

Implementation Research: A Synthesis of the Literature

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Preface

About the Review

This monograph summarizes findings from the review of the research literature on implementation. The review process began by identifying literature reporting any efforts to collect data on attempts to implement practices or programs in any domain, including agriculture, business, child welfare, engineering, health, juvenile justice, manufacturing, medicine, mental health, nursing and social services.

Nearly 2,000 citations were found, 1,054 met the criteria for inclusion in the review, and 743 remained after a full text review. There were 377 out of 743 citations deemed to be most relevant, and 22 studies that employed an experimental analysis of implementation factors.

Over the past decade, the science related to developing and identifying “evidence-based practices and programs” has improved—however the science related to implementing these programs with fidelity and good outcomes for consumers lags far behind. As a field, we have discovered that all the paper in file cabinets plus all the manuals on the shelves do not equal real-world transformation of human service systems through innovative practice. While paperwork and manuals do represent what is known about effective interventions, these tools are not being used effectively to achieve behavioral health outcomes for children, families, and adults nationally. Clearly, state and national policies aimed at improving human services require more effective and efficient methods to translate policy mandates for effective programs into the actions that will realize them.

To this end, our intent is to describe the current state of the science of implementation, and identify what it will take to transmit innovative programs and practices to mental health, social services, juvenile justice, education, early childhood education, employment services, and substance abuse prevention and treatment. The content is distilled from a far-reaching review of existing implementation literature that looks beyond the world of human services to organize and synthesize critical lessons from agriculture, business, engineering, medicine, manufacturing, and marketing. As you will find, authors from around the globe share the rigors of attempting to implement practices and programs and agree that the challenges and complexities of implementation far outweigh the efforts of developing the practices and programs themselves.

During the course of the overall literature review, select studies featuring robust experimental analyses of implementation factors also were mined for common themes and definitions. As a product of this work, conceptual frameworks and a corresponding lexicon emerged to help summarize the information, create understanding, and evolve testable hypotheses. Accordingly, this monograph suggests a unified approach for talk-

ing about, studying and promoting implementation in human services.

For example, it became evident that thoughtful and effective implementation strategies at multiple levels are essential to any systematic attempt to use the products of science to improve the lives of children, families, and adults. That is, implementation is synonymous with coordinated change at system, organization, program, and practice levels. In a fundamental sense, implementation appears most successful when:

- carefully selected practitioners receive coordinated training, coaching, and frequent performance assessments;
- organizations provide the infrastructure necessary for timely training, skillful supervision and coaching, and regular process and outcome evaluations;
- communities and consumers are fully involved in the selection and evaluation of programs and practices; and
- state and federal funding avenues, policies, and regulations create a hospitable environment for implementation and program operations.

It also appears that relevant implementation factors and processes are common across domains (e.g., mental health, juvenile justice, education, child welfare). If this is true, then efforts to improve the science and practice of implementation have the potential for positive broad scale impacts on human services, across service systems.

In summary, the results of this literature review and synthesis confirm that systematic implementation practices are essential to any national attempt to use the products of science—such as evidence-based programs—to improve the lives of its citizens. Consequently, a concerted national effort to improve the science and the practice of implementation must accompany support for the science of intervention. The components of implementation and factors promoting its effectiveness must be understood, and we hope the frameworks and recommendations introduced in this volume provide a foundation for this understanding.

Chapter 1

Introduction

- Review Methods
- An Implementation Headset
- Implementation Defined
- Paper Implementation

"If we want to find ways to achieve greater utilization of...research, merely thinking about utilization cannot take us very far."

— Beyer & Trice, 1982





Introduction

It has been well documented in many disciplines that major gaps exist between what is known as effective practices (i.e., theory and science) and what is actually done (i.e., policy and practice).

Background & Purpose

In the past few years several major reports highlighted the gap between our knowledge of effective treatments and services currently being received by consumers. These reports agree that we know much about interventions that are effective but make little use of them to help achieve important behavioral health outcomes for children, families, and adults nationally. This theme is repeated in reports by the Surgeon General (United States Department of Health and Human Services, 1999; 2001), the National Institute of Mental Health [NIMH] National Advisory Mental Health Council Workgroup on Child and Adolescent Mental Health Intervention Development and Deployment (2001), Bernfeld, Farrington, & Leschied (2001), Institute of Medicine (2001), and the President's New Freedom Commission on Mental Health (2003). The authors call for applied research to better understand service delivery processes and contextual factors to improve the efficiency and effectiveness of program implementation at local, state, and national levels.

Our understanding of how to develop and evaluate evidence-based intervention programs has been furthered by on-going efforts to research and refine programs and practices, to define “evidence bases” (e.g., Burns, 2000; Chambless & Ollendick, 2001; Lonigan, Elbert, & Johnson, 1998; Odom, et al., 2003), and to designate and catalogue “evidence-based programs or practices” (e.g., the National Registry of Evidence-based Practices and Programs, Substance Abuse and Mental Health Services Administration, n.d.; Colorado Blueprints for Violence Prevention, Mihalic, Fagan, Irwin, Ballard, & Elliott, 2004). However, the factors involved in successful implementation of these programs are not as well understood (Backer, 1992; Chase, 1979; Leonard-Barton & Kraus, 1985; Reppucci & Saunders, 1974; Rogers, 1983, 1995; Shadish, 1984; Stolz, 1981; Weisz, Donenberg,

Han, & Weiss, 1995). Current views of implementation are based on the scholarly foundations prepared by Pressman & Wildavsky's (1973) study of policy implementation, Havelock & Havelock's (1973) classic curriculum for training change agents, and Rogers' (1983; 1995) series of analyses of factors influencing decisions to choose a given innovation. These foundations were tested and further informed by the experience base generated by pioneering attempts to implement Fairweather Lodges (Fairweather, Sanders, & Tornatzky, 1974) and National Follow-Through education models (Stivers & Ramp, 1984; Walker, Hops, & Greenwood, 1984), among others. Petersilia (1990) concluded that, “The ideas embodied in innovative social programs are not self-executing.” Instead, what is needed is an “implementation perspective on innovation—an approach that views postadoption events as crucial and focuses on the actions of those who convert it into practice as the key to success or failure” (p. 129). Based on their years of experience, Taylor, Nelson, & Adelman (1999) stated, “Those who set out to change schools and schooling are confronted with two enormous tasks. The first is to develop prototypes. The second involves large scale replication. One without the other is insufficient. Yet considerably more attention is paid to developing and validating prototypes than to delineating and testing scale-up processes. Clearly, it is time to correct this deficiency.” (p. 322). Gendreau, Goggin, & Smith (1999) added that, “we cannot afford to continue dealing with the business of program implementation and related technology transfer topics in a cavalier fashion” (p. 185).

The purpose of this monograph is to describe the results of a far-reaching review of the implementation literature. There is broad agreement that implementation is a decidedly complex endeavor, more complex than the policies, programs, procedures, techniques, or technologies that are the subject of the implementation efforts. Every aspect

“The ideas embodied in innovative social programs are not self-executing.”

—Petersilia, 1990

of implementation is fraught with difficulty, from system transformation to changing service provider behavior and restructuring organizational contexts. Given the importance of implementation, the purpose of this review is to create a topographical map of implementation as seen through evaluations of factors related to implementation attempts. It is not an attempt to be exhaustive. Some literature reviews have very exacting criteria and review procedures, a style well-suited to areas of well-developed knowledge. With respect to implementation, there is no agreed-upon set of terms, there are few organized approaches to executing and evaluating implementation practices and outcomes, and good research designs are difficult when there are “too many variables and too few cases” (Goggin, 1986). Given the state of the field, the goal was to “review loosely” to capture meaning, detect relationships among components, and help further the development of the practice and science of implementation.

The remainder of this introduction sets the stage for reading the monograph. There is an overview of the review methods in order to provide the reader with a context for evaluating the face validity of the review in terms of scope, findings, and frameworks. This is followed by an orientation to implementation as distinct from program development and a definition of implementation.

Review Methods

The goal of this literature review is to synthesize research in the area of implementation as well as to determine what is known about relevant components and conditions of implementation. Search strategies were developed by the research team as an iterative process in consultation with the Louis de la Parte Florida Mental Health Institute (FMHI) University of South Florida librarian. The research team began the literature searching process by establishing guidelines for citation retrieval. The following citation retrieval criteria were used to select reports, books, and published and unpublished article citations for preliminary review:

- published in English no earlier than 1970,
- the title or abstract contained one or more of the search terms, and
- an empirical study, meta-analysis, or literature review.

Literature with any data (quantitative or qualitative) and any design (surveys to high quality randomized group designs or within subject designs) in any domain (including agriculture, business, child welfare, engineering, health, juvenile justice, manufacturing, medicine, mental health, nursing, and social services) was eligible for inclusion.

Databases searched included PsycINFO, Medline, Sociological Abstracts, CINAHL, Emerald, JSTOR, Project Muse, Current Contents, and Web of Science. Once the research team had completed the literature search, nearly 2,000 citations were retrieved and entered into an EndNote database. The principal investigators then proceeded to pare down the list by reading the titles and abstracts using the same guidelines for citation retrieval (full details are provided in Appendix A). The remaining citations ($N = 1,054$) were retrieved for full-text review and content analysis. The review team developed a data extraction tool called the *article summary* to record pertinent information from each document reviewed. The article summary covered several aspects including: the research domain, topic or purpose of the article, methods, results and findings, codes or stages of implementation as defined by the codebook, selected quotations, selected references, and memos or notes made by the reviewer about the article.

Full text reviews were completed by one of the five review team members. Each team member was asked to make note of any particularly noteworthy or “significant” implementation articles in the memo section of the article summary if it met one of the following three criteria: (1) well-designed experimental evaluations of implementation factors, (2) careful reviews the implementation literature, or (3) well-thought-out but more theoretical discussions of implementation factors. For example, “significant” articles included literature describing group or within-subject experimental designs, meta-analyses, or literature reviews pertaining to specific implementation factors; literature describing useful frameworks or theoretical summaries; or qualitative analyses of specific implementation efforts. Literature that focused on author-generated surveys of those involved in implementation efforts, focused on interventions and only provided incomplete de-

Given the state of the field, the goal was to “review loosely” to capture meaning, detect relationships among components, and help further the development of the practice and science of implementation.

The lack of common definitions and the lack of journals specifically oriented to implementation research probably reflect the poorly developed state of the field.

scriptions of implementation factors, or primarily presented the opinions of the authors were not included as “significant” articles.

After reading the full text, about 30% of the 1,054 articles were dropped from the review. Most often, deletions occurred when implementation was mentioned in the title or abstract but was not evaluated in any way in the article itself (i.e., was not “an empirical study, meta-analysis, or review”). Once the full text review was completed, 743 articles remained, about half (377) of which were identified as significant implementation articles. Of these, 22 articles reported the results of experimental analyses (randomized group or within subject designs) or meta-analyses of implementation variables. Article summaries were sorted into content areas by searching across articles for the codes described in the codebook (see Appendix B). The principal investigators then proceeded to review each area for common implementation themes and patterns.

The review was challenging due to the lack of well-defined terms. Diffusion, dissemination, and implementation sometimes referred to the same general constructs and, at other times, quite different meanings were ascribed to the same terms. For example, “implementation” sometimes means “used” in a general sense or “put into effect” with specific reference to a program or practice. At other times it referred to a set of methods to purposefully help others make use of a program or practice on a broad scale. Similarly, coaching, supervision, academic detailing, and on-the-job teaching were used to describe similar activities. Are the “implementers” the ones teaching or the ones being taught? The answer is, it depends on the author. We have created our own lexicon with definitions (see Appendix A and B) in the text to help guide the reader through this monograph and to reduce confusion. The lack of common definitions and the lack of journals specifically oriented to implementation research probably reflect the poorly developed state of the field.

An Implementation Headset

It is important to have an “implementation headset” while reading this monograph. From an implementation point of view, there are always two important aspects of every research study, demonstration project, or attempted intervention. In each study, there are intervention processes and outcomes and there are implementation processes and outcomes. When implementing evidence-based practices and programs, Blase, Fixsen, & Phillips (1984) discussed the need to discriminate implementation outcomes (Are they doing the program as intended?) from effectiveness outcomes (Yes, they are, and it is/is not resulting in good outcomes.). Only when effective practices and programs are fully implemented should we expect positive outcomes (Bernfeld, 2001; Fixsen & Blase, 1993; Institute of Medicine, 2001; Washington State Institute for Public Policy, 2002).

So far, as the wave of interest in evidence-based practices and programs has swept across human services, the nature of the evidence about interventions has received the preponderance of attention from researchers and policy makers. As Kitson, Harvey, & McCormack (1998) stated, “... the investment in developing structures to ensure gold standard research evidence has yet to be matched by equal investment in ways of elucidating how organizations change cultures or use different techniques to manage the change process” (p 157). From an implementation point of view, doing more and better research on a program or practice itself does not lead to more successful implementation. A series of meta-analyses and detailed assessments of the strength of research findings for certain practices and programs may help a consumer, agency, or community select a program. However, more data on program outcomes will not help implement that program. Implementation is an entirely different enterprise. Thus, an intervention must be well defined and carefully evaluated with regard to its effects on its intended consumers (children, families, adults). Likewise, implementation of an intervention must be well defined and carefully evaluated with regard to its effects on its intended consumers (practitioners, managers, organizations, systems).

