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Novel approaches to child welfare coalesce approximately every 7 years, quite regardless of solid evidence of their superiority. If policy benchmarks provide any clues about the future of child welfare, the next fad should be deployed as early as 2007 or so, with successors to follow. But what will they be? And, more important, will they demonstrably benefit maltreated children? 2

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The mission of the National Implementation Research Network (NIRN) is to close the gap between science and service by improving the science and practice of implementation in relation to evidence-based programs and practices.

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Implementation: The Missing Link Between Research and Practice

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For the past two decades, an international experiment has been underway to make better use of research-based prevention and treatment interventions in human service settings, such as child welfare, employment, health, juvenile justice, mental health, and substance abuse. So far, the results of this national experiment are not promising. Although the federal government spends over $95 billion a year to fund research to help create new interventions, and over $1.6 trillion a year to support services to citizens (Clancy, 2006), this research has had little impact on human services. The Institute of Medicine (2001) found that human services remain typically inconsistent, often ineffective, and sometimes harmful to consumers. These conclusions have been echoed in reviews by the Surgeon General (U.S. Department of Health and Human Services, 1999; 2001) and the President's New Freedom Commission on Mental Health (2003).

In 1983, *A Nation at Risk* (National Commission on Excellence in Education) declared that American schools faced a "rising tide of mediocrity" and that America was in danger of falling behind its international competitors because of the poor performance of its students. More than 20 years later, after billions spent on educational research, the National Assessment of Educational Progress showed the achievement of U.S. students was virtually identical to what it was in the early 1980s (Grigg, Daane, Jin, & Campbell, 2003). Given the lack of progress in making better use of research findings in delivering human services, in 2003 the U.S. Congress asked, "Is the bench to bedside transition becoming more effective?" The tentative conclusion from these efforts is that the findings of high-quality research are not being applied in sufficient quantity to have a demonstrable impact on human services, and they have not provided the intended benefits to consumers and communities.

Implementation: The Missing Link

Given the disappointing results of trying to move science to service, there has been renewed interest in the practice and science of implementation. Implementation has been lurking in the shadows since the 1960s, when it first received considerable attention in relation to the Great Society programs that were intended to benefit children, families, and communities nationally. Evaluations found that Great Society programs often had little or varied impact on individuals or communities. These poor results raised questions about why that might be, questions similar to those being asked today with respect to the limited effect of evidence-based programs. Lack of attention to implementation was a major factor in such failures both then (Pressman & Wildavsky, 1973; Hough, 1979) and now (Elliott & Mihalic, 2004).

Implementation can be defined as the art and science of incorporating innovations into human service settings to benefit children, families, and communities. We use the term *innovation* to include programs and practices that have a strong research base (e.g., *evidence-based programs*) as well as other programs and practices that have potential benefit to consumers, communities, or provider organizations (e.g., data-based decision support systems, electronic record systems, targeted fund-raising approaches, skill-based hiring methods). Although interest in implementation waned with the demise of the Great Society programs, some activity continued (e.g., Backer, Liberman, & Kuehnel, 1986; Blase, Fixsen, & Phillips, 1984; Bond, 1991; Fairweather, Sanders, & Tornatzky, 1974).

Recently, the authors completed a comprehensive review of the implementation evaluation literature and produced a synthesis of that literature, providing new ways to view the methods needed to make better use of science in human service settings. In this article, we summarize our findings and highlight some effective implementation practices found in our review (Fixsen, Naoom, Blase, Friedman, & Wallace, 2005; Blase & Fixsen, 2003; Blase, Fixsen, Naoom, & Wallace, 2005). The goal is to help readers make better use of knowledge about implementation science to enable them to use the products of research more rapidly and more effectively to benefit children, families, and communities.

