Model
Demonstration
Coordination
Center

Early Childhood Language Interventions: Lessons Learned About Model Sustainment and Spread

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Additional reports and information about the Model Demonstration Coordination Center are available at:
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Contents

Abbreviations and Acronyms

C3   cohort 3
CCC   Communication Coach Course

EBPs   evidence-based practices
EI   early intervention
EITA   Early Intervention Technical Assistance
EMT   enhanced-milieu teaching

FSU   Florida State University

KTTP   KidTalk Tactics Project

MDCC   Model Demonstration Coordination Center
MDP   model demonstration project (OSEP grantees)

OSEP   Office of Special Education Programs
OT   occupational therapist

PD   professional development
PI   principal investigator
PT   physical therapist

VU   Vanderbilt University

1. Introduction

The mission of the U.S. Department of Education's Office of Special Education Programs (OSEP)[1] is to improve results for infants, toddlers, children, and youth with disabilities by providing leadership and financial support to the states, local districts, and early childhood programs serving them, as authorized under the Individuals with Disabilities Education Act (IDEA). OSEP's legislative authority to provide technical assistance, support model demonstration projects, and disseminate useful information is critical to its ability to fulfill this mission. One emphasis of OSEP's dissemination activities is promulgating the use of evidence-based practices (EBPs) in serving children and youth with disabilities. OSEP's efforts are being informed by research in the emerging field of implementation science (e.g., Cook & Odom, 2013; Eccles et al., 2009; Proctor et al., 2009)—i.e., "the scientific study of methods to promote the systematic uptake of research findings and other [EBPs] into routine practice and, hence, to improve the quality and effectiveness of…services" (Eccles & Mittman, 2006, p. 1). The study of implementation science has made valuable contributions to an understanding of the factors that can promote or hinder successful implementation and sustainment of EBPs (e.g., Forman, Olin, Hoagwood, Crowe, & Saka, 2009; McIntosh et al., 2013; Savaya & Spiro, 2011).

OSEP's investment since 2005 in the Model Demonstration Coordination Center (MDCC) at SRI International is contributing to the development of new knowledge in the implementation science field. MDCC coordinates the work of OSEP's model demonstration grantees, whose projects aim to develop new practice, procedure, or program models for children and youth with disabilities on the basis of theory and/or evidence-based research. Each model demonstration project (MDP) then implements its model in typical settings, assesses impacts, and, if the model is associated with benefits, may go on to disseminate it. MDCC staff members have been documenting and synthesizing the lessons learned from the implementation experiences and outcomes achieved by the seven cohorts of MDPs that OSEP has funded since 2005. MDCC has facilitated cross-MDP collaboration and worked with the MDPs to establish consistent design elements, such as sample definition and selection, data collection methods and timing, and instrumentation, and to synthesize cross-MDP data. Consistent data collection within a given cohort permits comparison of the relative ease with which the models were implemented with fidelity in participating sites and supports comparison of the relative outcomes achieved when the unique approach of each model was implemented. Comparing and contrasting implementation experiences within and across cohorts also enables MDCC to distill from MDPs their insights into factors that have hindered and promoted the full implementation of their models.

For the first three cohorts of MDP grantees that were coordinated by MDCC, the study of implementation was broadened to examine the extent to which core components of the MDP models had been sustained in original MDP sites and spread to other sites after the end of their grants. Although research on program sustainment "has not yet coalesced into a single research paradigm, a shared set of statistical methods, or even a common terminology" (Schreier, 2005, p. 321), several conceptualizations suggest that sustainment can be considered to be the

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[1]   http://www2.ed.gov/about/offices/list/osers/osep/mission.html

maintenance of EBP components and activities in the absence of or after the conclusion of research support (Lyon, Frazier, Mehta, Atkins, & Weisbach, 2011; Scheirer & Dearing, 2011; Schell et al., 2013), and this can be achieved only after successful implementation (Fixsen, Blase, Duda, Naoom, & Van Dyke, 2010).

Findings from the follow-up studies conducted by MDP grantees that had completed their projects in 2010 and 2011 (i.e., cohorts 1 and 2) have been reported (Wagner, Lenz, & Shaver, 2011; Yu, Wagner, & Shaver, 2012, available at http://mdcc.sri.com/prod_serv.html). The third cohort of projects, the subject of this report, involved models that demonstrated various approaches to implementing early childhood language interventions that targeted children with significant language disorders or delays who were eligible for early intervention (EI) services and often early childhood special education. All projects sought to improve children's language development by teaching functional, naturalistic intervention strategies to parents, who then were to implement the strategies with their children.

Cooperative agreements for cohort 3 (C3) model demonstrations were awarded to (1) the Orelena Hawks Puckett Institute (Puckett), which worked in three states, partnering with local Part C early intervention practitioners and agencies; (2) the University of Kansas (referred to as Kansas), which partnered with three programs that delivered Part C services; and (3) Vanderbilt University (VU) and Florida State University (FSU), each of which worked with two programs (VU with two preschools in Tennessee and FSU with a regional early intervention services program and a local Early Head Start program in Florida). VU and FSU are considered to be separate MDPs for purposes of the follow-up study.

C3 model development and demonstration work began in January 2008. Each MDP began implementing its model within 6 months, introducing it to partnering programs, providing trainings on the model interventions, and recruiting families and practitioners. The C3 MDPs discontinued interventions with children and families at different times. The Puckett MDP ended intervention late in 2011. VU concluded most of its work in spring 2011, although it continued to serve some families through spring 2012. FSU discontinued intervention in one Early Head Start site in 2010 and in the other in 2011, and Kansas ended intervention in its programs in early 2013. After the conclusion of the interventions, the MDPs continued collecting data on child outcomes, including children's transitions from Part C early intervention to Part B preschool services, outcomes at kindergarten, as well as parents/caregivers' use of the strategies.

In spring 2013, OSEP funded the C3 grantees through the MDCC to conduct the follow-up activities that produced the findings reported here. In alignment with MDCC's examination of the sustainment of the first two cohorts of MDPs (Wagner et al., 2011; Yu et al., 2012), the C3 follow-up study documented which "core intervention components"[2] of the early childhood language intervention models were still in place in MDP participating programs as originally implemented and which had been adapted or discontinued. C3 MDP staff also examined the extent to which the models, in whole or part, had been implemented by programs or practitioners beyond those involved in the MDPs themselves.

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[2] Core intervention components refer to "the most essential and indispensable components of an intervention practice or program" (Fixsen, Naoom, Blase, Friedman, & Wallace, 2005, p. 24).

MDP principal investigators and colleagues worked with MDCC staff to develop a protocol for qualitative data collection and a format for reporting findings. MDP staff then interviewed program administrators who had been involved in the MDPs, conducted focus groups and surveys with practitioners, and, and in the case of the FSU project, conducted fidelity checks on implementation of that model's language promotion strategies. Table 1 summarizes the data collection activities of each participating MDP conducted over a 2-month period. MDP staff reported findings from the data collection activities to MDCC by (a) completing a qualitative template (see appendix) designed collaboratively by MDCC staff and the MDP principal investigators, (b) responding by phone and/or in writing to MDCC staff questions to clarify or expand on reported results, and (c) participating in a cross-MDP teleconference to jointly discuss the implications of the findings.[3]

The next chapter reports the extent to which the core intervention components of each MDP were sustained at both the program and provider levels—i.e., in the original early childhood programs involved with the MDPs and among the practitioners with whom the MDP staffs had worked. It also identifies particular components of the models that were more and less likely to be sustained as originally implemented and whether components of the models were being used in other programs and by other practitioners not directly involved in the MDPs. Chapter 3 reports factors that MDP staff identified as promoting and hindering model sustainment and spread. The final chapter summarizes the lessons MDP staff members reported learning from their model implementation experiences and suggestions they made for strengthening future model demonstration efforts.

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[3]   Statements in quotation marks in this report were taken from the qualitative templates completed by MDP staff and from transcriptions of telephone conversations MDCC facilitated with staff of individual MDPs and with representatives of all MDP in a cohort-wide call.