An implementation headset also is critical for understanding and interpreting data from outcome

studies. Rossi & Freeman (1985) identified three ways in which inadequate measures of program implementation may lead to an incorrect conclusion that an intervention is ineffective. First, no treatment or too little treatment is provided; second the wrong treatment is provided; and third, the treatment is nonstandard, uncontrolled, or varies across the target population. Dobson & Cook (1980) described “type III” (type three) errors. That is, evaluating a program that was described but not implemented. In their analysis of a program for ex-offenders, they found only 1 in 20 consumers actually received the program as described in the methods section. Thus, the outcome data could not be attributed to the program as described. Feldman, Caplinger, & Wodarski (1983) found that apparent findings of no differences among groups were explained by measuring the application of the independent variables. Those youths who were in groups whose leaders skillfully followed the protocol had better outcomes.

Outcome interpretation is further compromised when control groups utilize the components of the evidence-based program or practice, or, if the experimental programs fail to implement key aspects of the intervention. In studies of one evidence-based program (Assertive Community Treatment or ACT; Bond, Evans, Salyers, Williams, & Kim, 2000) it was found in one case that a control site had incorporated many ACT principles (McHugo, Drake, Teague, & Xie, 1999), while in another that the experimental sites had implemented fewer aspects of the ACT model than expected (Bond, Miller, Krumweid, & Ward, 1988). Dane & Schneider (1998) conducted a literature review of prevention programs published between 1980 and 1994. They found that only 39 (24%) of 162 outcome studies documented the implementation of the independent variables (i.e., fidelity) and only 13 used a measure of fidelity as a variable when analyzing the results. They also noted that the amount of documentation of fidelity found in their review (24%), “compared to the 20% found by Peterson, et al. (1982) in 539 experimental studies published from 1968 to 1980 in the *Journal of Applied Behavior Analysis*, the 18.1% found by Moncher and Prinz (1991) in 359 treatment outcome studies published in clinical psychology, psychiatry, behavior therapy, and family therapy journals from 1980 to 1988,

the 6% found by Rogers-Weise in 88 group-design parent training studies published from 1975 to 1990, and the 14.9% noted by Gresham et al. (1993) in evaluations of behaviorally based interventions published from 1980 to 1990” (p. 41). Dane & Schneider (1998) concluded that, “A reorganization of research priorities is needed to facilitate less confounded, better quality evaluations of preventive interventions” (p. 42).

Thus, implementation variables are not synonymous with those involved in interventions and implementation outcomes are important to measure, analyze, and report when attempting to interpret research findings or broad scale applications (Bernfeld, 2001; Blase et al., 1984; Dusenbury, Brannigan, Falco, & Hansen, 2003; Forsetlund, Talseth, Bradley, Nordheim, & Bjorndal, 2003; Goodman, 2000; Mowbray, Holter, Teague, & Bybee, 2003; Rychetnik, Frommer, Hawe, & Shiell, 2002).

Implementation Defined

What is “implementation?” For the purposes of this review, implementation is defined as a specified set of activities designed to put into practice an activity or program of known dimensions. According to this definition, implementation processes are purposeful and are described in sufficient detail such that independent observers can detect the presence and strength of the “specific set of activities” related to implementation. In addition, the activity or program being implemented is described in sufficient detail so that independent observers can detect its presence and strength. As noted earlier, when thinking about implementation the observer must be aware of two sets of activities (intervention-level activity and implementation-level activity) and two sets of outcomes (intervention outcomes and implementation outcomes).

The view becomes a bit more complicated when implementation-savvy researchers talk about implementation-related “interventions” with community leaders, agency directors, supervisors, practitioners, policy makers, and funders. For purposes of this monograph, we will use “interventions” to mean treatment or prevention efforts at the consumer level and “implementation” to mean efforts to incorporate a program or practice at the

For the purposes of this review:

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

community, agency, or practitioner levels. Also, it is common to read about “implementation” of a program or practice as if it were an accomplished fact when the context of the statement makes it clear that some process (more or less clearly described) had been put in place to attempt the

implementation of that program or practice (e.g., funding, policy mandate). When faced with the realities of human services, implementation outcomes should not be assumed any more than intervention outcomes are assumed.

Degrees of Implementation

During the course of the review, it was noted that various authors discussed the purposes and outcomes of implementation attempts in different ways (Goggin, 1986). The purposes and outcomes of implementation might be categorized as:

Paper implementation means putting into place new policies and procedures (the “recorded theory of change,” Hernandez & Hodges, 2003) with the adoption of an innovation as the rationale for the policies and procedures. One estimate was that 80-90% of the people-dependent innovations in business stop at paper implementation (Rogers, 2002). Westphal, Gulati, & Shortell (1997) found in their survey of businesses that, “If organizations can minimize evaluation and inspection of their internal operations by external constituents through adoption alone, they may neglect implementation altogether, decoupling operational routines from formally adopted programs.” (p. 371). Thus, paper implementation may be especially prevalent when outside groups are monitoring compliance (e.g., for accreditation) and much of the monitoring focuses on the paper trail. It is clear that paperwork in file cabinets plus manuals on shelves do not equal putting innovations into practice with benefits to consumers.

Process implementation means putting new operating procedures in place to conduct training workshops, provide supervision, change information reporting forms, and so on (the “expressed theory of change” and “active theory of change,” Hernandez & Hodges, 2003) with the adoption of an innovation as the rationale for the procedures. The activities related to an innovation are occurring, events are being counted, and innovation-related languages are adopted.

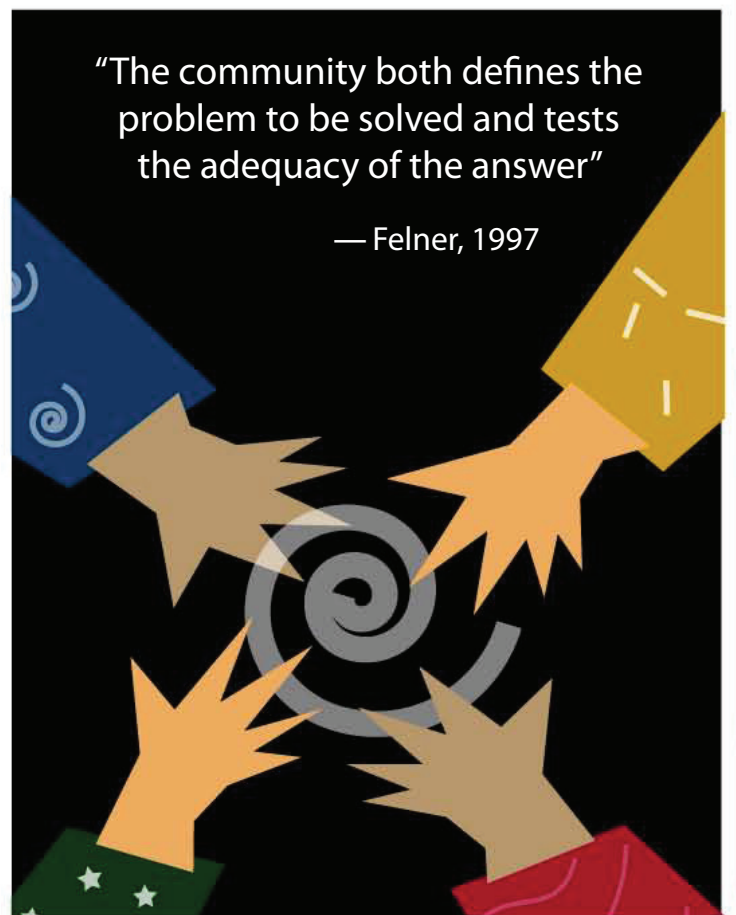
However, not much of what goes on is necessarily functionally related to the new practice. Training might consist of merely didactic orientation to the new practice or program, supervision might be unrelated to and uninformed by what was taught in training, information might be collected and stored without affecting decision making, and the terms used in the new language may be devoid of operational meaning and impact. In business, this form of implementation has been called the Fallacy of Programmatic Change. That is, the belief that promulgating organizational mission statements, “corporate culture” programs, training courses, or quality circles will transform organizations and that employee behavior is changed simply by altering a company’s formal structure and systems (Beer, Eisenstat, & Spector, 1990). It is clear that the trappings of evidence-based practices and programs plus lip service do not equal putting innovations into practice with benefits to consumers.

Performance implementation means putting procedures and processes in place in such a way that the identified functional components of change are used with good effect for consumers (the “integrated theory of change,” Hernandez & Hodges, 2003; Paine, Bellamy, & Wilcox, 1984). It appears that implementation that produces actual benefits to consumers, organizations, and systems requires more careful and thoughtful efforts as described by the authors reviewed in this monograph.

Chapter 2

Implementation in the Context of Community

- Research on Community Context
- Measuring Readiness
- Stages of Community Readiness





Implementation in the Context of Community

Before we begin to delve into the mysteries of implementation, we want to affirm the obvious. Implementation occurs in the context of community.

The World Bank advised that, "...for a mutually reinforcing coalition to emerge, each potential partner must make an investment with a high degree of uncertainty regarding the commitment, capacity, and intentions of their potential partner."

For present purposes, a "community" might be members of a city, neighborhood, organization, service agency, business, or professional association. A theme running throughout the literature was the importance of knowing the current strengths and needs of a community prior to selecting and attempting to implement an innovation. In the process of examining the community's strengths and needs, a planning group often forms and becomes a catalyst for increasing awareness, mobilizing interests and driving planning activities.

The literature across domains consistently cites the importance of "stakeholder involvement" and "buy in" throughout all stages of the implementation process ("Nothing about us without us" seems to apply to all stakeholders when choosing and implementing evidence-based practices and programs as well as other treatment interventions). As summarized in an example by Petersilia (1990), "Unless a community recognizes or accepts the premise that a change in corrections is needed, is affordable, and does not conflict with its sentiments regarding just punishment, an innovative project has little hope of surviving, much less succeeding" (p. 144). Fox & Gershman (2000) summarized several years of experience with the World Bank in its attempts internationally to implement new policies to help the poor. They advised that, "...for a mutually reinforcing coalition to emerge, each potential partner must make an investment with a high degree of uncertainty regarding the commitment, capacity, and intentions of their potential partner" (p. 188).

Research on Community Context

While those engaged in implementing programs and practices consistently discuss the need for community readiness and buy-in, there are virtually no data to support any given approach to achieving buy-in. In addition, there are few studies that relate community preparation to later implementation success. With respect to the concept of buy-in, several surveys of implementation efforts in business and industry consistently found support for worker and other staff participation in decisions to make changes (e.g., Ramarapu, Mehra, & Frolick, 1995; Salanova, Cifre, & Martin, 2004; Small & Yasin, 2000). Additional support was found in a longitudinal comparison study of worker stress and implementation of new manufacturing technology. Korunka, Weiss, & Karetta (1993) found subjectively-experienced stress decreases significantly following implementation in companies in which there was greater inclusion of employees in the planning process. Stress levels were unchanged in companies with lower levels of employee participation. For changes in businesses that rely heavily on human interaction, Rogers (2002) emphasized the need for communication, a clear theory of change that makes the case for the intended changes in the organization; and the development of champions who can consistently advocate, cajole, recognize, reward, and encourage. Thus, buy-in supported by communication and internal champions was thought to be important by those involved in many implementation processes and some evidence points to benefits to those whose jobs were changed in the process.

Working with communities and agencies in preparation for implementing evidence-based programs and practices also is seen as important in human services (e.g., Adelman & Taylor, 2003; Arthur & Blitz, 2000; Barber, Barber, & Clark,

1983; Bierman et al., 2002; Cleaver & Walker, 2004; Crosby, 1991; Dennis, Perl, Huebner, & McLellan, 2000; Klem, 2000; Taylor et al., 1999). For example, Adelman & Taylor (2003) described some early stages of preparation for adopting innovations in an educational setting:

- Develop an understanding of the local big-picture context for all relevant interventions; develop an understanding of the current status of efforts; delineate how the innovation can contribute with respect to the larger agenda; articulate cost-effective strategies.
- Mobilize interest, consensus, and support among key stakeholders; identify champions and other individuals who are committed to the innovation; plan and implement a social marketing strategy to mobilize a critical mass of support; plan and implement strategies to obtain support of key policymakers.
- Clarify feasibility; clarify how the functions can be institutionalized through existing, modified, or new infrastructure and operational mechanisms; clarify how necessary changes can be accomplished; formulate a long-range strategic plan.

Similar community planning was deemed to be important to sustainability of innovations as well. Denton, Vaughn, & Fletcher (2003) examined a number of reading programs that had been widely implemented and identified the following factors that seem to influence sustainability of high-quality implementation:

- Teachers' acceptance and commitment to the program; the presence of a strong school site facilitator to support them as the teachers acquired proficiency in its execution.
- "Unambiguous buy-in on the part of all staff at the school" (p. 16); empower teachers to take ownership and responsibility for the process of school change; schools or districts must agree to follow procedures designed to ensure high-fidelity implementation and agree to collect data on implementation and student outcomes
- Feelings of professionalism and self-determination among teachers; teachers are provided with professional development (training, in-class coaching, and prompt feedback) that leads to proficiency.

- Programs are perceived by teachers as practical, useful, and beneficial to students.
- Administrative support and leadership; instructional practice is valued by the school leaders; administration provides long-term support for professional development of teachers and assessments of implementation and student performance.

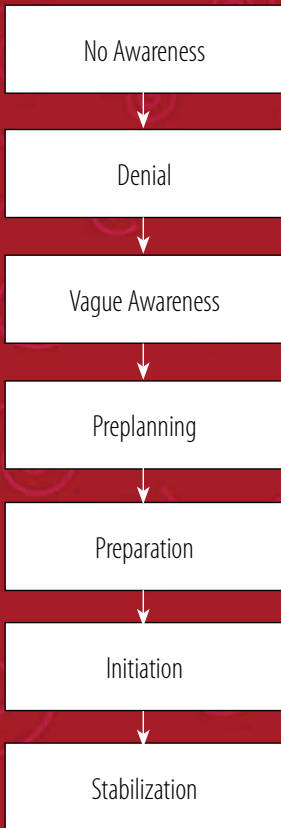
Thus, mobilizing support and local champions, community participation in decision making, developing understanding and commitment to an innovation, and clarifying feasibility and functions seem to be a few of the important aspects of initiating implementation in a community.