The *Science* in *Science-to-Service*

During the past two decades, researchers and policy makers have focused considerable attention on how to define an *evidence-based* program. A common definition now requires two or more randomized group designs, preferably done by two or more groups of investigators, that examine the outcomes of a program (Chadwick Center on Children & Families, 2004; Cohen, Mannarino, Berliner, & Deblinger, 2000; Elliott, 1998; Lonigan, Elbert, & Johnson, 1998; Saunders, Berliner, & Hanson, 2004; Wilson, 2005). Well-researched programs that meet these standards for scientific rigor are deemed to be *evidence based*, while those that fall short but demonstrate some preliminary positive outcomes may be called *promising practices* or *not yet effective*. Thus, *evidence-based programs* currently are defined by research methodology, and multiple experiments employing randomized group designs are considered the "gold standard" for defining *evidence* (e.g., Campbell Collaboration, www.campbellcollaboration.org.)

The *Service* in *Science-to-Service*

All human services could potentially benefit from science, including prevention and intervention services in child welfare, education, health, mental health, and substance abuse. Unfortunately, research-based program improvements in human services lag far behind improvements in other industries. We believe the reason is that the field of human services is far more complex than any other industry. With products such as computers, automobiles, pharmaceuticals, and other manufactured items, the latest science and high levels of quality can be built into the products themselves. The *product is, in fact, the intervention*, and its performance depends very little on the user of the product. Tens of thousands of pills that incorporate the latest scientific breakthroughs can be manufactured under the supervision of highly trained specialists working under carefully designed conditions to produce safe and reliable products. A license may be required to use the product, but the product itself produces largely uniform outcomes regardless of who dispenses it or uses it.

By contrast, in human services, the *practitioner is the intervention*. Science and quality must be incorporated into the performance of tens of thousands of practitioners situated in a variety of provider organizations that function within uniquely configured local, state, and federal service systems—a difficult task, considering the vagaries of life. Thus, in human services, the challenge in making best use of

science is to find the most effective means of integrating the findings of science and quality of performance into the daily work of hundreds of thousands of practitioners across the nation. In child welfare, this includes more than 500,000 social workers (www.bls.gov/oco/ocos060.htm), over 400,000 foster parents and group care workers (www.childwelfare.gov/pubs/factsheets/foster.cfm), and tens of thousands of associated psychologists, psychiatrists, and legal and medical professionals.

The *to* in *Science-to-Service*

As a profession, we are coming to realize that the *to* in *science-to-service* represents a whole new set of activities, which collectively are called *implementation*. For many years, science-to-service has been viewed as a passive process that involves the *diffusion* and dissemination of information whereby this information will somehow make its way into the hands of enlightened champions, leaders, and practitioners who will then put these innovations into practice (Rogers, 1995; Simpson, 2002). In this approach, researchers do their part by publishing their findings; it is then up to practitioners to do their part by reading the literature and making use of the innovations in their work with consumers.

This passive process is widely accepted and serves as the foundation for most federal and state policies related to making use of evidence-based programs and other human service innovations. For example, federal technical assistance (TA) grants allocate funds for information gathering, for publications and meetings to share information, and for training sessions to provide more detailed information in a lecture-discussion format. Federal TA efforts communicate this information to state TA representatives, who then pass the information along to provider groups and other potential users. Using this process, the professions spend hundreds of millions of dollars each year on the diffusion and dissemination of research information in child welfare, education, health, mental health, and other human service domains.

Over the past four decades, some practitioners have followed a more active and effective approach to translating science into service (e.g., Blase et al., 1984; Chamberlain, 2003; Fairweather, Sanders, & Tornatzky, 1974; Havelock & Havelock, 1973; Schoenwald, Brown, & Henggeler, 2000; Slavin & Madden, 1999). Further, other practice fields have been evaluating their attempts to use science in service settings. Thus, our review of the implementation evaluation literature (1970–2004) included practice fields such as agriculture, business, child welfare, engineering, health, juvenile justice, management, manufacturing, medicine, mental health, nursing, social services, and substance abuse, among others (Fixsen et al., 2005). To be included in the review, the literature needed to have some empirical evidence related to implementation.

Analysis and synthesis of the results of this review revealed some interesting findings and provided some frameworks that illuminate *what works* with respect to implementation. Additional information related to these strategies was identified through face-to-face meetings with successful purveyors of evidence-based programs (Blase et al., 2005).

In this article, we review two major theoretical frameworks that can guide efforts to move science-to-service more effectively and efficiently. The first framework describes the typical stages of implementation, and the second provides an overview of the core components of an implementation initiative. The final section of this article briefly explores the implications of these frameworks for improving the quality of child welfare services in the next decade.