Table 1.   Key Informants and Data Collection Methods, by MDP

Data Collection Method	MDP Grantee			
	Kansas	**Puckett**	**VU**	**FSU**

Interviews	None	Telephone
		P1
		    Administrator
		    6 interventionists
		P2
		    Administrator
		    3 interventionists
		P3
		    6 therapists
			VU2 administrator	None

Surveys	Surveys were sent to all providers and directors who participated in the model and who were still with their respective agencies. This included 36 providers (7 at K1, 8 at K2, and 21 at K3) and 3 program directors (1 at each program). The overall response rate was 47%.	None	KidTalk Tactics Electronic Survey of practitioners and former students using Research Electronic Database Capture (REDcap). Electronically sent to 31 practitioners (17 at VU1, 14 at VU2), 60 former students/communica-tion coaches. Response rates = VU1, 41%; VU2 practitioners, 81%; VU2 students/ communication coaches, 53%.	Online survey conducted with the Pennsylvania EI practitioner cohort members; 26 of 46 online course participants responded (57%).
Focus groups	K1: 7 Part C practitioners. K2 and K3: 6 practitioners	None	VU1 practitioners (*n* = 4) VU2 staff (*n* = 4 practitioners, 1 administrator)	Early Head Start practitioners Administrators considered "critical" for implementation
Fidelity checks	None	None	None	Completed for each Early Head Start practitioner

2. The Sustainment and Spread of Early Childhood Language Intervention Models

The MDP grantees each had developed a model that intended to improve children's language development by implementing the following core intervention components:

- evidence-based functional language interventions delivered in natural settings (i.e., home and early childhood programs) by adults who cared for the child, such as parents and child care providers, or worked directly with the child, such as early childhood special educators or speech/language pathologists;[4]
- training and support for parents and child care providers/teachers in implementing the language interventions;
- use of assessments and data to track implementation fidelity and child outcomes; and
- strategies to promote the continued use of the evidence-based language intervention across both Part C early intervention and Part B preschool programs.

Although all MDPs implemented models that incorporated these core components, there were different emphases within each MDP. Puckett promoted the capacity of practitioners and parents to use everyday interest-based learning opportunities to foster children's language and communication, with a focus on identifying those interests and increasing opportunities to use language in their contexts. Kansas increased exposure to language-rich environments by enhancing language-learning opportunities in the home as practitioners and parents implemented intervention strategies with increasing frequency and quality over time. VU/FSU used two evidence-based interventions—enhanced-milieu teaching (EMT) and family-guided routines-based intervention—to create a new model that was implemented with parents in the home by highly trained communication coaches, not Part C practitioners.

MDP staff returned to their implementing programs in spring 2013, after having been largely uninvolved with them for as little as 3 months (Kansas) to as much as 2 years (VU, one Puckett program). This variation in the length of time since the MDPs had discontinued their involvement with their programs is an important lens for viewing the degree of sustainment in those sites.

Perhaps most important in this sustainment study, however, is recognizing that the primary objective of the C3 MDP teams throughout the implementation of their models was to test whether the components could be made to work effectively in real-world settings (i.e., homes and child care programs) to improve the language and communication skills of children with disabilities. Thus, the examination of model sustainment and spread was initiated with uncertain expectations about what might be found in place but high expectations about what would be learned in a context that is unique among OSEP model demonstration investments (e.g., early intervention and preschool special education systems, home- not school-based services). The results of C3's follow-up explorations are reported here as they relate to the first three of the

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[4]   Because the MDPs worked with a variety of professionals in implementing their early childhood language intervention models, including providers of direct services such as speech/language therapy and teachers of early childhood programs, the term "practitioners" is used in referring to the adult professionals who worked with children and families to implement the MDP models.

models' core intervention components; cross-system continuity is discussed at the conclusion of this chapter.

Orelena Hawks Puckett Institute

Puckett's model used everyday interest-based learning opportunities to promote the communication and language skills of children with language delays and difficulties. The model was based on the premise that using children's interests and everyday family and community activities to support and promote learning would result in long-term positive outcomes for children and families. The goal of the model was to increase the number and variety of interest-based learning opportunities provided for young children with disabilities. The MDP implemented its model with four programs (P1, P2, P3, and P4), in three states (Tennessee, Delaware, and North Carolina). These programs not only were the most geographically diverse, but also were the most varied in their service delivery systems/structures among those working with the MDPs. Puckett worked with both Part C and general early childhood programs, which used a combination of direct employment and contracting of staff to provide EI services in a wide variety of settings.

Sustainment of the Model in Implementing Programs

Program directors were interviewed 16 to 18 months after the end of the MDP. The P1 director reported that the practitioners who had originally been trained to deliver the model language-promotion strategies with parents were still implementing them all. The two practitioners who were interviewed confirmed their own use and cited strategies related to interest-based learning, everyday learning opportunities, and responsive teaching to illustrate what they were working on with parents. However, some practitioners were said to be using the strategies for leveraging everyday learning opportunities—i.e., actively helping parents identify and choose activities that create the best language-learning opportunities—less frequently than other strategies. At the organizational level, even though the director affirmed support for practitioners' use of the model strategies, no professional development (PD) or other supports were available to help them retain implementation fidelity or to train new practitioners joining the program in the use of the language-promoting strategies. There also was no indication that processes were in place to collect data to assess practitioners' or parents' fidelity in implementing strategies or child outcomes.

More complete sustainment of the model strategies was apparent in P2, where the director said that all the strategies were being used by staff originally trained as part of the MDP. Interest-based learning and responsive teaching were apparently more prominently used; increasing learning opportunities appeared to be more difficult for practitioners and parents to do. Described by MDP staff as "totally committed to the model," the P2 program director had instituted a training/mentoring program for the four or five new staff to enable them to use model strategies with the families they served. The training program was being run by an early interventionist who had originally been trained in the MDP model. This "coach" was said to use the same content as the MDP's initial training program, including video examples and participatory activities designed to illustrate and practice the model intervention strategies. The program also was providing ongoing supports to staff through monthly meetings, which gave practitioners opportunities to talk with colleagues regularly about how to use model practices. This was said to

be consistent with the directors' commitment to concentrate on program quality—i.e., working with staff to reflect collaboratively on their experiences and identify opportunities for program and service improvements. Consistent with this, the program director had recently reached out to the MDP staff for help in thinking about ways to collect and use fidelity data for program improvement.

In P3, interviewees said there was no internal organizational push to continue to use the model practices, and in fact they did not appear to be used widely. Feedback from some staff, however, indicated that interest-based learning and responsive teaching strategies had been used "in some situations by a couple of people" who had been trained by the MDP team, but those staff had left the program. Strategies related to everyday activities and increasing learning opportunities were said to be used "infrequently" and not with fidelity. MDP staff indicated that no training or other forms of program-level support had been provided to new staff in the use of model strategies, in part because P3 and other state EI programs are primarily staffed by contracted personnel. Meeting and training time is not reimbursable for them, resulting in few opportunities to provide them with guidance on consistent use of model practices.

P4, a very small EI program that had newly emerged at about the time the MDP began, was no longer in operation at the time of the follow-up study.

Spread of the Model to Other Programs and Practitioners

The discussion of within-program sustainment of the Puckett model revealed that new practitioners in P2 had been trained in the model language intervention strategies, indicating some degree of spread beyond the group trained directly as part of the MDP. The P2 director also has been "moving the [model] practices into other home visiting programs in the agency, such as Early Head Start" and Parents as Teachers, as well as adapting some strategies to their center/classroom-based program. MDP staff also reported a "conceptual spread" of the model in that "the intervention is being applied in a similar fashion to promoting children's development and learning in other areas beyond language learning…they've been applying it in a much broader way." Additionally, MDP staff reported that "the state EI system is very pleased they [P2 staff] are using the model approach. They were asked to present information about the model at a state Interagency Coordinating Council meeting." There were no indicators of model spread within or beyond any of the other Puckett programs.