Measuring Readiness

Some researchers are developing scales to measure "readiness" of practitioners. For example, Aarons (2004) has developed the "Evidence-based Practice Attitude Scale" to measure mental health provider attitudes toward adopting evidence-based practices and programs. The 18-item scale was developed from the literature, consultation with providers, and researchers with experience implementing evidence-based practices and programs. The items assess the appeal of evidence-based programs, requirements for using evidence-based practices and programs, openness to innovation, and perceived divergence of evidence-based practices and programs from usual practice. Clinical and case management service providers from 51 programs were surveyed and the results demonstrated good internal consistency and reliability.

Scales to measure organizational readiness also are being developed (Lehman, Greener, & Simpson, 2002; Simpson, 2002). Items on the Organizational Readiness to Change scale ask questions about motivational readiness (need for improvement, training needs, pressure to change), institutional resources (space, staffing, training, computers, e-communication), staff attributes (growth, efficacy, influence, adaptability), and organizational climate (clarity of mission and goals, cohesiveness, autonomy, openness to communication, stress, openness to change). Data collected from treatment staff in over 100 organizations support the construct validity of the scales.

Stages of Community Readiness



A model for measuring readiness at the community level also has been developed. Many of the readiness concepts found in the literature were included in a Community Readiness Model developed by Edwards, Jumper-Thurman, Plested, Oetting, & Swanson (2000). In this model, assessment of the stage of readiness is done through key informant interviews, with questions on six different dimensions related to a community's readiness to mobilize to address a specific issue. Based on experiences in working directly with communities, strategies for improving community readiness have been developed for each stage. Teams of community members can use the strategies as a guide to develop specific, culturally appropriate efforts that use local resources to help the community to more advanced levels of readiness. Edwards et al. (2000) identified several stages of community readiness (some actions recommended by the authors to improve community readiness are provided in parentheses):

- **No awareness:** not a problem, just the way it is. (Actions: Raise awareness of the issue via one-on-one visits with community leaders and members, visits with existing and established small groups to inform them of the issue, and one-on-one phone calls to friends and potential supporters.)
- **Denial:** some recognition of the problem but it is confined to a small group, we are helpless anyway.
- **Vague awareness:** some recognition, some notion of doing something, no clarity.
- **Preplanning:** clear recognition of a problem, something needs to be done, leaders emerge, but no specifics yet. (Actions: Raise awareness with concrete ideas to combat the problem by introducing information about the issue through presentations and media, visiting and developing support in the cause by community leaders, reviewing existing efforts in community (programs, activities, etc.) to determine who benefits and what the degree of success has been, and conducting local focus groups to discuss issues and develop strategies).
- **Preparation:** active planning with a focus on details, leadership is active, resources are being assessed and expanded.

- **Initiation:** enough preparation has been done to justify efforts, policies and actions are underway and still seen as new, enthusiasm is high and problems (so far) are few.
- **Stabilization:** programs are up and running with support from administrators and community leaders, staff have been trained and are experienced, limitations have been encountered and resistance overcome.

The Community Readiness Model has been used by researchers to help match communities in preparation for experimental analyses of prevention programs (Edwards et al., 2000). However, no psychometric testing was reported.

In summary, community obviously is important to implementation and researchers are beginning the process of developing measures of community involvement in planning and implementing programs and practices. Advice from those engaged in implementation efforts emphasize the need for members of a community to recognize its assets and needs, select interventions and services, build support and buy in, retain a monitoring function, and help to assure long-term sustainability of useful services. "Readiness" to implement new practices and programs has intuitive appeal but there is scant research evidence to support the idea of "readiness" at any level (practitioner, organization, community). While the developers of the various scales have assessed the reliability and construct validity of their measures of readiness, so far there has been no assessment of predictive validity. Thus, the relationship between measures of readiness and later implementation success is unknown. However, future research should be aided by including measures of readiness. The next step is to conduct research to determine the ways in which aspects of community or organizational preparation are related to later implementation success.

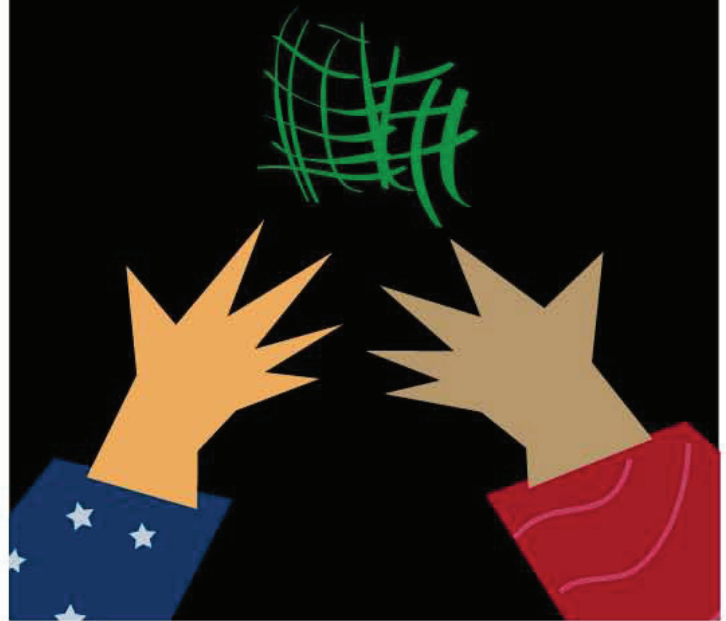
Chapter 3

A Conceptual View of Implementation

- Conceptual Framework
- Purveyors
- Stages of Implementation Defined
- What We Know about Implementation Stages
- Experimental Analyses of Implementation Strategies

"As anyone knows who has worked in the field, implementation of new practice is the biggest challenge of all."

— Hollin & McMurrin, 2001





A Conceptual View of Implementation

A persistent problem encountered throughout this review of the implementation evaluation literature is the lack of a common language and the lack of a common framework for thinking about implementation.

Conceptual Framework

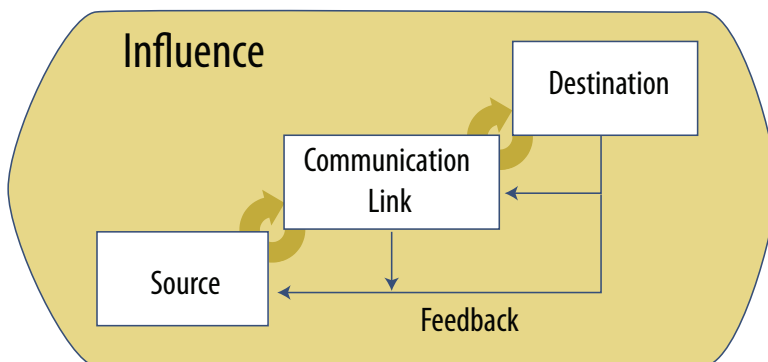
Based on the review of the literature and ideas from computer programming (Milojicic, Douglis, Paindaveine, Wheeler, & Zhou, 2000) and creativity fields (Altshuller, 1984), we arrived at a conceptual framework for implementation of well-defined programs and practices. As shown in Figure 1, in its simplest form implementation has five essential components:

1. a **SOURCE** (a “best example,” often a composite of the original practice or program that was developed and evaluated and the best features of attempted implementations of that practice or program),
2. a **DESTINATION** (the individual practitioner and the organization that adopts, houses, supports, and funds the installation and ongoing use of an innovation),
3. a **COMMUNICATION LINK** (an individual or group of individuals, named “purveyors” in this monograph, representing a program or practice who actively work to implement the defined practice or program with fidelity and good effect at an implementation site), and

4. a **FEEDBACK** mechanism (a regular flow of reliable information about performance of individuals, teams, and organizations acted upon by relevant practitioners, managers, and purveyors),
5. that operate within a sphere of **INFLUENCE** (social, economic, political, historical, and psychosocial factors that impinge directly or indirectly on people, organizations, or systems).

Implementation components and outcomes exist quite independently of the quality of the program or practice being implemented. Ineffective programs can be implemented well (e.g., the DARE program, Elliott, 1997; Ennett, Tobler, Ringwalt, & Flewelling, 1994). Effective programs can be implemented poorly (Fixsen & Blase, 1993; Fixsen, Blase, Timbers, & Wolf, 2001). Neither one is desirable. Desirable outcomes are achieved only when effective programs are implemented well (Fixsen et al., 2001; Leschied & Cunningham, 2002; Washington State Institute for Public Policy, 2002).

Figure 1
A Conceptual Framework for Implementation of Defined Practices and Programs



The essential implementation outcomes are:

1. changes in adult professional behavior (knowledge and skills of practitioners and other key staff members within an organization or system),
2. changes in organizational structures and cultures, both formal and informal (values, philosophies, ethics, policies, procedures, decision making), to routinely bring about and support the changes in adult professional behavior, and
3. changes in relationships to consumers, stakeholders (location and nature of engagement, inclusion, satisfaction), and systems partners.

For example, Toyota Production Systems (TPS) is a just-in-time manufacturing system (i.e., no unnecessary inventory at each input and output stage) requiring massive reorganization of production units, visual control and communication by workers with other workers, and specific arrangements of plant operating and management structures to support production teams and a consistent flow of materials (Kasul & Motwani, 1997).

SOURCE: Toyota created, developed, and evaluated TPS methods at their auto manufacturing plants in Japan and began replicating their system in affiliated parts manufacturing and auto assembly plants around the world.

DESTINATION: The Toyota Supplier and Support Center (TSSC) works with those organizations found worthy of the total commitment required to make the necessary changes.

COMMUNICATION LINK: TSSC provides consulting and implementation support free of charge (e.g., analyzes the client's manufacturing capability; prescribes the best implementation strategy with adaptations of some features of the TPS based on local circumstances and values; directly observes and analyzes workers on the line, supply chains, etc.; identifies the key aspects at an operations level; helps the plant redesign the workspace to emphasize and conserve human motion, improve safety, eliminate waste, and improve efficiency).

FEEDBACK mechanisms: Task assignments are detailed and focused and the TSSC staff spend about 1 week per month for about 3 years observing performance, reviewing progress, answering questions, and assigning new tasks until full implementation is achieved.

INFLUENCE: Car makers operate in an environment where consumers want a wide variety of individually tailored products. To remain competitive, manufacturers have to develop low-volume, high variety production strategies that call for flexibility in manufacturing done via more automation and integration of processes on the floor.

The result is Toyota can deliver a high quality car equipped to the customer's specifications within 21 days of the order being placed at a local dealership, 2 to 3 times faster than the industry standard.

Another example is Multisystemic Therapy (MST; Henggeler & Borduin, 1990; Henggeler, Schoenwald, Borduin, Rowland, & Cunningham, 1998), a treatment for serious antisocial behavior in youth that is delivered via a homebased model of service delivery.

SOURCE: MST methods were developed and evaluated with serious and chronic juvenile offenders by Henggeler, Borduin, and colleagues in Missouri and South Carolina and is a well-known evidence-based program.

DESTINATION: MST works with service systems to identify those organizations that have met certain criteria on a site-assessment instrument (e.g., leadership willing to adopt the MST framework, "fit" of MST with the intended target population, adequate referral and funding mechanisms, consonance of leadership and clinician perception of the nature of MST, team structure with specific MST supervision weekly, accountability for outcomes at the therapist, supervisor, and organizational levels; organizational structures that support the team, willingness to examine outcomes systematically).

COMMUNICATION LINK: MST Services, Inc. is the official purveyor of the MST program nationally (e.g., information sharing, site assessment, staff training, staff consultation and coaching, staff evaluation).

FEEDBACK mechanisms: The MST Institute has a web-based system for collecting adherence data monthly at the practitioner and supervisory levels and using those data to inform decision making and consultation at the therapist and organizational levels. Adherence data are collected monthly for the life of each implementation of the MST program.

INFLUENCE: There is increasing demand for evidence-based services to children and youth that can operate within typical organizational constraints, funding sources, and referral streams while maintaining high fidelity and good outcomes.

As a result, MST Services, Inc. has established many high-fidelity implementation sites that benefit youths and families across the country and internationally.

A Purveyor is an individual or group of individuals representing a program or practice who actively work to implement that practice or program with fidelity and good effect.

This conception of the implementation processes helps to focus attention on the “moving parts,” that is, those aspects that help to bring national programs and practices into contact with practitioners who can provide direct benefit to consumers locally. The generality of the concepts presented in Figure 1 is highlighted by the examples from manufacturing and human services and applies with equal ease to a wide variety of programs and practices in agriculture, business, child welfare, engineering, health, juvenile justice, manufacturing, medicine, mental health, nursing, and social services. The information in the following chapters is organized around the concepts contained in Figure 1.