Stages of Implementation

Implementation does not occur all at once. It is a process that takes 2 to 4 years to complete in any provider organization. It is a recursive process that includes steps focused on achieving benefits for children, families, provider organizations, human service systems, and communities. It appears that there are six functional stages of implementation: exploration, installation, initial implementation, full implementation, innovation, and sustainability. While we describe these in linear fashion, the stages are not linear in practice because each impacts the others in complex ways. For example, sustainability factors are very much a part of exploration, and exploration directly affects sustainability. Or, an organization may regress from full implementation to initial implementation as a result of unusually high levels of staff turnover. The stages should be viewed as components of a tight circle with two-headed arrows from each component to all others.

Exploration Stage

The passive processes of diffusion and information dissemination are important parts of the exploration stage. Information sharing in various formats is essential to increasing awareness of innovations and prompting professionals to consider the need to make changes in current practices and services. Prochaska and DiClemente (1982) described this process as moving from pre-contemplation to contemplation, preparation, and action. Drug companies and other manufacturers advertise their products to help potential users transition from awareness to action. In human services, information most often is shared through professional publications and at conferences. Rogers (1995) noted that the diffusion literature provides information about the factors associated with making a decision to adopt an innovation, but it says little about what to do next to implement that innovation with fidelity. Rogers observed that fewer than 30 of the more than 1,000 articles he reviewed pertained to implementation. Twenty years later, Greenhalgh, Robert, MacFarlane, Bate, and Kyriakidou (2004) stated that the most serious gap in the diffusion, dissemination, and implementation literature pertained to the processes by which implementation occurred in service delivery organizations. Thus, diffusion and dissemination play an important role in starting the implementation process but should not be confused with implementation itself.

Sustainable and effective implementation efforts are firmly rooted in the activities that occur during the exploration stage (Panzano & Roth, 2006). Critical questions at this phase include the following: What problem exists? What innovations exist that might help solve that problem? What changes will be needed in the provider organization to allow full and effective use of the innovation? What changes must be made in partner organizations, including federal, state, and local bureaucracies, to make full and effective use of the innovation? What are the costs of start-up and ongoing support of the innovation, and what sources of funding are available to pay for start-up and to support implementation? What data systems must be in place to monitor intended changes in consumer outcomes and organizational and bureaucratic supports?

The process of collecting and analyzing all of this information is a critical part of the exploration stage. Early in the exploration stage, an *implementation team* should be formed (e.g., Barratt, 2003). The

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implementation team members need to have direct access to people in the power structure and should be freed of other responsibilities to allow them to spend the time and resources needed to collect and analyze essential information. Team members must ultimately determine the problem to be solved, the innovation that might help solve it, and the most likely strategies to implement the innovation with fidelity and with clearly articulated benefits to consumers.

In some cases, innovations with a strong evidence base will have formed a *formal purveyor* group for the sole purpose of helping provider organizations, human service systems, and communities to consider the challenges and implications of implementing the innovation. As an example, Chamberlain (2003) described the purveyor group formed to help communities implement Multidimensional Treatment Foster Care. Purveyor groups have special expertise in the innovation itself *and* also have expertise in how to implement the innovation successfully. Implementation teams that have the benefit of experienced purveyors will find their jobs much easier to perform. However, most evidence-based innovations have no established purveyor group to support their implementation.

The exploration stage officially *ends* when the decision is made to implement a particular innovation. (As previously noted, implementation is not linear, so stages are never "over" in some final sense.) The time required to carry out exploration tasks seems to vary widely from a few months to several years; from 6 to 15 months seems to be a fairly common time frame for most organizations. However, this time frame is usually shorter when the help of an experienced purveyor group is utilized.