University of Kansas

The Kansas MDP's model was a combination of eight functional naturalistic strategies to promote communication and language development including, among others, prelinguistic and milieu teaching, dialogic reading, and shared book reading, all of which are supported by an extensive research base. The key naturalistic intervention strategies used in the Kansas model were increased responsiveness to children's communication attempts, joint attention, expansions, imitation, increased talking, shared book reading, and arranging the environment to encourage rich and effective language and communication. A teaming approach—i.e., encouraging adoption of these strategies by all practitioners serving a particular child—also was a feature of the Kansas model. The MDP implemented its model with three programs in counties that delivered Part C EI services (K1, K2, and K3). The MDP team stayed in contact with and offered support to those programs with decreasing frequency until spring 2013.

Sustainment of the Model in Implementing Programs

The Kansas MDP administered surveys to practitioners and program directors and conducted focus groups with practitioners from each of the three programs. Focus groups for K1 and K2 included all practitioners who were still working at those programs (*n* = 7 and 8, respectively), and 6 of 21 practitioners still working at K3 participated in that focus group. All the K1 focus group participants indicated they were using some of the model strategies with an estimated 25% to 75% of the families they served. However, one provider was said not to be using the strategies or the model-related materials at all now and actually never had. K2 practitioners who participated in the focus group indicated they were currently using the model's language promotion strategies with some of the children and families, with one provider reporting that she always used every component of the model with all the families she served. Five of the six practitioners in the K3 focus group indicated they used the strategies with their families, with half saying they used them with all their families.

Survey and focus group results indicate that the groups differed in which of the model's tools and materials they used most often in their work. K1 practitioners reported that they consistently used the manual, activity cards, and posters that had been developed as part of the MDP to help parents learn how to use the model strategies with their children. They reported infrequently using the DVD that demonstrates how to use each strategy and no longer using the observation checklists to record parents' strategy use. All the practitioners reported using five of the strategies (e.g., arranging the environment, following a child's lead) "regularly" or "sometimes." Strategies of using open-ended questions and time delay were used somewhat less frequently. K2 practitioners indicated that of the model-related materials they had received, they liked using the activity cards best. One provider reported using the Provider Observation Checklist regularly. These practitioners were not using the DVD, however, because families said they preferred discussing the strategies directly with them. Four of the five strategy users reported using six of the seven strategies "regularly" or "sometimes," and half reported using the various model-related materials (e.g., DVD, checklists) "sometimes." K3 practitioners indicated that they most frequently used the manual, DVDs, and posters, calling them "the strongest" of the model's implementation materials. They used the activity cards less frequently because they found them to be "too scripted" for some families, whereas others liked them because they showed examples of "real families" using the strategies. They also reported adapting their use of the activity cards by having families focus on one idea on the card at a time rather than address use of an entire strategy.

Regarding the PD and support component of the model, K1 staff indicated that a plan was in place that incorporated training in model strategies into the PD offered all new practitioners as they joined the program. K2 practitioners reported that new staff were given the model-related materials (e.g., manual, DVD) so they could use them with families, but they did not report that model-related training was offered new staff. The K3 director had requested more manuals, DVDs, activity cards, and posters from the MDP so they could be given to new staff and families, and MDP staff reported that K3 practitioners who had been trained during the MDP were training new practitioners on how to use the strategies with families. MDP staff also reported that all three programs continued to "embrace getting together as teams and using a coaching model to deliver their services, and within that model, they are sharing their expertise," an approach that had preceded but was further encouraged by their participation in the MDP.

Sustainment of the assessment and data use component was intermittent across the programs and practitioners, even though Kansas staff reported that the graphs that reported parent fidelity data as they corresponded to children's growth in language and communication were one of the most powerful and popular components of the MDP, a fact validated in focus groups. K1 practitioners said they "had not thought to use the self-checklist [to record their own activities with parents as a fidelity check] since the project ended but thought it would be a helpful tool to use in the future," and 90% of K3 practitioners did not use either the parent or provider checklists to assess implementation fidelity. In contrast, the majority of K2 practitioners said they liked using both the self-checklists for recording the strategies they used with each parent and the data graphs that enabled parents to see how their children's progress in language development corresponded to strategy use.

Spread of the Model to Other Programs and Practitioners

Some spread of model strategies at the practitioner level had begun during the MDP. MDP staff reported that staff at both K2 and K3 had begun to provide training for occupational and physical therapists in addition to speech/language pathologists, recognizing that OTs and PTs could incorporate the language-promotion strategies into their work with children and encourage parents to use them. After the MDP had concluded, incorporating model strategies into the K1 PD plan for new practitioners and supplying new K2 and K3 practitioners with model-related materials became pathways for the model's language-promotion strategies to spread beyond the practitioners who participated directly in the MDP.

Beyond the MDP programs themselves, a new research project undertaken by Kansas MDP leaders incorporated the early childhood language intervention model, along with progress monitoring and family engagement components, into a multipronged intervention whose efficacy is being tested in multiple programs in multiple states. MDP staff also reported working with Early Head Start home visitors to use the model strategies with families who did not necessarily have a child with a disability. They also indicated that they had been asked for MDP-related information and materials by personnel from 16 programs in and outside Kansas.

Vanderbilt University

The VU/FSU model incorporated enhanced-milieu teaching and family-guided routines-based intervention, both of which are parent-implemented interventions, into a new model, the KidTalk Tactics Project (KTTP). The VU/FSU team used a staged implementation approach whereby MDP staff first supported and coached families in their homes to use the interventions with their children and then moved to train practitioners active in children's lives, organizing parents and practitioners in communication teams to promote collaboration and learning as they worked with children. The VU/FSU model included a three-tiered training approach, with level 1 training being an introduction to the model and levels 2 and 3 being more in-depth training for practitioners who were working with children participating in the MDP. Training at VU1 and VU2 had ended by spring 2011. Ongoing weekly coaching with individual feedback continued through as late as spring 2012 and was provided for practitioners who had participated in level 2 and/or 3 training as long as that teacher or provider was still working with a child who was a project participant.

Sustainment of the Model in Implementing Programs

MDP staff interviewed VU2's administrator and conducted focus groups with four of VU1's MDP-trained therapists and four of VU2's trained practitioners and an administrator. The VU1 focus group comprised 4 of the 9 practitioners who had been trained (44%); the VU2 focus group comprised 4 of the 14 practitioners who had been trained (29%). Practitioners and current and former graduate student participants in KTTP's PD were invited to participate in an electronic survey conducted through e-mail, social media, and other personal contacts at the MDP sites. The survey was completed by 7 of 28 trained practitioners at VU1 (25%), 9 of 14 trained practitioners at VU2 (64%), and 31 of the 68 graduate students who were trained as communication coaches (46%).

Survey and focus group data indicated that overall continued strategy use was high, with all survey respondents and focus group participants reporting some degree of continued use. Across programs, the most popular strategy was language expansions, with 82% of survey respondents reporting continued use. Strategies that survey respondents reported using daily were expansions and playing at the child's level (63% each). Conversely, time delays were least likely to be used daily by survey respondents (41%). A majority of survey respondents (70%) reported that they continued to use the strategies with all children they served, whereas 14% reported that they used the strategies only with children who had diagnosed disabilities.

Focus groups revealed that at both programs, environmental arrangement was among the least frequently used of the strategies. In contrast, about 80% of VU1 focus group members reported continued use of time delays, and 60% reported daily use of mirroring and mapping, target talk, and playing at the child's level. All VU1 focus group participants reported continued use of all strategies except for responsiveness and target talk (50% each), and all reported using most strategies daily. Almost all (9 of 10) VU2 focus group members reported continued use of expansions, and the majority reported daily use of playing at the child's level. Survey data indicated high satisfaction with the strategies among practitioners and students, which MDP staff said facilitated continued use. For each strategy, the majority of survey respondents indicated that they thought it was effective, ranging from 69% to 86% across strategies. Respondents also indicated a favorable view of the training. All practitioners reported they would participate in the training again if given the chance, and 95% reported they would recommend the training to a colleague.

Since the project ended, VU2 has requested additional support from MDP staff, with one member indicating, "We are planning a school-wide EMT 'refresher' as part of the winter in-service. This has been requested by practitioners and facilitated by the administrator. We are currently working with two practitioners on developing model classrooms using the EMT model at their request." VU1 has not requested additional support.