Purveyors

As a communication link, in this monograph, we make use of the notion of a “purveyor.” By that we mean an individual or group of individuals representing a program or practice who actively work to implement that practice or program with fidelity and good effect. Thus, in the examples above, the Toyota Supplier and Support Center (TSSC) is a purveyor of the Toyota Production Systems for manufacturing automobiles. MST Services, Inc. is the purveyor of the Multisystemic Therapy (MST) program for serious and chronic juvenile offenders. These are clear-cut examples of purveyors and each has a set of activities designed to help new organizations (“implementation sites”) implement their respective programs. In other cases, the “purveyor” is not so readily identified nor are the activities well described. For example, the Assertive Community Treatment program and the Wraparound approach seem to have several individuals who act as consultants to communities and agencies interested in adopting those programs. The Wraparound group has recognized the problem of multiple definitions of their approach being used by different purveyors and have formed a national association to develop a common definition of the approach and a common set of processes for assessing the fidelity of new implementation sites (Bruns, Suter, Leverentz-Brady, & Burchard, 2004). The literature is not always clear about the activities of a purveyor. For example, the Quantum Opportunity Program (Maxfield, Schirm, & Rodriguez-Planas, 2003) was implemented in several sites in a major, multi-state

test of the program. The report of the findings simply noted that the originators of the program had received funding to provide technical assistance to the implementation sites. Given the uneven results, it is unfortunate that there was no link back to purveyor activities. Nevertheless, in all of these instances, a purveyor works in more or less organized ways with the intention to implement a specified practice or program at a particular location. Over the years a purveyor also has been described as a “change agent” (Fairweather et al., 1974; Havelock & Havelock, 1973), “linking agent” (Kraft, Mezoff, Sogolow, Neumann, & Thomas, 2000), “program consultant” (Gendreau et al., 1999), and “site coordinator” (Blase et al., 1984).

An advantage of having a well organized and persistent approach to implementation of evidence-based practices and programs may be that the purveyor can accumulate knowledge over time (Fixsen & Blase, 1993; Fixsen, Phillips, & Wolf, 1978; Winter & Szulanski, 2001). Each attempted implementation of the program reveals barriers that need to be overcome and their (eventual) solutions. Problems encountered later on may be preventable with different actions earlier in the implementation process. Thus, with experience, the purveyor group can learn to change their approaches early in the process and avoid some of the later problems. In addition, an experienced purveyor can describe to the managers of an implementation site the likely problems that will arise and the likely solutions that can be applied. This seems to engender confidence and may lead to greater persistence to “see it through” when the going gets rough during the early stages of implementation. The problem is that the feedback loops for implementation efforts are very long. It often takes years to develop an implementation site and then see how well that site performs with respect to implementation outcomes and intervention outcomes and a few more years to adjust strategies and experience new results in an ongoing iterative process (Blase et al., 1984; Fixsen & Blase, 1993; Fixsen et al., 2001). Having a consistent group involved as purveyors of a given program or practice may provide a repository for (more or less carefully evaluated) experiential knowledge and wisdom accumulated from a series of (more or less successful) implementation attempts over many years (Schofield, 2004).

Stages of Implementation Defined

As implied in Figure 1, implementation is a process, not an event. Implementation will not happen all at once or proceed smoothly, at least not at first. Based on their analyses of franchised businesses, Winter & Szulanski (2001) stated that, “We treat knowledge transfer as a process (not a one-time act) by which [a purveyor] recreates a complex, causally ambiguous set of routines in new settings and keeps it functioning. The [purveyor] gradually hones its ability to manage such a process through experience and repetition” (p. 741). Thus, a purveyor (COMMUNICATION LINK) can help organizations and systems stay on track and can help recognize and solve common implementation problems in a timely and effective manner. The following appear to be discernible stages in the process of implementing evidence-based practices and programs (e.g., Blase & Fixsen, 2003; Cheung & Cheng, 1997; Faggin, 1985; Feldman, Baler, & Penner, 1997; Fox & Gershman, 2000; Rogers, 2002; Williams, 1975; Zins & Illback, 1995).

Exploration and Adoption

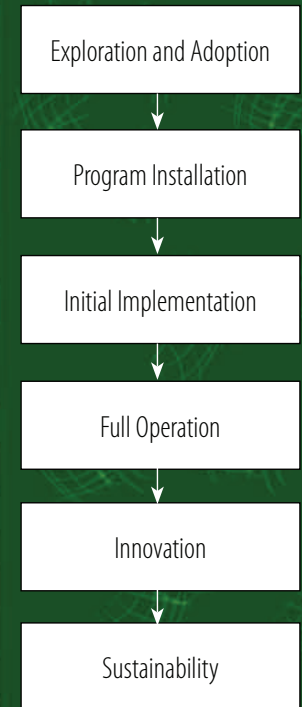
At some point, someone has to think about making use of an innovation. This requires some degree of awareness that leads to acquisition of information and exploration of options. A large and varied literature exist describing “diffusion” of information and how individuals and organizations make “adoption decisions” (Rogers, 1983; Westphal et al., 1997; Fitzgerald, Ferlie, & Hawkins, 2003). Rogers’ work has been influential and often is cited as the conceptual model used by others. The purpose of exploration is to assess the potential match between community needs, evidence-based practice and program needs, and community resources and to make a decision to proceed (or not). Social marketing methods seem to be relevant to the exploration process. Social marketing emphasizes knowing consumer needs and matching interventions with those needs (Andreasen, 1995). Flocks, Clarke, Albrecht, Bryant, Monaghan, & Baker (2001) provide a detailed description of social marketing strategies applied to reducing the adverse effects of pesticide exposure among farm workers.

Cohen, Farley, Bedimo-Etame, Scribner, Ward, Kendall, & Rice (1999) describe the use of similar strategies to increase the availability and use of condoms in one state. The processes of mapping consumer needs and understanding the enabling and limiting aspects of the contexts in which interventions can occur seem to be important during the exploration process. At the end of the exploration stage, a decision is made to proceed with implementation of an evidence-based program in a given community or state based on formal and informal criteria developed by the community and by the evidence-based program (Blase et al., 1984; Khatri & Frieden, 2002; Schoenwald & Hoagwood, 2001). The point of entry for evidence-based practices and programs may be at the system level or at the provider level. As discussed in Chapter 2, broad-based community education and ownership that cuts across service sectors may be critical to installing and maintaining an evidence-based program with its unique characteristics, requirements, and benefits. Kraft et al. (2000) describe a “pre-implementation” stage for implementing HIV/AIDS prevention programs where service providers, community planning groups, advisory boards, consumer population members, related organizations, and purveyors meet and exchange information to:

- identify the need for an intervention considering the information available
- acquire information via interactions with one another
- assess the fit between the intervention program and community needs
- prepare the organization, staff, and resources by mobilizing information and support.

For the Multidimensional Treatment Foster Care Program (Chamberlain, 2003), the purveyor begins by assessing the readiness of the interested agency with questions about the agency’s history, current resources, current staffing patterns, and relationships with key stakeholders. In addition, they assess potential barriers to implementation relating to funding, staffing, referrals, and foster parent recruitment. The result of the exploration stage is a clear implementation plan with tasks and time lines to facilitate the installation and initial implementation of the program.

Stages of the Implementation Process



It seems clear that evidence-based practices and programs will not be implemented on any useful scale without the support of political, financial, and human service systems at state and local levels (Schoenwald, 1997). That support is garnered during the adoption process and is important throughout all implementation stages. However, deciding to “adopt” an evidence-based program or practice and having well-aligned support should not be confused with actually putting that program or practice into effective use (see discussion of “paper implementation” in Chapter 1). Rogers (1983) observed that fewer than 3% of the more than 1,000 articles he reviewed pertained to implementation. Rogers noted that the diffusion literature takes us up to the point of deciding to adopt an innovation and says nothing about what to do next to implement that innovation with fidelity.

Program Installation

After a decision is made to begin implementing an evidence-based practice or program, there are tasks that need to be accomplished before the first consumer is seen. These activities define the installation stage of implementation. Resources are being consumed in active preparation for actually doing things differently in keeping with the tenets of the evidence-based practice or program. Structural supports necessary to initiate the program are put in place. These include ensuring the availability of funding streams, human resource strategies, and policy development as well as creating referral mechanisms, reporting frameworks, and outcome expectations. Additional resources may be needed to realign current staff, hire new staff members to meet the qualifications required by the program or practice, secure appropriate space, purchase needed technology (e.g., cell phones, computers), fund un-reimbursed time in meetings with stakeholders, and fund time for staff while they are in training. These activities and their associated “start up costs” are necessary first steps to begin any new human service endeavor, including the implementation of an evidence-based program or practice in a new community setting.

Initial Implementation

Implementation involves complexity in every aspect. Implementation requires change. The change may be more or less dramatic for an individual or an organization. In any case, change does not occur simultaneously or evenly in all parts of a practice or an organization. Kitson et al., (1998) note that implementation requires changes in the overall practice environment. That is, the practitioner in the context of personal, administrative, educational, economic, and community factors that are themselves influenced by external factors (new info, societal norms, economic recession, media).

Changes in skill levels, organizational capacity, organizational culture, and so on require education, practice, and time to mature. Joyce & Showers (2002) describe how they help practitioners through the “initial awkward stage” of initial implementation. Fisher (1983) stated it clearly when he described “the real world of applied psychology [as] an environment full of personnel rules, social stressors, union stewards, anxious administrators, political pressures, interprofessional rivalry, staff turnover, and diamond-hard inertia” (p. 249).

During the initial stage of implementation the compelling forces of fear of change, inertia, and investment in the status quo combine with the inherently difficult and complex work of implementing something new. And, all of this occurs at a time when the program is struggling to begin and when confidence in the decision to adopt the program is being tested. Attempts to implement new practices effectively may end at this point, overwhelmed by the proximal and distal influences on practice and management (e.g., Macallair & Males, 2004).

Full Operation

Full implementation of an innovation can occur once the new learning becomes integrated into practitioner, organizational, and community practices, policies, and procedures. At this point, the implemented program becomes fully operational with full staffing complements, full client loads, and all of the realities of “doing business” impinging on the newly implemented evidence-based program. Once an implemented program is fully operational, referrals are flowing according

Rogers noted that the diffusion literature takes us up to the point of deciding to adopt an innovation and says nothing about what to do next to implement that innovation with fidelity.

to the agreed upon inclusion/exclusion criteria, practitioners carry out the evidence-based practice or program with proficiency and skill, managers and administrators support and facilitate the new practices, and the community has adapted to the presence of the innovation.

Over time, the innovation becomes “accepted practice” and a new operationalization of “treatment as usual” takes its place in the community (e.g., Faggin, 1985). The anticipated benefits should be realized at this point as the new evidence-based program staff members become skillful and the procedures and processes become routinized. Once fidelity measures are above criterion levels most of the time, the effectiveness of the fully operational evidence-based program implementation site (DESTINATION) should approximate the effectiveness of the original evidence-based program (SOURCE).

Innovation

Each attempted implementation of evidence-based practices and programs presents an opportunity to learn more about the program itself and the conditions under which it can be used with fidelity and good effect. New staff members working under different conditions within uniquely configured community circumstances present implementation challenges. They also present opportunities to refine and expand both the treatment practices and programs and the implementation practices and programs. Some of the changes at an implementation site will be undesirable and will be defined as program drift and a threat to fidelity (Adams, 1994; Mowbray et al., 2003; Yeaton & Sechrest, 1981). Others will be desirable changes and will be defined as innovations that need to be included in the “standard model” of treatment or implementation practices (Winter & Szulanski, 2001).

When attempting to discriminate between drift and innovation, the Dissemination Working Group (1999) advised to first implement the practice or program with fidelity before attempting to innovate. In that way, it is clear that “innovation” is not an attempt to escape the scrutiny of fidelity assessments and that the innovation is based on a skillful performance of the program or practice. In addition, Winter & Szulanski (2001) noted that adaptations made after a model had been implemented with fidelity were more successful than

modifications made before full implementation. The Dissemination Working Group also encouraged “innovation with scrutiny over a long enough period of time to see if the innovation is beneficial to children, families, the organization, or community.” Of course, at some point, innovations may sufficiently change the definition and operations of an evidence-based program to merit a new round of experimental outcome studies to confirm the overall benefits of the revised program.

Sustainability

After the intensity of establishing a fully-implemented evidence-based program implementation in a new community (often requiring 2 to 4 years), the implementation site needs to be sustained in subsequent years. Skilled practitioners and other well-trained staff leave and must be replaced with other skilled practitioners and well-trained staff. Leaders, funding streams, and program requirements change. New social problems arise; partners come and go. External systems change with some frequency, political alliances are only temporary, and champions move on to other causes. Through it all the implementation site leaders and staff, together with the community, must be aware of the shifting ecology of influence factors and adjust without losing the functional components of the evidence-based program or dying due to a lack of essential financial and political support. The goal during this stage is the long-term survival and continued effectiveness of the implementation site in the context of a changing world.

Each attempted implementation of evidence-based practices and programs presents an opportunity to learn more about the program itself and the conditions under which it can be used with fidelity and good effect.

What We Know about Implementation Stages

Stages of Implementation and the Literature

It appears that most of what is known about implementation of evidence-based practices and programs is known at the exploration (e.g., Rogers, 1995) and initial implementation stages (e.g., Leschied & Cunningham, 2002; Washington State Institute for Public Policy, 2002). A test of evidence-based practice or program effectiveness at implementation sites should occur only after they are fully operational, that is, at the point where the interventions and the systems supporting those interventions within an agency are well integrated and have a chance to be fully implemented. After analyzing the apparent failure of a program, Gilliam, Ripple, Zigler, & Leiter (2000) concluded that, “Outcome evaluations should not be attempted until well after quality and participation have been maximized and documented in a process evaluation. Although outcome data can determine the effectiveness of a program, process data determine whether a program exists in the first place.” (p. 56). While we did not systematically assess the timing variable, our impression was that most evaluations of attempted program implementations occur during the initial implementation stage, not the full operation stage. Thus, evaluations of newly implemented programs may result in poor results, not because the program at an implementation site is ineffective, but because the results at the implementation site were assessed before the program was completely implemented and fully operational.