Installation Stage

The installation stage officially begins with the decision to implement an innovation and ends when the innovation is used for the first time with the first consumer. The installation stage has been largely ignored in human services, but it is routinely planned for in other practice domains, such as manufacturing, engineering, management, and forestry. Starting up any innovation requires time and resources, and the lack of planning for these costs has doomed many implementations attempted in human services. Start-up often requires hiring new staff and the associated activities of preparing job descriptions, developing salary scales, and special recruiting and interviewing, while concurrently redeploying existing staff, arranging office space, purchasing communications equipment such as cell phones and computers, creating new referral mechanisms, securing new funding sources, arranging initial training for staff, and preparing for responsible supervision and coaching. All these are essential components of the installation stage, and considerable resources often must be expended to accomplish these before the first consumer is seen and before any revenues are realized. Implementation teams must anticipate and consider the installation tasks as much as possible during the exploration stage to assure that adequate resources are available to support installation. Experienced purveyors can help potential implementation sites consider these tasks and their associated costs during the exploration stage.

The time required for installation varies widely, depending upon the nature of the innovation and the quality of the implementation support, but between 2 and 6 months represents an average amount of time required for installation for many attempted implementations.

Initial Implementation Stage

This stage is where the "rubber meets the road." During the initial implementation stage, practitioners, supervisors, managers, system partners, and others involved in the innovation must learn how to perform and relate to this new way of doing things. It is called the *initial* implementation stage to acknowledge that practitioners and managers in the provider organization, system administrators, and ongoing policy makers are not likely to be proficient in their new roles at the beginning of the implementation process. Learning any new skill does not generally go smoothly in the beginning, whether learning to play a musical instrument, master a sport, work in a new way with a distressed child and family, provide skill-based coaching, or revamp the methods used by the human resources department. Successful implementation usually requires people to acquire new skills and approaches, individually at first and then in unison or collaboration with others.

Because of the inherent challenges and difficulties in implementation of new innovations, this phase may not go well in the beginning. Change is often hard on everyone, and doing new things, especially when just learned, is difficult at best. For organizations to survive this stage and for the innovation to be successful require both determination and skill. Organizations that have the assistance of an experienced purveyor group have a considerable advantage, as the purveyors can guide and sustain an organization through this challenging change process. If a purveyor group is not available, the implementation team will need to find or develop the necessary expertise to help practitioners, organizations, and systems through this process.

Most attempts to implement innovations fail during this stage because the requirements for successful implementation are both poorly understood and inadequately supported. If organizations can survive the initial challenges and stresses, completion of the initial implementation stage may require from 9 to 24 months.

Full Implementation Stage

Full implementation of an innovation is reached when at least 50% of the currently employed practitioners simultaneously perform their new functions acceptably, that is, when measured by criteria that denote fidelity to the original innovation in their replication. This requirement may appear easy to meet, but it is not. One challenge, staff turnover, is a common occurrence not only at the practitioner level in human services agencies but also at supervisory and administrative levels. For each staff person who resigns, a replacement must be selected, trained, and coached, and the new practitioners' performance in their jobs must be assessed one or more times to assure their performance meets standards of fidelity. This sequence of activities takes considerable time. Further, there is no assurance that meeting fidelity criteria once means that the same practitioner will meet fidelity criteria the next time he or she is assessed as part of an ongoing process of quality assurance. Staff turnover also occurs in positions of interviewer, trainer, and coach. Learning to be a competent interviewer, trainer, or coach is itself a challenge, and practitioners who are supported by inexperienced trainers and coaches may not achieve fidelity criteria readily. Similarly, practitioners, interviewers, trainers, coaches, and performance assessors may not receive the guidance and support they need if managers and directors also are inexperienced, thus further affecting staff's ability to achieve compliance with fidelity criteria.

In the estimation of the authors, for these and other reasons, few attempts to implement innovations ever reach the full implementation stage. For those that do, the process from the exploration stage to the point of first achieving full implementation may take from 2 to 4 years to complete.

Innovation Stage

Useful innovations typically occur only after full implementation has been achieved. The advice from successful purveyors is "first do it right, then do it differently." That is, learn the intervention, learn how to do it with fidelity, do it long enough to learn the nuances of its applications, and then work on how to improve the intervention itself. In this manner, innovations will be thoroughly based on a solid mastery of the knowledge and skills that define the intervention, and therefore, they will be useful to other users of the same intervention.