Spread of the Model to Other Programs and Practitioners

Overall, 55% of survey respondents indicated that they had taught other professionals at least one strategy. Specifically, 55% of VU2 practitioners reported sharing a strategy with other staff, as did 7% of VU1 practitioners. Former graduate students were most likely to have shared a strategy, with more than 70% reporting having done this. Overall, 57% of survey respondents reported that they had shared at least one strategy with parents, including 78% of VU2

practitioners, 14% of VU1 practitioners, and 70% of former graduate student communication coaches.

Florida State University

The FSU MDP implemented the VU/FSU model with an agency (FSU2) that ran two Early Head Start classroom-based programs in Florida that served children with disabilities receiving Part C early intervention services, as well as other children. FSU returned to these programs for the follow-up study 3 years and 2 years after ending implementation in the two programs and conducted focus groups with practitioners and program administrators as well as fidelity checks for staff. During the MDP, FSU also had worked directly with primary caregivers of children being served through a Part C early intervention program (FSU1). Because all intervention-related services were provided directly to caregivers, there was no real intervention at the program level to be sustained once the MDP communication coaches discontinued their home-based work with families. Hence, this program was not included in the follow-up study.

The FSU MDP team also developed the content for the Communication Coach Course, a manualized multicomponent online distance learning program based on the KTTP model that was "designed to build infant toddler specialists' capacity to support children with communication needs and their families" (Brown & Woods, 2012) across states and programs. The online KTTP-based program offered five 6-hour online asynchronous content units, structured around the ROPE (Read, Observe, Practice, Exhibit) instructional model (Brown & Woods, 2010), which provided background on communication development, strategies for expanding children's communication, and coaching caregivers to use communication-promoting strategies. The program was provided through the Pennsylvania Early Intervention Technical Assistance system (EITA), which offers statewide training and technical assistance to administrators and practitioners of the local infant/toddler and preschool early intervention agencies on behalf of the Office of Child Development and Early Learning, Pennsylvania Departments of Public Welfare and Education. Follow-up activities for that part of the FSU MDP involved an online survey of practitioners who took the online training course; 24 of the 46 participants responded to the survey.

Sustainment of the Model in Implementing Programs

FSU2 practitioners/programs. Program administrators reported that most components of the KTTP model were being implemented with children in classrooms and that in classroom observations, they were able to identify major strategies still in use, such as responsiveness, using descriptive language, and expanding on child communication. Administrators were not aware of any significant changes to the model. This view was confirmed by practitioners who participated in the focus groups. They reported that they all continued to use the strategies for children both with and without disabilities because all nondisabled children in their classrooms were at risk of poor outcomes because of poverty. In observations, practitioners were seen to consistently use responsiveness strategies they had learned during the intervention. Except for one practitioner, observed practitioners consistently responded to and expanded on children's communication during daily classroom routines, and some both mentioned and used expansions to children's communication and mirroring. However, although no strategies had been dropped entirely, some were seen less during observations and were reported in focus groups to be used

less, such as environmental arrangement strategies. Observed practitioners had implementation fidelity ratings ranging from 60% to 90% with an average of 78%.

Communication Coach Course (CCC). FSU's follow-up study of the online PD program revealed that it was still being offered to EI practitioners statewide in Pennsylvania through the EITA system. The FSU principal investigator reported that EITA offers the course once or twice a year and has waiting lists of potential participants; "Now they basically own it, and this is something they are actively promoting." At the provider level, data from the online survey of members of the initial cohort of CCC participants indicated that the 24 respondents (52% of participants) used "most of the strategies with considerable regularity in their daily practice with families." On a Likert scale of 1–5 in which 5 represents the use of a strategy *frequently with families in many daily routines*, five strategies received an average score of 4 or greater, indicating to MDP staff that "providers have maintained their ability to apply strategies with families in everyday settings." Practitioners also were said to be able to cite specific instances in which they coached caregivers in everyday routines and listed functional Individualized Family Service Plan outcomes, leading MDP staff to conclude that "they both understand and are applying these [model] principles."

Spread of the Model to Other Programs and Practitioners

FSU2 practitioners/programs. Administrators reported believing that strategy use was more widespread than it was during the MDP, in part because of the migration of MDP-trained practitioners from the two MDP sites to a third Early Head Start site operated by the same program.

> The teachers who have relocated to the third site have brought with them the expertise that they gained during the project. In turn, they have worked with new assistants and co-teachers who have each learned from one another.

More specifically, administrators observed that practitioners had helped spread responsive communication, using language targeted to the child's level and increasing the use of descriptive language in the classroom. Practitioners who fully participated in the training in KTTP strategies also reported sharing their learning with other practitioners in their centers who received only the introductory training the MDP offered, thereby increasing the skills of other staff in working with the children they taught. Practitioners also mentioned sharing strategies with parents and encouraging their use at home. MDP staff observed that the practitioners also shared ideas with graduate students who came to their classrooms. FSU staff did not report any spread of the model to other programs beyond the third site.

Communication Coach Course (CCC). The FSU staff asserted that developing the online PD program and working with EITA to offer it broadly in Pennsylvania "is the single best thing we did as far as dissemination and maintenance of training." For example, in addition to taking the MDP provider training in preparation for sponsoring CCC online, EITA staff completed a related training on how to coach practitioners, "adding another level of support for EI professionals in the field." MDP staff reported that now "a cadre of technical assistance professionals has participated in the [MDP model] approach and can help spread its use by learning how to coach other practitioners." Further, understanding the value of coaching in helping practitioners reach and maintain fidelity of new intervention skills, EITA used state

funds that became available through an increase in federal funding for the state Part C program to award "mini-grants" to programs to hire coaches to support CCC participants as they implemented MDP-originated strategies with the children and families they served. Coaches hired through the mini-grants also supported non-CCC practitioners who, through collaboration with CCC participants in their programs and with this coaching support, also used the MDP strategies with their children and families. Both EITA and FSU staff were communicating broadly within the early intervention community about the nature of the training and early evaluation results (Brown & Woods, 2012). For example, EITA staff members were scheduled to present information on the CCC at the Council of Exceptional Children's Division for Early Childhood conference in late October 2013, and the FSU principal investigator had recently given a presentation on CCC to a statewide audience of EI practitioners in Pennsylvania. Finally, MDP staff reported that materials produced for the MDP were being widely used in other training programs in Pennsylvania and that practitioners reported sharing those materials with others to help support them in using model strategies.

The Sustainability of Specific Model Core Intervention Components

One purpose of the follow-up work on the sustainability and spread of the C3 MDPs was to ascertain whether some core intervention components of the models were more likely than others to be sustained and to spread. Follow-up study findings suggest that the most fundamental component of the models—the evidence-based functional language intervention strategies to be used by practitioners and/or parents to promote the language and communication development of children with disabilities—were sustained to some degree in all but 2 of the 11 programs, one of which had actually discontinued operations altogether after the MDP concluded. The degree of sustainment in the nine programs still implementing the intervention varied across strategies and practitioners, with only one clear example of a provider stating she used all the strategies with all the children and families she served. In all four MDPs, some or all of the materials and tools developed to support the intervention strategies were still in use.

The PD/coaching component of the model was less in evidence. Formal training and/or coaching programs to promote model strategy use had been incorporated in three programs spanning three of the four MDPs, although MDP-related materials and tools were given to new staff (without explicit training) in several other programs. Additionally, informal spread of model strategy use to new staff was reported as occurring in other programs through provider-initiated collaboration with new staff. Systematic collection and use of data on fidelity and/or child outcomes was not evident in any of the former MDP programs, although the director of one Puckett program was interested in pursuing the idea, as were practitioners in one Kansas program.