Research on Stages of Implementation

Research on the stages on implementation is rare, especially research that evaluates the relative contributions of implementation factors across stages. In one well-designed study, McCormick, Steckler, & McLeroy (1995) randomly assigned school districts to experimental or control conditions. All districts were provided with a choice of middle school tobacco prevention curricula. Health education teachers and administrators in the experimental school districts also received in-depth training on the curriculum. In their analysis of the results, the authors found that smaller school districts (smaller numbers of teachers, less bureaucratic administrations) were more likely to decide to adopt a curriculum at the conclusion of the exploration stage. However, during the initial implementation stage, larger school districts (more resources, greater flexibility) were more likely to implement more of the curriculum. A positive organizational climate (job satisfaction, perceived risk taking, managing conflict, involvement in decision making) was associated with both the adoption decision and with the extent of implementation. However, they found no carry-over effects. That is, events measured during the exploration stage did not affect outcomes during the implementation stage.

The complexity of implementation variables was captured by Panzano et al., (in press). These researchers conducted an evaluation of 91 behavioral healthcare organizations that adopted or considered adopting one or more evidence-based practices and programs: Cluster-Based Planning (a consumer classification scheme; $N=23$); Multisystemic Therapy (home-based treatment; $N=16$); Ohio Medication Algorithms Project (medication management for persons with serious mental illness; $N=15$); and Integrated Dual Disorder Treatment (for consumers with mental illness and substance abuse problems; $N=37$). A range of interview, survey, and implementation outcome data were included in a longitudinal design that allowed the authors to relate the data from earlier stages to later stages. The authors tested the usefulness of four conceptual models: Model 1: the adoption decision; Model 2: multi-level model of implementation success; Model 3: cross-phase effects on implementation outcomes; Model 4: effects of implementation variables on outcomes over time.

It appears that most of what is known about implementation of evidence-based practices and programs is known at the exploration and initial implementation stages.

The results indicated that out of the original 91 organizations, 50 decided to adopt an evidence-based practice or program. During the exploration stage (Model 1), perceived risk discriminated the adopters from the non-adopters (also see Anderson, & Narasimhan, 1979, for measures of risk assessment). Risk was seen as lower when the organization staff members felt they could manage the risks involved in implementation, when management support was high, and resources were dedicated specifically to implementation. Thus, during the exploration stage, perceived risk discriminated the adopters from the non-adopters.

During the initial implementation stage (Model 2), positive consumer outcomes were positively related to fidelity (conversely, “reinvention” was associated with poorer outcomes) and positively related to assimilation into the agency (making the new program a permanent part of ongoing operations). At the next level of analysis, assimilation was related to quality of the communication between the purveyor and the organization, the extent to which the organization was seen as having a learning culture and a centralized decision making structure, the availability of dedicated resources, and the extent to which implementation was seen as relatively easy and as compatible with the organization’s treatment philosophy. Overall implementation effectiveness was positively related to having a system in place for monitoring implementation progress, access to technical assistance, the perceived ability of the organization to manage risks, and belief in the scientific evidence in support of the program. Overall implementation effectiveness was negatively related to the extent to which the program had been modified from its prescribed form. Thus, during the initial implementation stage, implementation success was associated with a range of contextual, organizational, and purveyor variables and with fidelity to the evidence-based practice or program as described.

In the next two analyses, Panzano et al., (in press) examined the relationships among variables across stages. They found that later assimilation and positive implementation outcomes were higher when, during the exploration stage, the advantages of the program were seen as outweighing the disadvantages, staff had high expectations of the benefits of the program for consumers, the organization

staff felt they had a good relationship with the purveyor, and the outcomes of implementation were demonstrable. In addition, objective decision making strategies that involved staff members, good information about the intervention, and organizational leadership support during the exploration stage were positively related to assimilation during the implementation stage. Thus, the methods used to consider adoption appear to have an impact on the later success of implementation (Model 3).

Another interesting analysis indicated that proximal factors exerted greater influence on current outcomes (Model 4), a conclusion similar to the one reached by McCormick et al., (1995). Top management support and access to dedicated resources during the exploration stage were important to the adoption decision but were not related to later implementation outcomes. However, top management support and access to dedicated resources during the initial implementation stage were directly related to implementation outcomes. Similarly, access to technical assistance during the exploration stage was related to 3 of the 7 later implementation outcomes while access to technical assistance during the initial implementation stage was related to all 7 outcomes. Thus, implementation seems to require a sustained effort in order to produce desired outcomes.

The studies by McCormick et al., (1995) and Panzano et al., (in press) offer insight into the complex interactive factors that seem to be important within the early stages of implementation and how those factors may interact across stages and time. Panzano and her colleagues also provide a model for how to do longitudinal, integrative research across the stages of implementation.

During the initial implementation stage, implementation success was associated with a range of contextual, organizational, and purveyor variables and with fidelity to the evidence-based practice or program.

Experimental Analyses of Implementation Strategies

Of the 743 citations that resulted from the review of the implementation evaluation literature, 20 were identified as experimental studies that employed within subject or randomized group designs and 2 were identified as meta-analyses of experimental studies.

Experimental Research: Ineffective Implementation Strategies

As an implementation strategy, access to information alone appears to have little impact on practitioners' performance. Azocar, Cuffel, Goldman, & McCulloch (2001) and Azocar, Cuffel, Goldman, & McCarter (2003) randomly assigned clinicians in a managed care organization to one of three groups: a general dissemination group (single mass mailing of best-practice guidelines), a targeted dissemination group that received guidelines with a letter targeting a specific patient, and a control group that was not mailed guidelines. This research demonstrated that dissemination of evidence-based treatment guidelines was not effective in influencing the behavior of mental health clinicians, even in the context of a managed behavioral health organization. Four months after mailing the guidelines, only 64% of clinicians reported receiving guidelines and less than half of them reported reading the quick reference sheet or the 8-page reference booklet. In addition, there was no difference in guideline-consistent practices between clinicians who received the general mailing and those who did not receive the guidelines.

A similar result was found by Fine et al., (2003). Physicians in the experimental and control groups each received mailed information regarding an evidence-based guideline for use with patients with pneumonia. The guideline was designed to change practices to reduce the duration of intravenous antibiotic therapy and length of hospital stay. Information alone had no effect on the clinical practice of the control group. Physicians in the experimental group received the information and had the support of specially trained nurses who made patient assessments, informed the physician when the patient met the guideline criteria, placed prompt sheets in the patient's file, and offered to

take an order for antibiotics and arrange for nursing home care. Physicians in the experimental group prescribed antibiotics significantly more often but there was no change in length of hospital stay.

Schectman, Schroth, Verme, & Voss (2003) conducted an assessment of clinician adherence to acute and low back pain guidelines. Clinicians were randomly assigned to one of four groups: no intervention, physician education and feedback on usage, patient education materials, or a group that combined physician education and feedback on usage and patient education materials. No effect was found for the first three groups. A modest effect was found for the group that combined physician education, feedback on guideline usage, and patient education materials (guideline usage increased by 5.4% as opposed to the control group who decreased guideline usage by 2.7%).

Schofield, Edwards, & Pearce (1997) randomly assigned primary and secondary schools to two groups. Group 1 received mailed education materials and information on the SunSmart skin program in Australia. Group 2 received the mailed information and a staff development module for preparing staff and changing school policies to reduce sun exposure and eventual skin cancer. The results indicated that Group 2 schools adopted sun protection policies at a rate twice that of Group 1 schools (i.e., paper implementation as described in Chapter 1). However, there were no differences in the sun protection practices in either group of schools. Ellis et al. (2003) conducted a thorough review of the experimental literature regarding cancer control interventions. They concluded that passive approaches (diffusion) such as mailings and educational presentations were ineffective.

Taken together, these experimental studies indicate that dissemination of information does not result in positive implementation outcomes (changes in practitioner behavior) or intervention outcomes (benefits to consumers).

Three overall implementation themes emerged from our review of the experimental studies:

1. guidelines, policies, and/or educational information alone or practitioner training alone are not effective, and
2. longer-term multilevel implementation strategies are more effective, and
3. not enough is known about the functional components of implementation factors.

Experimental Research: Effective Implementation Strategies

A high level of involvement by program developers on a continuing basis is a feature of many successful implementation programs. In their classic study, Fairweather et al., (1974) randomly assigned hospitals who had agreed to develop lodges to one of two groups. Group 1 received printed materials and a manual. Group 2 received printed materials, a manual, and face-to-face consultation. All received telephone consultation and had free access to making calls to consultants any time. There was significantly greater implementation of the lodge model in Group 2. On-site face-to-face time with staff, managers, and directors provided opportunities to help explain the lodge model and to resolve the structural and policy issues associated with the implementation process.

Wells, Sherbourne et al., (2000) matched (on several dimensions) primary care clinics in 6 managed care organizations. They then randomly assigned one of each matched trio to usual care (mailing of practice guidelines) or to 1 of 2 quality improvement (QI) programs that involved institutional commitment to QI, training local experts and nurse specialists to provide clinician and patient

education, identification of a pool of potentially depressed patients, and either nurses for medication follow-up (QI-meds) or access to trained psychotherapists (QI-therapy). The managed care organizations did not mandate following the guidelines for treating depression. Over the course of a year, the QI programs resulted in significant improvements in quality of care, mental health outcomes, and retention of employment for depressed patients without any increase in the number of medical visits.

The value of these multilevel approaches to implementation was confirmed in a meta-analysis of cancer control program implementation strategies (Ellis et al., 2003). They found 31 studies of cancer program implementation factors and concluded that active approaches to implementation were more likely to be effective in combination.

While it is encouraging to see some examples of experimental research on implementation strategies, the few examples pale in comparison to the need for clear and effective strategies to move science to service and transform human service systems nationally.

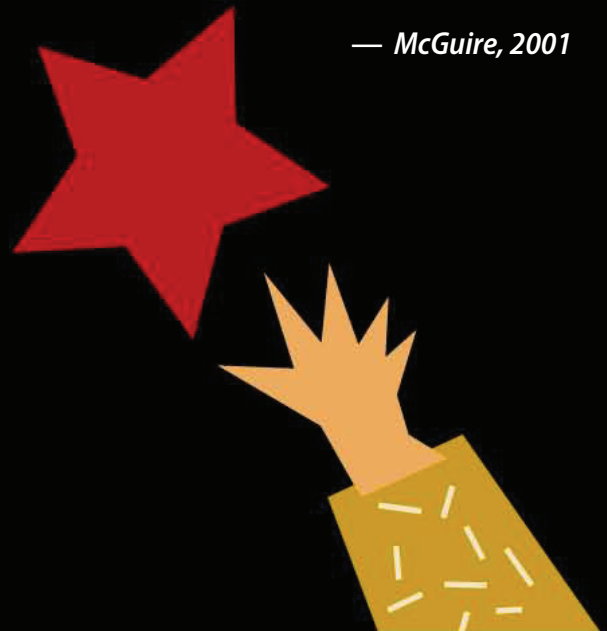
Chapter 4

Core Implementation Components

- Core Components Defined
- Core Components for Interventions
- Core Components for Implementation
- Implementing an Organization
- National Implementation Efforts

“There are no known treatment or training materials that will achieve their goals in the absence of trained and committed staff with adequate resources and managerial support.”

— McGuire, 2001





Core Implementation Components

Core components refer to the most essential and indispensable components of an intervention practice or program or the most essential and indispensable components of an implementation practice or program.

Core Components Defined

The next concept that needs to be understood is the idea of “core components.” We have adopted this phrase to reflect the knowledge base that exists in “information economics” (see Winter & Szulanski, 2001), a division of economics first developed by Nobel-prize winner Kenneth Arrow. Unlike other economic goods, information is enhanced with use, not depleted, thus engendering a new division of economics. The core components specify, “which traits are replicable, how these attributes are created, and the characteristics of environments in which they are worth replicating” (Winter & Szulanski, 2001, p. 733). Thus, core components refer to the most essential and indispensable components of an intervention practice or program (“core intervention components”) or the most essential and indispensable components of an implementation practice or program (“core implementation components”).

Core Components for Interventions

There is some evidence that the more clearly the core components of an intervention program or practice are known and defined, the more readily the program or practice can be implemented successfully (Bauman, Stein, & Ireys, 1991; Dale, Baker, & Racine, 2002; Winter & Szulanski, 2001). From an implementation point of view, the particular practice or program being implemented (the SOURCE, see Figure 1 in Chapter 3) could be anything: cognitive behavior therapy practices, supported employment programs, intensive homebased treatment programs, group home treatment programs, medical practice guidelines, drug treatment algorithms, new hotel management methods, reforestation programs, or advanced manufacturing technologies. All of these (and more) were encountered in this review.

Aside from the specific content and purpose of evidence-based practices and programs, there are characteristics of those practices and programs that seem to influence implementation. In human services, evidence-based practices and programs usually begin in one location where they are

developed, tested, and carefully researched. In some cases, research is done to tease out the most effective procedures and components of a practice or program. However, even after extensive research it is difficult to know the core components of an evidence-based practice or program until replications in new settings with new practitioners have been attempted and evaluated (Arthur & Blitz, 2000; Gallagher, 2001; Harachi, Abbott, Catalano, Haggerty, & Fleming, 1999; Winter & Szulanski, 2001; Wolf, Kirigin, Fixsen, Blase, & Braukmann, 1995).

A purveyor’s goal is to implement only those attributes of a program or practice that are replicable and add value. At first, purveyors can only speculate about what is most important to replicate among the myriad variables contained within a program or practice, even one that has been the subject of extensive research in its original location. However, it may be that only well-evaluated experiential learning (exploration, iteration between facts and theory) can provide answers to the questions regarding the relative importance of various factors. Given the complexities, well-evaluated experiential learning can lead to an increasingly sophisticated view of the model (because the current view includes learning from all past mistakes) and of the supports required for replicating core components at implementation sites (Winter & Szulanski, 2001).