This premise is a distinct departure from the advice of those who say that adaptation is necessary to adoption of innovations. Rogers (1995) and others claimed that the adoption of innovations *requires* adaptations that the individual user can make to help assure a better *fit* for the innovation within the adopting organization. However, a decision to adopt an innovation cannot be considered implementation of that innovation. On the one hand, a growing body of evidence shows that implementation with fidelity produces benefits to consumers, while adaptation (or reinvention) leads to poor outcomes for consumers (e.g., Panzano & Roth, 2006; Lipsey & Wilson, 1998). On the other hand, evidence-based programs need to continue to evolve if they are to maintain and improve their effectiveness over the years. Constructive change can occur in such programs provided that improvements are based on data derived from attempts to implement innovations with fidelity in real-world human service settings (Dusenbury, Brannigan, Falco, & Hansen, 2003). Thus, adaptations based on solid data that demonstrate improved benefits to consumers are the heart of the innovation stage.

Sustainability Stage

As we mentioned, activities related to sustainability must be incorporated into every stage, and they never end. Creating understanding of the innovation and building a constituency to support it begins during the exploration stage, and the scope and depth of support must be expanded at every opportunity in every ensuing stage (Khatri & Frieden, 2002). Early decisions about how to access external expertise to assure a quick and successful start-up, and how to make use of that external expertise to build local capacity, will impact sustainability over the long term. Developing and maintaining ongoing quality assurance systems that include practical measures of outcomes will positively impact sustainability. The conditions under which human services are delivered are in a constant state of change, and the sustainability of innovations depends upon staying tuned in to the changes, anticipating the next set of changes, and continually maintaining high fidelity services even in the midst of continual change.

Core Implementation Components

What goes on during the initial and full implementation stages? Based on the commonalities among successfully implemented programs, several core implementation components have been identified (Fixsen et al., 2005). The goal of implementation is that practitioners, such as foster parents, caseworkers, therapists, teachers, and physicians, will use innovations effectively. To accomplish this, practitioner behavior must be shaped and supported by several core implementation components, which are also referred to as *implementation drivers*. As shown in Figure 1, these core components are staff selection, preservice training, ongoing coaching and consultation, staff performance evaluation, data systems that support decision making, facilitative administrative support, and systems interventions. These interactive processes must all be *integrated* to maximize their influence on both staff behavior and organizational culture. The interactive core implementation components also *compensate* for one another, in that a weakness in one component may be overcome by strengths in other components.

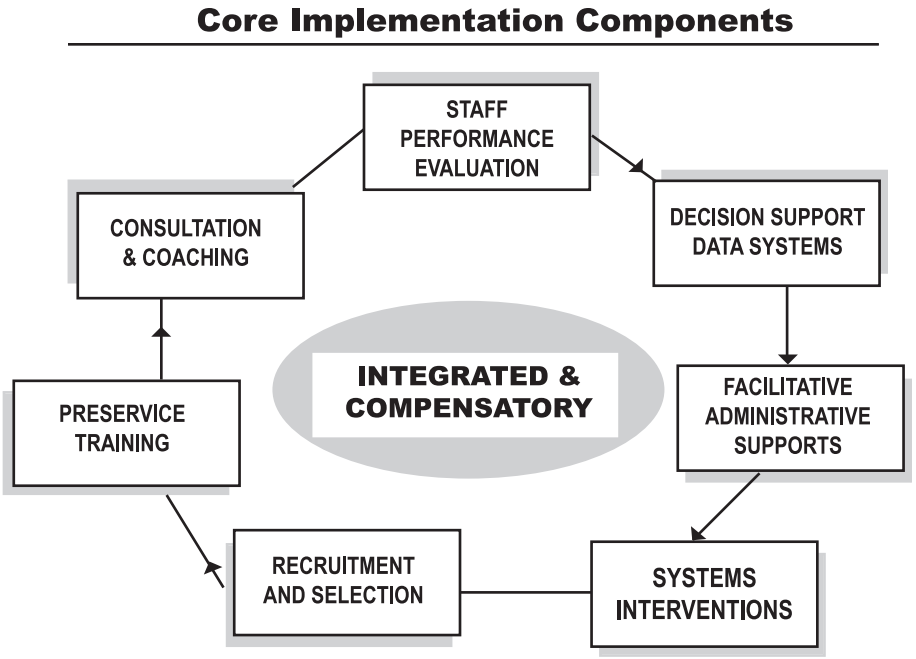

Figure 1. Core components that work together to implement and sustain the effective use of innovations, such as evidence-based programs.