The fourth core intervention component of the early childhood language intervention models—mechanisms for promoting the continuity of model strategy use across the transition from Part C to Part B—proved to be the most challenging to implement. All the MDP teams had planned to incorporate strategies for promoting the continuity of their models across systems, yet to varying degrees all MDPs were challenged by the incompatibility between a Part B system that is structured to deliver services to a child through a program or classroom and an early childhood language intervention model whose "service" is a set of child- and parent-focused strategies to be applied in naturalistic settings as part of daily routines. Each MDP took a

somewhat different approach to this challenge. Puckett MDP parents were expected to be the conduit for consistent use of intervention strategies across systems; parents would use the practices themselves, and Part B practitioners would adopt the practices at the parents' request. Part B program personnel were not directly contacted by Puckett MDP staff to encourage continuity of interventions, nor were materials or PD offered to the Part B practitioners. Kansas MDP staff expected that the Part C practitioners they had trained and their own MDP site liaisons would directly contact Part B practitioners to describe the project and share model-related materials. Ideally, Part C and Part B practitioners would then work together to provide a seamless transition of services and practices and implement the MDP's strategies based on the child's needs. These expectations were realized infrequently. The VU/FSU approach was to support parents as decision makers and have their own MDP communication coaches train Part B practitioners to use the MDP intervention strategies. However, relying on parents, MDP site liaisons, or MDP communication coaches did little to build capacity within the Part C programs to help families and children bridge the Part C-Part B system divide. Without developing Part C program capacity, it is not surprising that efforts to bridge the gap had not been sustained in the Part C programs at the conclusion of the C3 MDPs.

3. Factors Related to Model Sustainment and Spread

MDP staff involved in the follow-up study of C3 MDP programs and practitioners were asked to reflect on the data collected and distill factors that appear to have promoted and factors that appear to have hindered the sustainment of the models among the original MDP programs and practitioners and their spread to others. Although many of the factors they identified were directly linked to sustainment and spread, several were reported to limit the MDPs' ability to fully implement an intervention in a particular site or with particular practitioners in the first place. These factors also are reported here because in hindering full implementation, they also hindered the ability of a model to achieve the desired results and thus be sustained or spread.

The conceptual framework that has guided MDCC's work (Figure 1) suggests that variations in factors related to the model itself (i.e., the *source*), the composition and strategies of the MDP team (i.e., the *purveyor*), the organizations implementing the models (i.e., *destination organizations*, in this case, early intervention and other child-serving programs), and the contexts in which those organizations implemented the models (e.g., early intervention and preschool special education systems) might help explain variations in the implementation experiences and outcomes generated by the various MDPs. Findings related to these linkages were reported this year (Gaylor, Hebbeler, Wagner, Shaver, & Fabrikant, 2013). Not surprisingly, MDP staff reported many of the same factors also related to model sustainment and spread. This chapter first presents the factors reported to have promoted sustainment and/or spread of one or more of the MDP models, organized to correspond to the major elements of the conceptual framework, and then discusses reported inhibitors of sustainment and/or spread.

Factors Reported to Promote Sustainment and Spread

Model Characteristics

The following three key concepts from the body of research on the diffusion of innovations (Rogers, 2003) helped focus our analyses of the contribution of model characteristics to variations in the MDPs' implementation experiences, outcomes, sustainment, and spread:

- relative advantage—"the degree to which an innovation is perceived as being better than the idea it supersedes" (p. 229);
- compatibility—"the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters" (p. 240); and
- complexity—"the degree to which an innovation is perceived as relatively difficult to understand and use" (p. 257).

Research suggests that the relative advantage and compatibility of an innovation, as perceived by members of a social system, are positively related to its rate of adoption, whereas its perceived complexity is negatively related to its rate of adoption. MDPs reported similar relationships to sustainment and spread.

Figure 1. **Conceptual Framework for Cohort 3 Model Demonstration Implementation and Outcomes**

INTERVENTION IMPLEMENTATION

INTERVENTION OUTCOMES

Influences
State/local
Other external factors

Destination
Participating Organizations and Staff
Characteristics of participating organizations, programs, and staff
Implementation outcomes
Changes in:
▪ Staff knowledge, attitudes, skills, and actions
▪ Organizational structures, processes, and culture
▪ Community and other peripheral relationships
Sustained implementation

Purveyor
The MDP Grantee
Core implementation components
▪ Partnering with programs and services in the community
▪ Providing professional development, training and support
▪ Ongoing coaching
▪ Staff selection and staffing strategies
▪ Strategies for promoting continuity of the model across Part C and Part B

Source
The Model
Core intervention components—e.g.,
▪ Evidence-based functional language intervention model (in natural settings, i.e., home and early childhood programs)
▪ Training and support for parents and child care providers/teachers to imple-ment the language interventions with their children
▪ Use of data and assessments
▪ Continuity of the evidence-based language intervention strategies across Part C and Part B preschool programs

Feedback
Model evaluation
Fidelity data
Social validity data

Parent Outcomes
▪ Increased competence
▪ Increased confidence
▪ Increased skills and generalizability

Childcare Providers/ Teacher Outcomes
▪ Increased competence
▪ Increased confidence
▪ Increased skills and generalizability

Child Outcomes
Improved language and communication including, prelinguistic, receptive, expressive, and linguistic diversity/complexity.

Systems Outcomes
▪ Continuity of services and interventions between Part C and Part B

* Adapted from *Implementation Research: A Synthesis of the Literature* (Fixsen et al., 2005).

Relative Advantage

The factors reported as being advantages of the MDPs' early childhood language interventions relative to current practice in implementing sites included the interventions' encouragement of collaboration, the coaching provided to practitioners, the positive results regarding children's language development and communication, the tools and materials developed as part of the MDP and distributed for ongoing use by practitioners and parents, and the opportunity to leverage the assets and support of outside partners.

Collaboration. C3 follow-up study findings suggested that encouraging collaboration expands opportunities to share good ideas among collaborators and results in feelings of ownership of the interventions. One MDP staff member reported that

> The most important lesson from the data we gathered…was that collaborative practices in professional development are essential to the sustainment of any intervention…. Soliciting the teachers' input, feedback, and ideas from the planning phase onward is critical to building capacity and sustaining the model. Collaborative practices help the participants feel ownership of the content and appear to make them more motivated to continue to use the approach beyond the end of the PD experience.

Staff of another program said that

> All these infant and toddler programs have embraced getting together as teams and using a coaching model to deliver their services, and within that model they are sharing their expertise.

Administrators in another MDP's programs also indicated that

> Close relationships between practitioners helped to facilitate the continued use of the strategies…. They often used informal conversations with one another to brainstorm and discuss their use of strategies.

When asked what their MDP team would have done differently if it had a chance to launch the intervention again, one member said

> We would engage the PD recipients at each stage in the process, from designing the intervention, discussing dosage, and discussing methods for feedback and follow-up. Engaging in a jointly planned, collaborative approach builds capacity among the PD recipients and gives them a stake in the intervention.

Coaching. Coaches supported practitioners implementing the C3 models in many ways, including reviewing important points about the intervention, resolving issues in working with particular families, convening provider groups for shared reflection and support, and modeling use of strategies to refresh practitioners' understanding of them. Their value to implementers in sustaining interventions also was apparent—coaches kept implementers on track. One MDP staff member indicated that "the continued presence of the coach during the follow-up phase was cited as an important factor that encouraged continued implementation. Simply seeing the coach and having her check in often jogged the practitioners' minds about which strategies to use." Although outside coaches often are not available to programs, coaches can be "trained up" from the ranks of program staff to serve in that role, as they had been in the Kansas MDP sites.

Seeing results. One group of practitioners who had participated in and sustained the model in their program said in focus groups that they had continued to use the MDP strategies because "they saw they worked with their children…. Practitioners commented on how remarkable it was to witness the growth in the children they worked with and that it served as an incentive to keep using the strategies." Another MDP staff member concurred: "A project like this needs continuous buy-in and …one of the ways to achieve that is by showing continuous effects." Another said, "Sharing data at all levels—with the parents, at the provider level—was the most

important part of the project…. The focus groups reported that as well—that it was very, very helpful."

Tools and materials. Developing useful tools and materials during the MDP is an advantage both in implementation and in sustainment. One MDP staff member contended that the graphing tool developed during her project to display children's communication growth in relation to parents' strategy use was powerful in showing parents the value and payoff of using the model strategies. Sometime after the conclusion of another MDP, practitioners reported that they continued to use MDP handouts and feedback and routinely referred to the PD manuals for information on strategies. They agreed that an even more comprehensive written manual with examples and videos would have helped them even more in maintaining the frequency and use of the strategies over time. A member of one MDP team confirmed the value of tools and materials, saying that if they were to implement the intervention again,

> We would invest time up front into developing materials [explicitly] for use after the project ends so that the…professionals have something to refer back to upon completion of the intervention. These materials…would need to be introduced to by coaches ahead of time so that they were not simply left [with participants] to figure out how to use on their own.