Wolf et al., (1995) describe the lessons learned from early failures to replicate the Teaching-Family group home treatment program. Previously unnoticed (but critical) aspects of the original treatment program were discovered by their absence in the first attempted replications. That is, early implementation attempts helped to discover new components. Those new components then became the subject of the next round of research to clarify their procedural aspects and outcomes for consumers before they gained the status of “core intervention components” for the Teaching-Family Model (e.g., methods for relationship development, skill and concept teaching, motivation systems, self-management, counseling, advocacy).

Other efforts have been designed to uncover the core intervention components within widely-

implemented evidence-based programs (e.g., Huey, Henggeler, Brondino, & Pickrel, 2000; Korfmacher, Kitzman, & Olds, 1998) as well as those components that may be common across evidence-based practices and programs (Chorpita, Yim, & Dondervoet, 2002; Latessa, 2003; Simpson, 2004). Sexton & Alexander (2002) summarized a few decades of research to arrive at a description of core intervention components for homebased interventions that had been replicated across a number of programs and investigators (methods to create a therapeutic alliance, to reduce within-family negativity, and to improve family interaction and communication patterns). Thus, the core intervention components (the SOURCE) may best be defined after a number of attempted applications of a program or practice, not just the original one.

The speed and effectiveness of implementation may depend upon knowing exactly what has to be in place to achieve the desired results for consumers and stakeholders: no more, and no less (Arthur & Blitz, 2000; Fixsen & Blase, 1993; Winter & Szulanski, 2001). Not knowing the core intervention components leads to time and resources wasted on attempting to implement a variety of (if only we knew) non-functional elements. Knowing the core intervention components may allow for more efficient and cost effective implementation and lead to confident decisions about what can be adapted to suit local conditions at an implementation site. Clear descriptions allow for evaluations of the functions of those procedures. Some specific procedures and components may be difficult to evaluate using randomized group designs. When discussing “model-specific change mechanisms that are hypothesized to guide therapeutic intervention,” Sexton & Alexander (2002) noted that, “Unfortunately, meta-analyses provide little insight into these critical mechanisms of change” (p. 249). However, within subject research designs provide an efficient alternative way of helping to identify and demonstrate the function of individual components of evidence-based practices and programs (Blase et al., 1984; Kazdin, 1982; Odom & Strain, 2002; Wolf et al., 1995).

Knowing the core intervention components seems essential to answering persistent questions about local adaptations of evidence-based prac-

tices and programs. Core intervention components are just that, they are essential to achieving the outcomes desired for consumers.

For many years, it was thought that “strict implementation” was impossible to achieve and that local adaptations were inevitable (Rogers, 1983) if “diffusion” of innovations were to occur on a national scale. However, recent evaluations have demonstrated that large-scale implementations can occur with a high degree of fidelity (e.g., Elliott & Mihalic, 2004; Fagan & Mihalic, 2003; Fixsen et al., 2001; Mihalic & Irwin, 2003; Schoenwald, Sheidow, & Letourneau, 2004; Schoenwald, Sheidow, Letourneau, & Liao, 2003). Thus, the question becomes, “What must be maintained in order to achieve fidelity and effectiveness at the consumer level?” The answer is that core components that have been demonstrated to account for positive changes in the lives of consumers must be retained. The core intervention components are, by definition, essential to achieving good outcomes for consumers at an implementation site. However, understanding and adhering to the principles of intervention underlying each core component may allow for flexibility in form (e.g. processes and strategies) without sacrificing the function associated with the component. For example, Bierman, Coie, Dodge, Greenberg, Lochman, McMahon and Pinderhughes (2002) of The Conduct Prevention Research Group, noted in their analysis of the large-scale implementation of the school and community-based Fast Track Program that, “To maintain the fidelity of the prevention program, it was important to maintain a central focus on the protective and risk factors identified in developmental research, and to employ intervention strategies that had proven effective in previous clinical trials. Yet, at the same time, flexibility was needed to adapt the intervention in order to engage heterogeneous participants who represented a range of demographic characteristics and cultural backgrounds. In general, we focused on maintaining similarity across sites and groups in the principles of intervention, but allowing the process and implementation strategies to vary within these limits” (pp. 9-10). In practical terms, for example, this meant that acceptable ‘menus’ for skill presentations and a variety of practice activities were offered to allow group leaders of a child social-skill

The speed and effectiveness of implementation may depend upon knowing exactly what has to be in place to achieve the desired results for consumers and stakeholders: no more, and no less.

— Arthur & Blitz, 2000;
Fixsen & Blase, 1993; Winter &
Szulanski, 2001

Evidence-based programs consist of collections of practices that are done within known parameters and with accountability to the consumers and funders of those practices.

groups to tailor sessions to the interests and of the children (e.g. video presentation, modeling story, in vivo demonstrations). Thus, the specification of core intervention components becomes very important to the process of developing evidence-based practices and programs, preparing programs for large-scale implementation, and monitoring core components to ensure that underlying concepts and goals are adhered to over time and across sites.

In summary, knowing the core components of intervention programs and practices and their underlying principles may be an important aspect related to successful implementation efforts. Detailed descriptions are helpful and a good place to begin but the eventual specification of the core intervention components for any evidence-based program or practice may depend upon careful research and well-evaluated experiential learning from a number of attempted replications. Such research and replication efforts may promote an increasingly clear elucidation of the core intervention components and principles and an understanding of the flexibility and the limits to program modifications.

Evidence-Based Practices and Evidence-Based Programs

The focus of this monograph is on implementation, especially implementation of practices and programs that can help children, youths, families, and adults. Evidence-based practices are skills, techniques, and strategies that can be used by a practitioner. Examples of evidence-based *practices* include cognitive behavior therapy (Linehan, 1991), cognitive mapping (Dansereau & Dees, 2002), good behavior game (Embry, 2002), systematic desensitization (Wolpe & Lazarus, 1966), token economy motivation systems and social skills teaching strategies (Phillips, Phillips, Fixsen, & Wolf, 1974), and a variety of clinical practice guidelines (see below). Such practices describe core intervention components that have been shown to reliably produce desirable effects and can be used individually or in combination to form more complex procedures or programs (Embry, 2004).

Evidence-based *programs* consist of collections of practices that are done within known parameters (philosophy, values, service delivery structure, and treatment components) and with accountability to the consumers and funders of those practices. Evidence-based programs represent a way to translate the conceptual, goal-oriented needs of program funders and agency directors into the specific methods necessary for effective treatment, management, and quality control.

Such programs, for example, may seek to integrate a number of intervention practices (e.g., social skills training, behavioral parent training, cognitive behavior therapy) within a specific service delivery setting (e.g., office-based, family-based, foster home, group home, classroom) and organizational context (e.g., hospital, school, not-for-profit community agency, business) for a given population (e.g., children with severe emotional disturbances, adults with co-occurring disorders, children at risk of developing severe conduct disorders). Examples of evidence-based programs include Assertive Community Treatment (Stein & Test, 1978), Functional Family Therapy (Alexander & Parsons, 1973), Multisystemic Therapy (Henggeler & Borduin, 1990), and Supported Employment (Bond, Drake, Mueser, & Becker, 1997).

When evaluating the intervention research literature, distinctions often are made between practices and programs. However, practices and programs share a great deal of common ground with respect to implementation.

Practices often are seen as simpler procedures that can be adopted for use when and where appropriate by individual practitioners. It is expected that practitioners might make use of many evidence-based practices in the course of providing treatment (Chorpita et al., 2002). However, successful implementation of clinical practices has not been a simple matter. For example, a major implementation effort has been underway in medicine to reduce research findings and best practices to “clinical guidelines” that can be used by medical staff to eliminate errors, reduce variability, and improve consumer outcomes. Mittman, Tonesk & Jacobson (1992) found that, “Modifying health practitioners’ behavior to conform more closely to practice guidelines and other recommended practices has proved to be a difficult task” (p. 413). DeBattista, Trivedi, Kern, & Lembke (2002) concluded that, “Even

when guidelines are carefully implemented through intensive physician education or well publicized through distribution or publication, their use and influence in clinical practice remains elusive... Evidence suggests that even if a physician adheres to a guideline initially, adherence often diminishes over time” (p. 662).

Similarly, Saliba et al., (2003) assessed nursing home clinicians’ adherence to the Agency for Healthcare Research and Quality (AHRQ) pressure ulcers guidelines. The study found adherence to only 41% of the fifteen guidelines and 50% adherence to the 6 key recommendations. According to the authors, variation in implementation of guidelines was found to be evident even among nursing homes with the same owners and reimbursement structures. Sheldon et al., (2004) examined patient records in a national survey of implementation of nine practice guidelines in England. They found evidence that 2 of the 9 guidelines were being implemented generally. They also found that managerial, financial, and clinical perspectives often did not support changes in physician behavior (e.g., changes in health care funding, competing priorities, funding deficits, staff shortages, staff turnover, professional bureaucracies that effectively resist change and external influences from network partners) and were barriers to effective implementation.

Nevertheless, evidence-based practices have been implemented successfully. Perlstein (2000) evaluated a multi-component approach to the implementation of a practice guideline for bronchitis. Implementation was successful when training for medical staff was followed with daily rounds by the clinical coordinator to prompt and reinforce use of guideline principles (coaching). The clinical coordinator was a respected person with high credibility, was dedicated to assuring use of the guideline, and had the authority to remove barriers to implementation at the practice level. Similarly, Perry (2003) assessed a multi-component approach to the use of clinical practice guidelines for nutritional support in acute stroke. In this study, training of medical staff (teaching combined with practice sessions to develop skills), use of opinion leaders, and audit and feedback were coupled with a project coordinator who was trained in change management, critical appraisal skills, and methods to embed evidence-based practices.

The Dissemination Working Group (1999) defined the common elements of evidence-based programs as having:

1. Clear philosophy, beliefs, and values that: a) provide guidance for all clinical judgments, program decisions, and evaluations; b) are fully integrated with actual operations and treatment delivery; and c) promote consistency, integrity, and sustainable effort across all program components.
2. Specific treatment components (treatment technologies) that promote consistency across clinical people at the level of actual implementation of treatment procedures.
3. Treatment decision making (within the program framework) that is invested in each clinical staff person with accountability systems for staff and programs.
4. Structured service delivery components that include an organizational context to facilitate treatment, a definition of service location and duration, staff development systems, and specification of clinical staff: client ratios and clinical staff: supervision ratios.
5. Continuous improvement components that encourage innovation with scrutiny over a long enough period of time to see if the innovation is beneficial to children, families, the organization, or community.

In summary, from an implementation point of view, it appears from these studies that practices share many components of programs. That is, specific practices are embedded in an organizational context and each must be accounted for if implementation is to be successful. It seems that evidence-based practices and programs occupy two sides of the same coin and appear to have similar requirements for successful implementation.

Implementing Practices within Organizations

As we worked our way through hundreds of articles it became clear that treatment procedures do not exist in isolation. Treatment occurs in context and that context is important to the success of implementation attempts (Bauman et al., 1991; Bernfeld, 2001; Blase et al., 1984; Hyde, Falls, Morris, Schoenwald, 2003; Leschied & Cunningham, 2002; Schoenwald & Hoagwood, 2001). Figure 2 shows the implementation framework applied to implementation of evidence-based practices within an organization:

- The SOURCE is the set of core intervention components that define a given evidence-based practice or a “packaged” evidence-based program,
- The DESTINATION is the practitioner who works directly with the consumer of the service,
- The COMMUNICATION LINK is the set of implementation drivers (core implementation components, see below) provided within the service organization to assure that the practitioner has the prerequisite knowledge, skills, and abilities and continuing resources necessary to provide the core intervention components competently,
- The FEEDBACK mechanisms are the fidelity, staff evaluation, and program evaluation measures that are collected and routinely used to guide decision making at the practitioner, supervisor, and manager levels of the organization, and
- The entire process is INFLUENCED by a range of local and state professional and socio-political factors including funding, licensing, regulation, labor relations, community relations, and agency collaboration (e.g., Bierman et al., 2002).

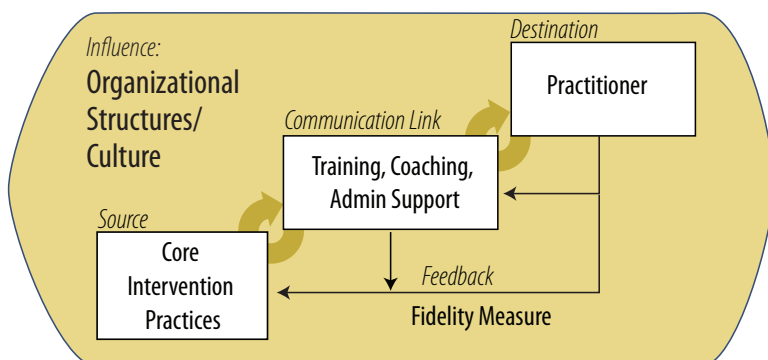
Core Components for Implementation

Overview and Definitions

Based on the commonalities among successfully implemented practices and programs found in the literature, several core implementation components were identified. The goal of implementation is to have practitioners base their interactions with clients and stakeholders on research findings (evidence-based practices or practices within evidence-based programs). To accomplish this, high-fidelity practitioner behavior is created and supported by core implementation components (also called “implementation drivers”). These components are *staff selection, preservice and inservice training, ongoing consultation and coaching, staff and program evaluation, facilitative administrative support, and systems interventions*. These interactive processes are integrated to maximize their influence on staff behavior and the organizational culture. The interactive implementation drivers also compensate for one another so that a weakness in one component can be overcome by strengths in other components. These core implementation components (implementation drivers) are shown in Figure 3.

