they are targeted to outcomes
- The role of technology in supporting replication
- The "readiness to change" of program sites

Small group work and full group discussion

During this session, participants met again in small groups. The groups then reported back to the full group the issues raised during these discussions. These issues include:

- The current delivery system does not have structure and capacity to develop and maintain evidence-based practice largely due to workforce issues
- The field needs systems for professional development, beyond what program developers can do to train staff
 - There are gaps in professional development between pre-service and in-service teachers
 - How can we improve the quality of early childhood teacher preparation programs?
 - There is a need for training of leadership staff/administrators on the importance of evidence-based practice and how to use research
 - More collaborative discussions between providers and program developers would be beneficial
- The need for follow-through studies and strategies to prevent the "fading" of program effects
- The need to address cultural and diversity issues
- The roles implementation science can play during various stages of program development

- The differences between evaluating an intervention and evaluating implementation and implementation strategies
 - What are the drivers of implementation and what are drivers of the intervention itself?
- What does scaling up mean? Implementing the model with a new group of people or more people?
- The process of adaptation
 - If an intervention doesn't work for a particular group, do you start over and redevelop the intervention for a new group?
- Infrastructure matters
 - Implementation is unique in the ECE field because ECE infrastructure is housed in many different systems
- The importance of journal articles on interventions that articulate what the implementation strategies were and how strategies were developed
- The importance of understanding the effectiveness of coaching and its effect on children
- How cost is shaping models and the ability to scale them up
- The need to inform policymakers about the complexities of implementation
- The need to consider how measurement plays out in model replication efforts

Discussion of Next Steps

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The meeting closed with suggestions for continuing implementation research work as well as for developing dissemination materials to share knowledge from the meeting with the field.

Possible Next Steps:

- Planning a meeting with state administrators about implementation research in order to increase awareness and stakeholder buy-in
- A workshop on analytic approaches to implementation
- Measurement development

Potential Products for Dissemination:

- A guidance document on implementation that includes definitions of terminology and core components (a possible audience could be program managers)
- A book that captures the finer details about implementation science
- A brief or series of briefs on the different purposes of implementation data and to highlight the benefits of implementation to program sustainability and replication
- Journal articles or conference presentations (e.g., Society for Prevention Research)
- A website that focuses on implementation research
- A compendium of implementation measures and/or datasets