Outside partners. Some MDPs' partnerships in implementation enabled them to leverage outside resources that contributed to sustainment and spread. Most notably, through its partnership with the Pennsylvania EITA system, the FSU online Communication Coach Course reached a substantially greater audience with its training in the KTTP model strategies than the MDC staff could have generated on their own. With its access to practitioners and the resources to provide grants for additional coaching for those who took the course, EITA multiplied the value and impact of the MDP and is likely to continue to do so over time.

Compatibility

The evidence from the follow-up studies strongly affirmed the hypothesis that interventions are more easily sustained and spread when they are compatible with the implementation environment. That compatibility can be apparent on a variety of dimensions, including philosophical views of good practice, emerging trends in practice, organizational culture and structure, and the match of practitioner skill to intervention demands.

Philosophical compatibility. The early childhood language intervention models were grounded in principles that emphasized the importance of leveraging and maximizing the learning opportunities inherent in naturalistic settings and daily routines and involving a variety of significant adults in a child's life in promoting language and communication development in those contexts. This philosophical foundation was compatible with many of the programs and practitioners MDP staff worked with but not all. One MDP leader acknowledged that model implementation had not gone smoothly in a program where the speech therapist, a key member of the communication team serving children at that site, was not

> thrilled that somebody other than the speech therapist had something to say about the child's communication…because [the therapist] philosophically had a different approach that was not naturalistic.

Philosophical views regarding the appropriate level of inclusion of students with disabilities in classroom activities was another important contextual factor for one MDP. "We did well in strong classrooms that had a strong inclusion model and less well in those that didn't." Not surprisingly, sustainment of the model in the programs followed a similar pattern.

Emerging trends. Model implementation and sustainment are enhanced when they "go with the flow" of trends in the relevant fields. For example, when one MDP team began initial implementation of its intervention, its programs previously had

> all started adopting more of a teaming approach to their service delivery, so they felt that this program fit really well into that model. It was at a time in Part C programs that everybody was starting to talk more about teaming…[and] collaboration.

Organizational culture. MDP staff members concurred that working in programs with an organizational culture that supports model practices is critical for implementation success and for "sticking with" an intervention over time. For example, in one site, "[teaming] was a trait they naturally had because of the administrative culture." When another MDP staff member was asked whether their implementation experience confirmed that a culture of teaming/collaboration supported model sustainment, she replied that

> It's not collaboration and teaming [alone], it's collaboration, teaming, *and* a culture of learning. [In one program] the important thing was that it was a culture of learning.… There was an expectation that the individuals who worked there would continue to learn…. This was an important seed for all that happened [in their implementation of the model].

A member of another MDP team concurred with the importance of an organization's learning environment; one site where implementation had gone well "had a lot of support and expectation from the administration that staff wanted to get better and do this [the model's] professional development."

Organizational structure. Another MDP team member affirmed the importance of compatibility with organizational cultures but added that fitting within organizational structures also can affect implementation and sustainment. She indicated that the MDP had been differentially successful with its teaming model in two sites because their contexts differed on these two dimensions. In one program, parent-teacher collaboration was strong because the culture of the school supported it, but other practitioners on the communication teams were not well integrated. In the other site, provider-teacher collaboration was strong, but parents were not well integrated into the teams because parents were not often present at the school. Sustainment of a core component of an intervention, such as an inclusive parent-teacher-provider team, is not possible when it is not fully implemented during the MDP.

Requisite practitioner skills. During MDP implementation, MDP leaders reported that implementation went better in programs where practitioners had a baseline level of skills required for integrating the model into their practices. As one MDP staff member noted, "We underestimated the skills and management strategies that needed to be in place before we could begin to do what we did." Another confirmed that the environments in which the intervention was delivered "were sometimes too chaotic to provide as much individual attention to children as we would like," in part because of inexperience or lack of skills in managing the intervention

environments well. When interventions cannot be effectively delivered, there is little incentive to sustain efforts to do so once an MDP has concluded.

Complexity

Although the complexity of an intervention is generally thought to hinder its adoption, the absence of it can promote a model's sustainment and spread. Staff of one MDP asserted that the eager uptake of their model's language-promotion strategies in one program was at least in part due to the simplicity of the strategies: "We heard from the OTs and the PTs how they really valued this intervention because it helped them address language [issues with children and families] in ways that were simple and accessible." Another MDP actively encouraged adaptation of model strategies and ways of presenting them to parents so practitioners could align the intervention with the needs of children and families.

Characteristics of Programs and Practitioners

In addition to characteristics of the models, follow-up study results showed that some characteristics of the programs and practitioners also promoted implementation and sustainment.

A positive shared history. Many MDP grantees across the cohorts funded by OSEP have chosen to work with programs or schools they had worked with on past research and/or development efforts. Often, this shared history can smooth the MDP's implementation path, but it also can encourage continued involvement by MDP staff with the site after the MDP team concludes the project. One MDP leader said that "when the model demonstration personnel have a relationship with a site, it's possible to go on implementing something." Another MDP leader agreed but elaborated on this point, indicating that "It's not just that you have a relationship with the site, it's that you have a relationship in which your input about programming is valued and sought."

Administrative support. All MDPs testified to the importance of having strong administrative support behind both initial and continued implementation of model components. One MDP leader, speaking of administrators in their programs said, "What we saw is that when there was that [administrator] energy, that buy-in, that ability to make [the model] part of their system, then we saw [that] the model has been sustained longer." Another indicated that "The key in that program [where the model had been sustained] has been the director, who totally and completely bought in to these ideas from the very beginning and believed in the idea and the way we worked with kids,"

Increased self-efficacy of practitioners. Administrators involved in one follow-up study reported an increased sense of leadership among their staff involved in the MDP and credited it with the spread of language-promoting strategy use to other center staff. Administrators noticed in the staff members a confidence in their ability to share their MDP-related knowledge with others that they did not evidence so clearly before the MDP. The staff members attributed the growth in confidence to the MDP's use of collaborative planning, shared problem-solving about children, and their role as active members of a broader child-focused team. They noted that because the MDP coaches did not just come in "and tell them what to do," they were more able to make their own decisions about strategy use and engage other staff in discussions about children not involved in the MDP.

Factors Reported to Hinder Model Sustainment and Spread

The follow-up studies done by the MDPs and the reflections of MDP staff on their implementation experiences suggested that the following factors hindered or limited model sustainment and spread.

The developmental stage of the models. As noted at the beginning of this report, the interventions that were at the heart of the MDPs were evidence based; that is, research had demonstrated that they facilitated the development of children's language and communication skills. What was not known was whether practitioners could be taught to implement the interventions with fidelity in real-world settings. Thus, the PD and coaching components of the model were in an early trial stage. MDPs had PD materials and plans at the outset but went through several cycles of implementation, obtaining feedback from participants, revising materials and developing new ones, and implementing again. In some sense, the MDP teams and the practitioners and administrators in their programs were partners in a learn-as-you-go approach to model implementation. With their focus on achieving model implementation and fidelity among the practitioners they worked with, issues of sustainability and spread of the model were not initially on the MDPs' agendas. Such issues did begin to surface to varying degrees across MDPs as implementation began to stabilize, but for the most part they were not a central focus of MDP activity for this cohort of grantees. Against that backdrop, the degree of sustainment and spread that occurred is a tribute to the value of the models and to the implementing programs, practitioners, and others who have become engaged with the models since the MDPs ended.

Staff turnover. Staff turnover was an issue for one or more programs in which each of the MDPs worked, underscoring the reality that "capacity doesn't stay built." When MDP staff returned to one program to assess the extent to which model strategies were still being used, they discovered there was "basically nobody left there." Not only had virtually all trained staff left the program, it had also "gone through three directors" since the MDP worked with it. As a result, one MDP staff member said, "It has not been easy to sustain any impact from the intervention there because it is all different people, different directors; it is just a different situation." In reflecting on the issues surrounding staff turnover, one MDP leader concluded that "This finding speaks to the importance of future efforts to work toward program-level changes that are sustained beyond any individual staff changes."