As noted, the core implementation components are integrated and compensatory. Thus, a description of the components could start anywhere on the circle. For ease of description, we will begin with *practitioner selection*. Who is qualified to carry out the evidence-based practices and programs? What are the methods for recruiting and selecting those practitioners? Beyond academic qualifications or experience factors, certain practitioner characteristics are difficult to teach in training sessions so must be part of the selection criteria (e.g., knowledge of the field, common sense, social justice, ethics, willingness to learn, willingness to intervene, good judgment). Some programs are purposefully designed to minimize the need for careful selection. For example, the SMART program for tutoring reading was designed to accept any adult volunteer who could read and was willing to spend 2 days a week tutoring a child (Baker, Gersten, & Keating, 2000). Others have specific requirements for practitioner qualifications (e.g., Chamberlain, 2003; Phillips, Burns, & Edgar, 2001; Schoenwald, Brown, & Henggeler, 2000) and competencies (e.g., Blase

Figure 2
Implementation Framework Applied to Developing Evidence-based Intervention Practices within Organizations.

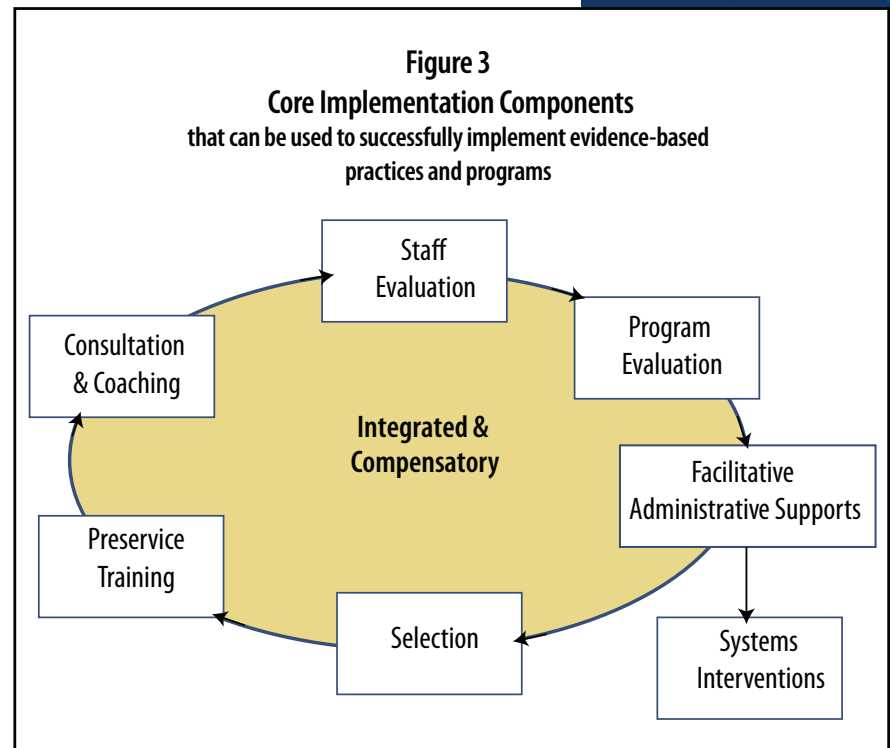


et al., 1984; Maloney, Phillips, Fixsen & Wolf, 1975; Reiter-Lavery, 2004).

Staff selection also represents the intersection with a variety of larger system variables. General workforce development issues, the overall economy, organizational financing, the demands of the evidence-based program in terms of time and skill, and so on impact the availability of staff for human service programs. For example, the Teaching-Family treatment group homes in Texas had many applicants for Teaching-Parent positions when the price of oil was low and very few when the price of oil was high and people could earn much higher salaries in the oil business. Also, as the national Teaching-Family program expanded, the demand for certified Teaching-Parents increased substantially and salaries more than doubled in just a few years. The move toward evidence-based practices and programs in human services has prompted concerns about advanced education, the availability of a suitable workforce, and sources of funding highly skilled practitioners (Blase & Fixsen, 1981; O'Connell, Morris, & Hoge, 2004).

Innovations such as evidence-based practices and programs represent new ways of providing treatment and support. 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; introduce the components and rationales of key practices; and provide opportunities to practice new skills and receive feedback in a safe training environment. Most skills needed by successful practitioners can be introduced in training but really are learned on the job with the help of a *consultant/coach* (e.g., craft information, engagement, treatment planning, teaching to concepts, clinical judgment). Implementation of evidence-based practices requires behavior change at the practitioner, supervisory, and administrative support levels. Training and coaching are the principle ways in which behavior change is brought about for carefully selected staff in the beginning stages of implementation and throughout the life of evidence-based practices and programs.

Staff evaluation is designed to assess the use and outcomes of the skills that are reflected in the selection criteria, are taught in training, and reinforced and expanded in consultation and



coaching processes. Assessments of practitioner performance and measures of fidelity also provide useful feedback to managers and purveyors regarding the progress of implementation efforts and the usefulness of training and coaching. Program evaluation (e.g., quality improvement information, organizational fidelity measures) assesses key aspects of the overall performance of the organization to help assure continuing implementation of the core intervention components over time.

Facilitative administration provides leadership and makes use of a range of data inputs to inform decision making, support the overall processes, and keep staff organized and focused on the desired clinical outcomes. Finally, *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.

As noted earlier, the implementation drivers are integrated and compensatory. Huber et al., (2003) described highly effective hospital management systems that included recruitment and prescreening for basic qualifications and personality characteristics; interview procedures designed to give information about the goals, philosophy, and

functions of the hospital as well as getting information about work experience and style; post-hiring orientation to the workplace and specific role of the person and cross training on related roles; ongoing training and education focusing on specific skills needed, and in-services and monthly dinners for discussion; performance evaluations based on direct observation to assess practice knowledge, communication skills, and use of time with prompt verbal feedback followed by a write up with recommendations; and quality improvement information systems to help the managers keep the system on track. McGuire (2001) underscores the importance of staff selection, staff training, and facilitative administrative supports by stating that “even well-designed intervention programmes (sic) may have nil and possibly even negative effects if the quality of delivery is poor... There are no known treatment or training materials that will achieve their goals in the absence of trained and committed staff with adequate resources and managerial support” (p. 34).

The integrated and compensatory nature of the core implementation components represents a challenge for implementation and sustainability. Organizations are dynamic, so there is ebb and flow to the relative contribution of each component to the overall outcomes. The feedback loops are critical to keeping the evidence-based program “on track” in the midst of a sea of change. If the feedback loops (staff evaluations or program evaluations) 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 implementation driver require adjustments in

other implementation drivers as well. Many well-run human service programs would fit the model shown in Figure 3. They are coherent, organized, mission-oriented, effective, and well evaluated.

The importance of integrated implementation drivers was illustrated by a meta-analysis of research on training and coaching carried out by Joyce & Showers (2002). They summarized several years of systematic research on training teachers in the public schools. As shown in Table 1, training that only consisted of theory and discussion produced a modest gain in knowledge and the ability of teachers to demonstrate the new skills in the protected training environment but there was no transfer to the classroom. More substantial gains were made when demonstration, practice, and feedback were added to theory and discussion in a training workshop, but still with little use of the new skills in the classroom (Rogers, 2002, estimated that in business about 10% of what is taught in training is actually transferred to the job). When on-the-job coaching was added large gains were seen in knowledge, ability to demonstrate the skills, and use of the new skills in the classroom with students. Joyce & Showers (2002) also note that training and coaching can only be done with the full support and participation of school administrators and works best with teachers who are willing and able to be fully involved.

The descriptions of core implementation components (implementation drivers) provide a way to think about implementation. A given practice or program may require more or less of any given component in order to be implemented successfully and some practices may be designed specifically to eliminate the need for one or more of the components (e.g., Baker et al., 2000; Embry, 2004). In addition, given the compensatory nature of the components, less training may be supplemented with greater amounts of coaching. Or, careful selection and very well designed staff performance evaluations may compensate for less training and little coaching. However, when planning for national implementation with fidelity and good effect for consumers, careful consideration should be given to each implementation driver.

Table 1
A Summary of a Meta-analysis of the Effects of Training and Coaching on Teachers' Implementation in the Classroom (Joyce & Showers, 2002)

TRAINING COMPONENTS	OUTCOMES		
	(% of participants who demonstrate knowledge, demonstrate new skills in a training setting, and use new skills in the classroom)		
	Knowledge	Skill Demonstration	Use in the Classroom
Theory and Discussion	10%	5%	0%
+ Demonstration in Training	30%	20%	0%
+ Practice & Feedback in Training	60%	60%	5%
+ Coaching in Classroom	95%	95%	95%

Sources of Core Implementation Components

Who provides the selection, training, coaching, evaluation, and administrative support services at an implementation site? Who intervenes with larger systems when needed? Will this be done by people inside the organization or contracted to individuals or groups outside the implementation site? For example, implementation sites using Multisystemic Therapy participate in a complex mix of implementation drivers. Practitioners in new Multisystemic Therapy implementation sites are selected by the implementation site based on MST Services, Inc. criteria, trained by MST Services, Inc. at a central location in South Carolina, coached by local consultants who are trained and coached by MST Services, Inc. consultants, evaluated via monthly submissions of fidelity results to the MST website, and administratively supported by the implementation site (Schoenwald et al., 2000). At least initially, interventions in larger systems issues (referrals, funding streams, interagency collaboration) are carried out jointly by MST Services, Inc. and the implementation site. For Multidimensional Treatment Foster Care (MDTFC), the implementation site identifies a core group to be trained (an administrator, supervisor, therapist, and a foster-parent trainer/recruiter) in a 3-day training session in Oregon that 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, conduct additional training with the core staff group, and introduce them to the parent daily report (PDR) web site. After youths are placed in the foster homes, the Oregon staff monitors the PDR data, and the Oregon staff provide weekly telephone consultation to the program supervisor and therapist. During the first year of implementation, the Oregon staff provide 3 additional 2-day training sessions at the implementation site. A similar hybrid system for providing implementation drivers is used with the adult mental health “tool kits” (Drake et al., 2001; Bond, et al., 2001; Mueser, Torrey, Lynde, Singer, & Drake, 2003). Although not as organized and purposeful as MST Services, Inc. or MDTFC, adult tool kit practitioners are selected by the implementation site, trained at the implementation site by contracted trainers,

supervised by the implementation site with (usually) telephone consultation from a contracted expert in the adult mental health program, perhaps evaluated by the implementation site, and administratively supported by the implementation site. The Nurse-Family Partnership (Olds, 2002; Olds, Hill, O’Brien, Racine, & Moritz, 2003) has formed the National Center for Children, Families, and Communities to replicate their program in new communities. As the purveyor of the Nurse-Family Partnership, the National Center works with communities to assure that sufficient capacity exists to carry out the program with fidelity and sustain it over time. The purveyor works with the community to assure adequate need, consensus that the program will benefit the community, and that the program is a good fit with the community and the host organization. A detailed program implementation plan is negotiated with the community and organization (re: client and staff recruitment, space and technological support for staff, organizational policies and operating culture, coordination and fit with other early intervention services, and funding). Funding is scrutinized to assure that it is sustainable, allows for the full range of services to infants and mothers (health, parenting, life course), is a case rate (not per visit), and is sufficient to attract and retain skilled nurse visitors. The plans are put into a contract and signed by all parties. An implementation site begins with a minimum of 4 full-time nurse visitors and a supervisor. Selection of nurses is based on a minimum BSN degree and “basic personal qualifications” to do the work. Staff training is done by the purveyor with a thorough orientation to the program and training on guidelines and techniques. Supervisors are trained as well. Training is conducted over 18 months with different modules designed to coincide with the developmental stages of infants and toddlers encountered by a Nurse in his or her first group of families. Program evaluation and quality improvement are assessed via the Clinical

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 organization.

Information System, a web-based system designed to collect data on a set of outcome variables for every family. Data are used to assess progress at new sites and used to inform feedback and corrective action for each site. Data also are used to change the program itself to make it more usable and effective, and used to assess how data from “typical applications” differ from the randomized clinical trials. Purveyors consult with implementation sites monthly via phone calls to discuss program management, community coordination, funding, and any issues with the services being provided. Purveyors also intervene in systems at local and state levels to assure adequate funding and support for the program over time.

In these systems, the ongoing operations of an implementation site are always tied to the work of outside contractors. While these hybrid systems probably retain the compensatory benefits discussed above, ongoing integration of core treatment components and implementation driver functions may be difficult to achieve and maintain over the years. A different approach (see the following section) is to develop regional implementation sites that have the full capacity to provide all of the core implementation components within their own organization (these are sometimes called “intermediary organizations”). For example, in the Teaching-Family Model, staff members employed by an implementation site are specially trained to provide selection, training, coaching, evaluation, facilitative administration, and systems interventions for treatment group homes within easy driving distance (Blase et al., 1984; Wolf et al., 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 measured at the implementation site level to assure competent delivery of the core implementation components (see section on fidelity below). Purveyors of Functional Family Therapy also work to develop self-sufficient implementation sites (Sexton & Alexander, 2000) and, recently, MST Services, Inc. has begun to develop organizations (“network partners”) to provide training and support services at a more local level.