Staff Selection

Effective staffing requires consideration of several questions. Who is qualified to carry out the evidence-based practice or program? What are the best methods for recruiting and selecting practitioners who possess necessary qualifications? In addition to prerequisite academic qualifications and experience factors, certain practitioner characteristics may be difficult to impart in training sessions, so they must be included in selection criteria. These include a broad knowledge of the practice field, basic professional skills, common sense, sense of social justice, sound ethics, a willingness to learn, a willingness

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to intervene, good judgment, and empathy. Some programs are purposefully designed to minimize the need for careful selection. An example might be a reading tutoring program designed to be staffed by volunteers (Baker, Gersten, & Keating, 2000). Other programs require more specific and complex qualifications for practitioners (Chamberlain, 2003; Phillips, Burns, & Edgar, 2001; Schoenwald, Brown, & Henggeler, 2000) as well as specific methods for assessing competencies (e.g., Blase et al., 1984; Maloney, Fixsen, Phillips, Wolf, 1975; Reiter-Lavery, 2004). In a qualitative study of the capacity of evidence-based program developers to help others implement their programs, many program developers stated that selection of staff was critical to the delivery of their model, but few program developers had established staff selection criteria or interview protocols to guide provider organizations in the selection of staff (Naoom, Blase, Fixsen, Gilbert, & Wallace, n.d.).

Staff selection also intersects with a variety of larger system variables. General workforce development issues, the overall economy, organizational financing, salaries and benefits, and the demands of the innovation in terms of time and skill can all affect the availability of qualified staff for human service programs. The focus on evidence-based practices and programs in human services has created concern about advanced education, the availability of a qualified workforce, and sources of funding to enable hiring of highly skilled practitioners (Blase & Fixsen, 1981; O'Connell, Morris, & Hoge, 2004).

Preservice and Inservice Training

Evidence-based practices and programs often represent novel ways of providing treatment and support to clients. Direct service practitioners and others at an implementation site need to learn when, where, how, and with whom to use new approaches and new skills. Preservice and inservice training are efficient ways to provide knowledge of background information, theory, philosophy, and values; to introduce the components and rationale for key practices; and to provide opportunities to practice new skills and receive feedback in a safe training environment. However, classroom training by itself is not sufficient to assure that staff will develop the capacity to effectively implement an innovation (Azocar, Cuffel, Goldman, & McCarter, 2003; Schectman, Schroth, Verme, & Voss, 2003; Stokes & Baer, 1977).

Coaching and Consultation

Most skills needed by effective practitioners can be introduced in training but must be practiced and mastered on the job with the help of a coach. A coach provides specific information about the application of an intervention in a clinical setting as well as advice, encouragement, and opportunities to practice and use skills specific to the innovation. The implementation of human service innovations usually requires behavior change at the practitioner, supervisory, and administrative support levels. Training and coaching are the principal ways in which behavior change is brought about for carefully selected staff in the beginning stages of implementation and also throughout the life of evidence-based practices and programs.

Staff Performance Appraisal

Evaluation of staff performance is designed to assess the application and outcomes of the skills that are reflected in the selection criteria, that are taught in training, and that are reinforced and expanded in coaching processes. Assessments of practitioner performance and measures of fidelity also provide feedback useful to interviewers, trainers, coaches, managers, and purveyors regarding the progress of implementation efforts and the usefulness of selection, training, and coaching.

Decision Support Data Systems

Other measures such as quality improvement information, organizational fidelity measures, and consumer outcomes assess key aspects of the overall performance of the organization and provide data to support decision making to assure continuing implementation of the core intervention components over time.

Facilitative Administration

Facilitative administration provides leadership and makes use of a range of data inputs to inform decision making, to support the overall processes, and to keep staff organized and focused on the desired intervention outcomes. In organizations with this advantage, administrators give special attention to policies, procedures, structures, culture, and climate to assure alignment of these organizational components with the needs of practitioners. Practitioners' interactions with consumers are key to successful intervention. It is the responsibility of administrators to make sure that practitioners have the skills and supports they need to perform at a high level of effectiveness with every consumer.