The flip side of staff turnover, however, is that when trained staff move to a new program, they may still sustain their use of model practices, as was true of several practitioners who left a VU program to teach in Part B settings in public preschools. Staff members who migrate to new programs also may share their knowledge of and experience with an intervention with other staff, thereby increasing the breadth of provider/teacher exposure to model practices.

Staffing and reimbursement policies. Although the contribution of coaching and collaboration to model sustainment and spread was clearly present in the MDPs' implementation experiences, staffing and reimbursement policies, generally determined at county or state levels, hindered programs in providing their staff training, collaboration, and teaming opportunities. Speaking of one state, an MDP leader said, "As the system is set up now, there is very little opportunity for [coaching] support…because basically what you have is individual practitioners with very little connection to any organization at all." A similar situation was evident at

another's MDP program, leading an MDP staff member to comment that "When people are hourly contract employees, it's really difficult to fit any sort of supervision or training into their schedule." Another commented that in a contract-based system, "Given the logistical barriers of organizing 50 to 100 practitioners, even if you had a coach, cohesion among practitioners would be difficult." The same limitation was true regarding time for collaboration among staff, which closed one avenue through which MDP-trained therapists might have encouraged strategy use by new staff.

Limited resources. In discussing the importance of the programs or the systems they belong to for building the coaching capacity and providing ongoing staff support to sustain interventions, one MDP staff member pointed to the limited resources available to many Part C programs: "All of the programs that we have come into contact with and others across the state are pretty strapped." This situation resonated with the other three MDPs regarding their own state contexts, and one pointed to "the chronic underfunding of programs for adaptation of any sort of innovative model." She acknowledged that except for very small programs, most programs have someone in the role of coach, but that person usually carries his/her own caseload or functions as the program's director. Consequently, that person usually has limited time and often has received no training in what successful coaching entails. Without training for new staff and ongoing support for all staff, sustaining evidence-based interventions and/or taking on new ones and providing them with fidelity is beyond the reach of many programs.

Demands on staff time. Administrators involved in one MDP said that the demands of the classroom sometimes prevented the spread of the model from MDP-trained practitioners to others who could have benefited from learning the model strategies. Practitioners were "stretched quite thin" in their responsibilities to the children and families they served, which did not leave time for informal collaboration or for formal or allotted time to collaborate because of classroom schedules. Administrators were considering building time into practitioners' group meetings to problem-solve and share ideas to support each other in the classroom.

Children's complex needs. MDP-trained staff in one program indicated that the most significant barrier to implementing their model was the complex needs of the children in their care. In addition to deficits in language development, many practitioners cited the behavioral and social challenges of their children as being the primary focus of their attention on many days, with behavioral challenges taking a particular "mental and emotional toll." Other children, they noted, had physical and occupational therapy needs that also needed to be addressed in the classroom ahead of the use of model strategies to promote language development.

Summary

MDP staff conducted their follow-up studies with participating MDP programs and practitioners from 3 months to 2 years after their projects had concluded and found important differences in the extent to which their models had been sustained and had spread among and beyond the original programs and practitioners. They attributed the differences they observed to several factors related to the core components of the models themselves, including the tools and supports provided to practitioners and parents; the "fit" of the model with a program's philosophy, organization, culture, and staff capabilities; and the opportunities the model provided to partner with outside organizations. Program and practitioner factors also were found to support sustainment and spread, including administrative leadership, a shared history of working

with the MDP team, and a culture of learning among practitioners and administrators. Some of the hindering factors were contextual, including limited resources and staffing and reimbursement policies, whereas others were program level, such as high staff turnover, limitations on staff time, and the nature of the children served by the program. These findings both support and add to the results of the cohort 1 and cohort 2 follow-up studies in painting a rich picture of complexities involved in MDP implementation, sustainment, and spread.

4. Reflections on Model Sustainment and Spread

In collecting follow-up data on the sustainment and spread of their models, MDP staff also noted the suggestions of administrators and practitioners regarding how models might have been strengthened during implementation. Those lessons are documented here. In addition, MDP staff were asked to reflect on what they learned from their MDP experience with regard to (1) the important lessons about model sustainment and spread revealed in their follow-up data, (2) what they would do differently in the future to support sustainment and spread at the program and provider levels, and (3) any advice they would give to OSEP or future model demonstration grantees about model sustainment and spread. The results of those reflections conclude this report.

Being inclusive in defining the participants in the model can multiply opportunities for learning. Early childhood practitioners involved in one MDP reported that their ability to carry over and continue strategy use would have been improved if the MDP had included all practitioners in participating classrooms in the model's in-depth training and coaching, as it would have created a more common language among practitioners and a greater ability for them to support each other in working with children. They also said that including in the MDP all children with disabilities in a classroom rather than directing strategy use to the one MDP target child in the classroom would have enabled practitioners to learn better how to generalize their strategy use by practicing with several different children. When reflecting on what they would do differently if they had the chance to do the intervention again, an MDP staff member concurred with the practitioners:

> We would coach teachers as deeply and as widely as possible…. We would coach as many teachers in a classroom as possible, and each teacher would receive coaching and support with multiple children.

Staff of another MDP also learned the value of inclusiveness. They expanded MDP training in strategy use to include OTs and PTs in addition to the originally included speech/language pathologists and were thereby able to increase children's exposure to language-promoting strategies across the practitioners working with them.

Share responsibility. Thinking of possible revisions to the intervention or their implementation strategies, one MDP leader said the team would "designate a liaison at partnering programs who can help support the implementation" and "encourage more involvement by directors who could make the model more a part of the professional development conducted at the sites." The importance of involving directors, even though the interventions were provider focused, also was recognized by another MDP leader who said, if doing the intervention again,

> More work may need to be done with directors. A director would need to be in agreement with and support the intervention practices…. The director should be able or willing to provide leadership in a way that defines particular expectations in terms of staff practices and performance. Model demonstration project efforts to promote sustainability would need to help directors both understand the

intervention practices and also provide leadership necessary to effect change in the program.

Other comments also highlighted the importance of director involvement.

> [We would] set the stage from the beginning that the purpose of our work together would be to help ensure the sustainability of the model at the program level. We would develop specific strategies for supporting directors in specifying a program philosophy and goals that include use of the model practices. We would help directors know how to communicate expectations of staff and to provide the supports necessary for staff to adopt and use the practices. We would help directors see how the model might apply throughout the program and beyond the individual staff with whom we worked.

Information is powerful; more is better. As noted, MDP staff indicated that sharing progress data with practitioners and administrators facilitated continued use of strategies. In fact, sharing data was so "powerful" that one MDP staff member said,

> When we went back and talked to the staff and administrators in our follow-up, it became clear that they would have liked to have seen more program-level information about how we [the MDP as a whole] were doing, even though they saw information about their own kids.

A team member from another MDP indicated that if they were to implement their intervention again, they would "build in more opportunities for feedback during and after" the PD. Another MDP staff member indicated they would build in "sufficient time to share ongoing results." Not only was a greater quantity of information thought to be desirable, but more individualized information as well. One MDP leader reported that,

> If we were to do the project again, we would co-create plans for systematized feedback with each practitioner; some preferred written feedback while others wanted to view more videos of themselves [using the strategies] more regularly. Planning this together would increase the collaborative nature of the intervention.

Involving "the next generation" encourages model sustainment and spread. Because OSEP-funded MDP grantees often are university based, they interact closely with students who will become professionals in fields pertinent to children and youth with disabilities. One MDP leader strongly recommended including university students in model activities as a way to have model-related knowledge and skills inform whole careers into the future. Having actively included students in the MDP, she asserted that "If you want to ensure some continuity and spread of effects, including students in some way in your training whenever you create a model is one way to informally disseminate those procedures fairly widely."