Systems Interventions

Systems interventions are strategies to work with external systems to ensure the availability of the financial, organizational, and human resources required to support the work of the practitioners. Again, alignment of these external systems to support the work of practitioners is an important aspect of systems intervention (see Mihalic & Irwin, 2003), for examples of the interaction of administrative and external system variables with successful implementation and benefits to consumers).

Integrated and Compensatory Core Implementation Components

The importance of integrating these core implementation components was illustrated by a meta-analysis of research on training and coaching carried out by Joyce and Showers (2002). They summarized several years of systematic research on training public school teachers. The study found that training consisting of theory and discussion coupled with demonstration, practice, and feedback resulted in only 5% of the teachers using the new skills in the classroom. These findings are similar to those of Rogers (2002) who reviewed the business literature and estimated that only about 10% of what is taught in training is actually transferred to the job. In the Joyce and Showers analysis, when on-the-job coaching was added to training, large gains were seen in both knowledge and the teachers' ability to demonstrate the skills. Most important, about 95% of the teachers used the new skills in the classroom with students. Joyce and Showers (2002) also noted that training and coaching can be done only with the full support and participation of school administrators (facilitative administration) and works best with teachers who are willing and able to be fully involved (staff-selection factors).

The integrated and compensatory nature of the core implementation components represents a challenge for implementation and sustainability. Organizations are dynamic, so ebb and flow affect the relative contribution of each component within overall outcomes. The feedback loops are critical to keeping the evidence-based program "on track" amid continuing change. If formal feedback loops (staff performance evaluations and decision support data systems) indicate

needed changes, then the integrated system needs to be adjusted to improve effectiveness or efficiency (see Bernfeld, 2001, for a more complete description of these interactive variables). That is, any changes in process or content in any one of the core implementation components require adjustments in other core implementation components as well.

The descriptions of the core implementation components provide a template for analyzing and attending to implementation. A given practice or program may require more or less attention to any given core implementation component for the practice or program to be implemented successfully, and some practices may be designed specifically to eliminate the need for one or more of the core implementation components (e.g., Baker, Gersten, & Keating, 2000; Embry, 2004). In addition, the compensatory nature of the core implementation components helps to assure that there are multiple systems, procedures, and opportunities to support high-fidelity implementation. For example, in an implementation infrastructure that has minimal training opportunities for practitioners, intensive coaching with frequent feedback may compensate for the lack of formal training. Or, careful selection of personnel and well-designed staff performance evaluations, coupled with strong incentive systems, may compensate for less training and coaching.

Sources of Core Implementation Components

Successful implementation requires identification of persons responsible for carrying out functions related to the core implementation components. For instance, who will select, train, coach, and evaluate staff at an implementation site? Who will provide administrative support services? Who will intervene with external systems when needed? Will this be done by people who work within the organization, or will it be contracted to individuals or groups outside the implementation site? For example, implementation sites using multisystemic therapy (MST) participate in a complex mix of core implementation components. Practitioners working in new MST implementation sites are selected by staff at the implementation site based on criteria provided by MST Services, Inc., are trained by MST Services, Inc. at a central location in South Carolina, are coached by local consultants who are themselves trained and coached by MST Services, Inc.'s consultants, are evaluated via monthly submissions of fidelity results to the MST Web site, and are administratively supported by staff employed by the implementation site (Schoenwald et al., 2000). At least initially, MST Services, Inc. and staff at the implementation site jointly carry out interventions in larger systems (e.g., referrals, funding streams, and interagency collaboration).

For multidimensional treatment foster care (MTFC), the implementation site identifies a core group (including an administrator, a supervisor, a therapist, and a foster-parent trainer/recruiter) who then participate in a 3-day session in Oregon, which includes training and exposure to the important aspects of a fully operational program (Chamberlain, 2003). Next, two trainers from Oregon go to the implementation site to train the first cohort of foster parents, to conduct additional training with the core staff group, and to introduce them to the parent daily report (PDR) Web site. After youth are placed in program foster homes, the Oregon staff monitor the PDR data and provide weekly telephone consultation to the on-site program supervisor and therapist. During the first year of implementation, the Oregon staff provides three additional 2-day training sessions at the implementation site.

In the systems described in these two examples, external contractors are actively involved in the ongoing operations of an implementation site. While these hybrid systems probably retain the compensatory benefits we mentioned, ongoing integration of functional treatment components and core implementation components may be difficult to achieve and maintain over the years. A different approach is to develop regional implementation sites that have the full capacity to provide all of the core implementation components within their own organizations. These are sometimes called "intermediary organizations." For example, in the teaching-family model, carefully selected staff members employed by an implementation site are trained and coached to conduct staff selection, training, coaching, evaluation, facilitative administration, and systems interventions for treatment programs within easy driving distance (Blase et al., 1984; Wolf, Kirigin, Fixsen, Blase, & Braukmann, 1995). In this approach, each implementation site becomes the source of its own core implementation components without continuing reliance on outside contractors. For these implementation sites, fidelity is measured at the practitioner level to assure competent delivery of the core intervention components, and it is also measured at the implementation site level to assure competent delivery of the core implementation components. Purveyors of a system called functional family therapy also work to develop self-sufficient implementation sites (Sexton & Alexander, 2000) and, recently, MST Services, Inc. has begun to develop organizations, called "network partners," to provide training and support services at the local level. A concurrent challenge for these "intermediary" arrangements is the development of procedures to monitor and assure fidelity to the implementation processes and outcomes at an organizational level.

Next Steps

In this article, we have summarized stages of implementation and core implementation components. As the review of the current literature and implementation best practices has demonstrated, there is nothing really new about either the implementation stages or any of the core implementation components. What is new, however, is an understanding that both the stages and components are highly integrated parts of a whole new entity that is identifiably "implementation." Thus, now we can see that the missing link in the science-to-service chain is implementation. And, when implementation teams and purveyors are doing their work effectively, we can identify their stage in the implementation process and exactly which core implementation components they are using.

To affect outcomes for children and families significantly, we must learn how to utilize well-researched programs and practices on a national scale. In their report of findings from the Blueprint Replication Initiative, Elliott and Mihalic (2004) stated that although ten Blueprint programs studied had completed the necessary efficacy and effectiveness trials and had met the rigorous evaluation standards required for certification as a Blueprint program, they were not necessarily prepared to deliver their programs on a large scale. Only four of the ten programs had the organizational capacity to deliver their program to ten or more sites a year. According to the authors, "Although we have taken giant strides in determining what works and promoting the use of science-based programs, we have lagged behind in building the internal capacity of designers to deliver their programs" (Elliott & Mihalic, 2004, p. 48).

As noted in the introduction to this article, the challenge in making use of science is in building science and quality into the daily performance of hundreds of thousands of practitioners across the

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nation. In the area of child welfare, this includes more than one million social workers, foster parents and group care workers, and associated psychologists, psychiatrists, and medical professionals. How many experienced and skillful purveyors will that take? How will we know if the purveyors are doing a good job? How can we help federal and state human service systems keep up with the changing landscape at the evidence-based practice level?

These questions relate to three seminal issues that must be resolved if we truly wish to close the science-to-service gap:

1. We need to develop measures of both the implementation stages and implementation components to provide practical signposts for policy makers and funders, useful feedback systems for purveyors, and common outcomes that can be assessed through continuing research.
2. We need to design training academies to develop—systematically, effectively, and efficiently—a whole generation of purveyors who have the requisite knowledge and skills to competently perform implementation work.
3. We need to engage policy makers and politicians in a determined effort to defragment human service systems and fully align funding, licensing, accreditation, monitoring, and bureaucratic functions with the needs of effective practitioners working in the context of facilitative provider organizations. Current state and federal systems are "legacy systems" that typically are more attuned to the past than to the future.

The practice and science of implementation have improved to the point where more is known, but to bridge the gap between research and practice, and to foster the science of implementation, we must be as empirically sound in choosing our implementation strategies as we are in choosing our interventions.

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