Distance learning systematizes PD but is benefited by including individual support. FSU's development of the Communication Coach Course presented a unique opportunity to consider the factors that promote distance learning in addition to the hands-on PD that was part of the other C3 MDPs. FSU MDP staff concluded from their CCC experience that,

> When engaging in distance training approaches like the online Communication Coach Course, it is imperative to have the administrative support of the statewide

program, particularly in states that have contract-based systems like Pennsylvania. … [A statewide approach] helps give providers a consistent message about which intervention strategies and approaches they should be adopting. In addition, pairing online content with individualized feedback helps providers assess whether or not they are accurately applying what they learned in the course. The provision of feedback may also take place at a distance and via technology, but some level of observation and feedback is necessary for adults when they are learning new skills.

In fact, respondents to the online survey of CCC participants commented on the helpfulness of the coach's feedback and said they would have benefited from more coaching sessions. The MDP leader further noted that, "In keeping with recommended practices for professional development and adult learning, online experiences like the Communication Coach Course should be sustained, have multiple opportunities and modalities of feedback, and should encourage a provider's reflection on their practice." She also said that, if the FSU team were doing CCC again, they would use social media and other technologies to create forums for collaborative problem solving.

Build in continued coaching. MDCC's analysis of the implementation experiences of the C3 MDPs indicates that the PD and ongoing support offered to practitioners were critical to achieving implementation fidelity for all programs. As further tribute to the value of ongoing support, participants in the focus groups of one MDP indicated that plans for providing intermittent follow-up support would have been helpful in ensuring their continued use of the language-promoting strategies: "In order to increase sustainability, we would also continue to offer coaching and support after the initial cohort of children moved on to new… programs." Another MDP leader said,

At the individual practitioner level, people need continued support over time… Without explicit expectations from the program or without ongoing and active support from professional development providers, it may be difficult for practitioners to continue to use newly learned practices.

Suggestions for follow-up PD included refresher sessions, e-mail consultations, and "expert" training for practitioners or administrators who would then be the designated people to support continued implementation. In an MDP survey that addressed the question of follow-up support, half the respondents indicated that they would be interested in follow-up training, and 43% gave a response of "maybe."

Model demonstration projects that are system "boundary crossers" encounter challenges other MDPs do not. Although federal law calls for Part C early intervention and Part B preschool programs to coordinate the transition of children between systems, OSEP's charge to C3 grantees was to take on directly the challenges of promoting the continuity of children's participation in their particular interventions as they made that transition. All cohorts of MDPs that had implemented their interventions within the K–12 school system experienced the influence of forces beyond their control (e.g., state budget cuts for education); that is to be expected. In contrast, the C3 grantees were expected to develop successful strategies for getting practitioners from the two systems to work together on behalf of children and families despite significant philosophical and operational differences in what "services" mean, how they are best

delivered, and the role of families in making decisions about them. Some parents and some individual Part C practitioners at some programs were able to hand off the baton of the early childhood language intervention strategies to Part B practitioners on the other side of the divide, but such successes were relatively rare. It will be important for future systems boundary-crossing cohorts OSEP might fund that reasonable expectations be held for the ability of individual MDPs to instigate the kinds of system-level changes necessary to eliminate the barriers that inhibit cross-system model success.

The experiences of the C3 MDPs have generated valuable lessons that can support future MDPs in implementing and sustaining their own models. Their experiences emphasize the importance of inclusiveness in defining eligible children and practitioner participants and in finding a role for university students as a way of expanding model implementation. The follow-up study findings also underscore the value of information in monitoring implementation quality and demonstrating results. They also encourage a careful phasing out of MDP involvement with their programs so that sustainment is enhanced. And importantly, as the first MDP cohort to be expected to be system "boundary crossers," they have raised awareness of the increased complexity involved in that effort.

Although the specific insights and lessons MDPs reported learning from their implementation experiences are addressed here individually, some of the MDP staff also articulated a more summative assessment of the learning value of their MDP experience. One comment seemed a particularly cogent summary:

> This grant allowed us to develop the model in a much more portable, reproducible way, and now we're ready to do a good study about it. We would like to take what we've done here and put it into a randomized control trial….

This statement demonstrates that the C3 MDP teams accomplished what model demonstrations are intended to do—demonstrate whether practitioners, be they early intervention practitioners, high school writing instructors, or elementary school teachers working with English learners, can be taught to implement and sustain model interventions with fidelity in real-world settings. With feasibility and sustainment demonstrated, attention can turn to establishing unequivocally whether the interventions achieve positive outcomes for children and youth with disabilities when delivered by practitioners in diverse settings.

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Appendix

Follow-up Template for Recording the Ongoing Story of Model Sustainability in MDP Sites and Beyond, 2012–13

C3 MDP (*please circle one*):　　**FSU**　　　**Kansas**　　　**Puckett**　　　**Vanderbilt**

Questions	Responses
A. Follow-up Data Collection/Analysis Activities	
1. Note length of time since implementation ended to help put the sustainability findings in context.	
2. How were participants in the data collection activities selected and if surveys were used, what was the response rate?	
3. Interview respondents (note role and organization).	
4. Focus groups done (if any), who participated	
5. Observations done (if any), who observed, activities ongoing, etc.	
6. Specific fidelity or observation check lists or other protocol used (if any)	
7. Other data collected or analyzed (if any); indicate form, purpose.	
*Please complete section B for **each program** included in your follow-up work*	
B. Evidence of Continued Use of Early Childhood Language Intervention Components	
1.　**Program-level:** Please answer the questions below for **each program** that participated in your model demonstration project.	
a.　To what extent are components of your early childhood language intervention still being used in each program that participated in the MDP? In other words, how widespread is the use of model components in the program? E.g., Is the number of providers using the model or its components about the same, greater, or less than when your project was actively implementing the model?	
b.　Which components are being used as intended?	
c.　Which components have been dropped or adapted (beyond any adaptations made during the project)? What adaptations have been made, if any, and why?	

Questions	Responses
B. Evidence of Continued Use of Early Childhood Language Intervention Components (Continued)	
d. For components not being fully implemented at follow-up, note whether they were being implemented with fidelity at the end of the project (i.e., does the issue go back to implementation fidelity during the project or is it a sustainability issue?)	
e. What factors have worked to support continued use of the practices/model components at the program level?	
f. What factors have hindered continued use?	
g. During model demonstration implementation, did you observe changes in the organizational culture (e.g., practices, beliefs, attitudes) of the program that were likely due to model implementation? If so, to what extent are the changes still present at the program level? What evidence do you have?	
h. Is any PD (formal or informal) related to model practices being provided? If so, who is providing the PD, what content related to the model is being provided, and what was the impetus for this PD provision?	
i. What kinds of supports are needed to implement the model (or its components) in a sustainable way (i.e., how could future efforts to support model implementation and sustainability at the program level be improved)?	
j. Has the model influenced other practices or interventions (e.g., assessing, monitoring) at the program level? If so, how?	
k. Is there evidence of dissemination of the model's early childhood language intervention components beyond the originally involved programs or to new cohorts of providers beyond those trained in the strategies during the model demonstration project?	
l. Which strategies or practices have spread?	
m. What were the catalysts for any dissemination/spread? Who was responsible?	
n. What factors have hindered dissemination or spread?	

Questions	Responses
B. Evidence of Continued Use of Early Childhood Language Intervention Components (Concluded)	
2. **Individual-level:** Please answer the questions below for **providers from each program included in the follow-up** that participated in your model demonstration project.	
a. To what extent are components of your functional language intervention still being used by providers that participated in the model demonstration project? Describe variations in sustainability for providers who participated in different levels of training and those with different levels of implementation fidelity.	
b. Which components are being used as intended?	
c. Which components have been dropped or adapted (beyond adaptations made during the project)? What adaptations have providers made, if any, and why?	
d. What factors have persuaded providers to continue using the model's language promotion strategies in working with children and families?	
e. What supports and resources are providers receiving or have available to facilitate continued use of the strategies?	
f. What factors have been disincentives to continuing to use the model strategies among providers?	
g. What kinds of supports do providers need to implement the model (or its components) in a sustainable way (i.e., how could future efforts to support model implementation and sustainability at the provider level be improved)?	
C. Implications of Findings	
1. What are the important take-aways about model sustainability from your follow-up data?	
2. Given what you learned, what would you do differently in the future to support sustainability at the program and provider levels?	
3. What advice would you give to OSEP or future model demonstration grantees about model sustainability?	