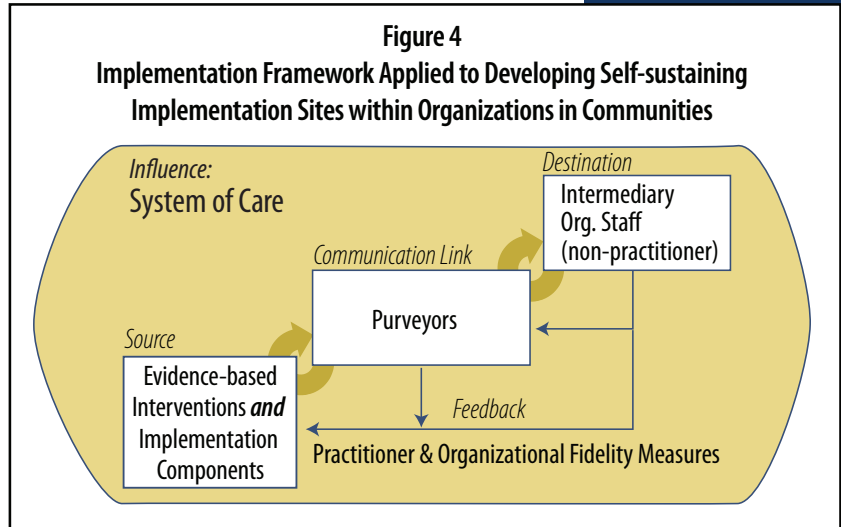
Developing Self-Sustaining Implementation Sites

If evidence-based practices are implemented and sustained within organizations, how can we produce more organizations that routinely provide evidence-based practices to consumers? How can openings due to turnover or expansion be promptly filled with a steady supply of competent practitioners over the long term (20 years and more)?

In this section, the goal of implementation shifts to developing self-sustaining implementation sites (i.e., whole organizations or new ‘departments’ in existing organizations). These new organizations may be developed from the ground up specifically to host the evidence-based program but, more often, implementation involves adding new programs and practices to existing organizations, which requires significant organizational change. Managing the organizational change process (maintaining the old while installing the new, changing internal support systems while maintaining daily treatment and care functions) adds another interesting dimension to the tasks that face the host organization and the purveyors who are helping with implementation (Al-Mashari & Al-Mudimigh, 2003; Blase et al., 1984; Bond et al., 2001; Corrigan & Boyle, 2003; Fixsen et al., 1978; Reppucci & Saunders, 1974; Shadish, 1984; Solberg, Hroscikoski, Sperl-Hillen, O’Connor, & Crabtree, 2004; Zins & Illback, 1995). In any case, a whole evidence-based program with defined core intervention and core implementation components is now viewed as the SOURCE that is to be implemented in organizations in new communities (DESTINATION). With respect to implementation of evidence-based programs and/or practices along with defined implementation drivers (e.g. selection, training, coaching) within organizations:

- The SOURCE now comprises not only the core intervention components but also the core implementation components. That is, the specifics related to selection, training, coaching, evaluation, administrative supports, and systems intervention strategies and procedures that have been demonstrated to be critical to support the core intervention components employed by practitioners,

- The **DESTINATION** is an organization that not only has agreed to undergo the changes necessary to implement the evidence-based program but also has agreed to develop the functions to sustain the program or practice by installing the core implementation components.
- The **COMMUNICATION LINK** is a group of individuals representing a program or practice (purveyors) who work with communities, organizations, and staff members in an attempt to educate others about the program or practice; actively work with the identified organization to implement a given evidence-based practice or program with fidelity and good effect and over time ensure that the core implementation components are embedded in the organization. Purveyors help select, train, coach and administratively support the new trainers, coaches, evaluators, and administrators employed by the organization to assure that they have the prerequisite knowledge, skills, and abilities and continuing resources necessary to competently develop, support and sustain skilled practitioners,
- The **FEEDBACK** mechanisms are practitioner fidelity (e.g. engaging in evidence-based interventions) and organizational fidelity measures (e.g. fidelity measures associated with selection, training, coaching) that are routinely collected and used to guide decision making at the purveyor level and at the management levels of the organization,
- The entire process is **INFLUENCED** by the existing system of care, i.e. a range of local, state and national professional and socio-political factors including funding, licensing, and regulation as well as community relations, agency collaboration, labor relations, and historical factors pertaining to the local system of care.



In this scenario, the implementation drivers are important in two ways. As we have seen, the implementation drivers seem to be necessary to have practitioners successfully use evidence-based practices within organizations. Where do the trainers, coaches, evaluators, and administrators who utilize these implementation drivers come from? How do they acquire their knowledge and skills? In the next iteration, at the organizational implementation level (Figure 4), the implementation drivers are used by the purveyor to prepare other (non-practitioner) staff members at an implementation site. In this instance the purveyors serve as the **COMMUNICATION LINK** using the implementation drivers at this new level in order to:

- select (S) an implementation site based on certain assessment criteria,
- select (S) implementation site staff for key roles as trainers, consultants, evaluators, and administrators
- train (T) the implementation site staff in the staff selection, training, consultation/coaching, evaluation, and facilitative administrative supports and systems intervention methods required to produce conducive setting conditions, develop practitioner skills and support and sustain practitioners to carry out the evidence-based treatment procedures with fidelity,
- consult and coach (C) the implementation site staff as they carry out the staff selection, training, consultation/coaching, evaluation, facilitative administrative supports, and system interventions within the implementation site,

- evaluate (E) the performance of implementation site staff as they carry out the staff selection, training, consultation/coaching, evaluation, facilitative administrative supports, and systems interventions,
- administratively support (A) the implementation site staff and others as they carry out necessary organizational changes at the implementation site, and
- engage in systems interventions (SI) on behalf of the implementation site to help ensure conducive operating conditions are established and remain in place or are improved.

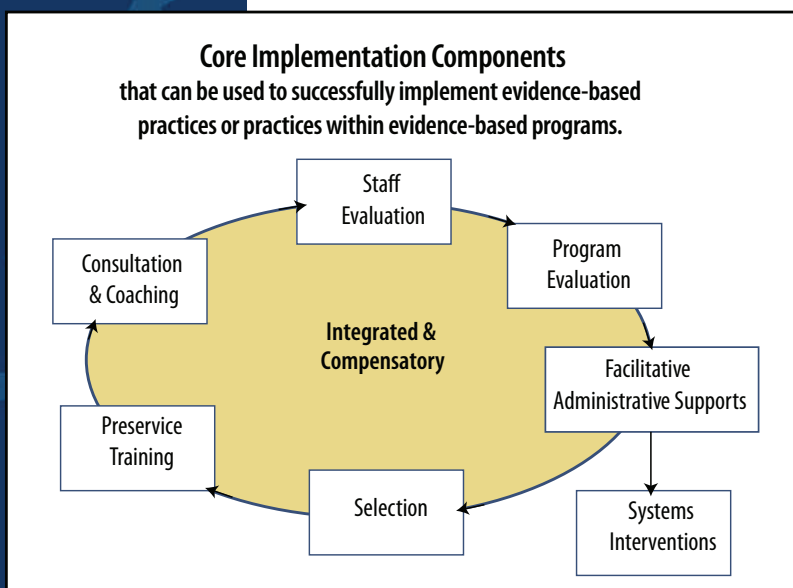
Training and coaching trainers, consultants, evaluators, and administrators, assuring implementation and integration of all these implementation components, evaluating their fidelity and effectiveness, and ushering organizations through the organizational change processes necessary to accommodate the new evidence-based program is a set of daunting tasks. It may take more time initially to implement an evidence-based program in this manner (about three years, Fixsen et al., 2001) but the long-term result may be worth it in terms of sustainable quality services (e.g., Blase et al., 1984; Fixsen et al., 2001; Kasul & Motwani, 1997; Khatri & Frieden, 2002; Ogden, Forgatch, Bullock, & Askeland, in press).

National Implementation Efforts

The use of implementation drivers at a national level has been tried. In an attempt to implement an AIDS education nationally in Zimbabwe, a “cascade model” of training trainers was used (O’Donoghue, 2002). National trainers were trained by the program development staff. The national trainers trained trainers at the regional level who trained trainers at the district level who trained trainers at a “school-cluster” level who trained teachers to deliver the AIDS curriculum to students in the classroom. At the end of the chain evaluation findings indicated that only 1/3 of the teachers said they had received AIDS training and fewer understood participatory teaching, a core intervention component for teaching the AIDS curriculum. The evaluation found that quality of training diminished as it moved through the various levels down to the teachers. In Zimbabwe, little attention was given to selection, modest efforts were made to coach the trainers, and there were no staff evaluation and fidelity assessments other than the eventual outcome evaluation (5 years later).

A similar, better planned approach was described by Khatri & Frieden (2002) for the implementation of the Directly Observed Therapy System (DOTS) for treating tuberculosis in India. Over a million people were treated and over 200,000 lives were saved with a savings of over \$400 million. A national approach also is being used in Norway to implement the parent management training Oregon model (Ogden et al., in press). In Norway, the second and third groups of trainers are being chosen from the ranks of practitioners who learned the program first hand. Data from this experiment should be available soon. From an implementation perspective, this is a well designed effort that attends to the implementation drivers throughout the process.

In summary, well planned and carefully executed implementation strategies can be used to improve services at the practitioner level, organizational level, and national level. In each case, the core implementation components seem to involve careful selection; staff training, coaching, and performance evaluation; program evaluation and facilitative administration; and methods for systems interventions.



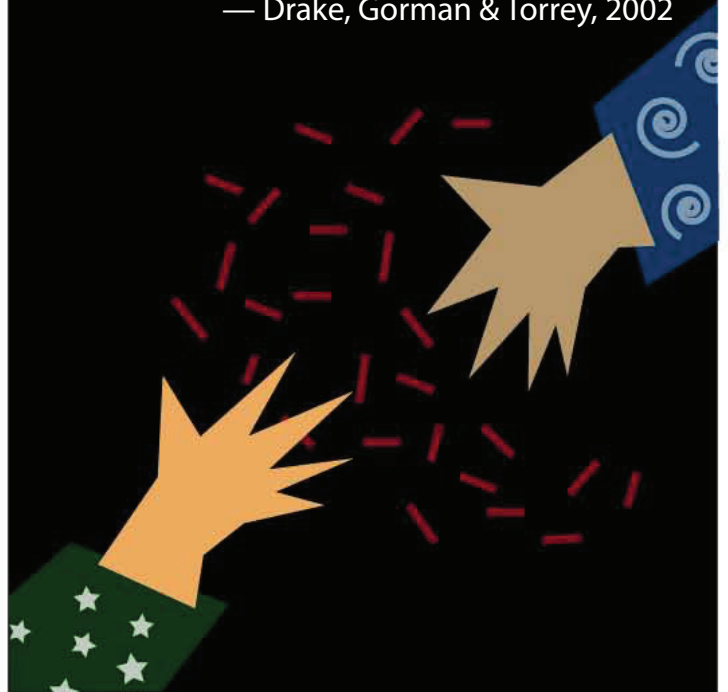
Chapter 5

Research on Core Implementation Components

- Staff Selection
- Staff Training
- Staff Coaching
- Evaluation and Fidelity

"We are faced with the paradox of non-evidence-based implementation of evidence-based programs."

— Drake, Gorman & Torrey, 2002





Research on Core Implementation Components

Selection of staff is important to having effective practitioners, excellent trainers, effective coaches, skilled evaluators, facilitative administrators, or effective purveyors.

Logically, desired changes in important consumer outcomes in human services can only be achieved by changing the behavior of practitioners.

To be sure, enabling policies are important, appropriate funding sources are important, organizational structures and cultures are important, facilitative administrative supports are important, and capable trainers, coaches, evaluators, and administrators are important. However, in the end, all of these important factors exert their influence on consumers indirectly, through practitioners. Practitioners who competently use core *intervention* components in their interactions with consumers can have the positive effects that are the promise of evidence-based practices and programs. Thus, critical functions of implementation consist of practitioner training, coaching the practitioner on the job, regularly assessing fidelity, and using that information to improve the performance of practitioners who are carefully selected for the position. With these core *implementation* components in place (and functioning at a high level of competence themselves), practitioner behavior can be routinely changed and improved to assure competent performance of evidence-based practices and programs.

This chapter summarizes the empirical foundations for these core implementation components. Each section contains an introduction to the component, an overview of the experimental research (functional analyses using rigorous designs) concerning the component, a brief discussion of factors that may affect implementation of the component (where this information is available), an overview of other research and literature reviews regarding the component, and a brief summary section. For the interest of some readers, the well-designed experimental studies also have been summarized in Appendix C.

Staff Selection

Staff selection has been proposed as an implementation driver although it is not discussed often and rarely evaluated in human service programs. Nevertheless, selection may be a key ingredient of implementation at every level:

- selection of practitioners,
- selection of organization staff (trainers, coaches, evaluators, administrators), and
- selection of staff for purveyor groups.

Selection of staff is important to having effective practitioners, excellent trainers, effective coaches, skilled evaluators, facilitative administrators, or effective purveyors. Not everyone is suited to each role. People who are outgoing and decisive may make good practitioners or purveyors. People who are methodical and comfortable making judgments based on specified criteria may make better evaluators. People who are more comfortable with public speaking and “performing” might make better trainers. With respect to given evidence-based practices or programs, the extent of knowledge and direct experience in the specific program or practice might be more critical for some positions than others.

Experimental Research on Selection

The factors involved in staff selection interviewing were the subject of a meta-analysis of research in business (McDaniel, Whetzel, Schmidt, & Maurer, 1994). The authors found that education and background, exchange of information, and role play/behavior vignettes were effective interview techniques that related to later work outcomes for employees. An analysis of education and background as a selection criterion for the Nurse-Family Partnership prevention program was conducted by Olds et al., (2002). In this study, training, consumer: practitioner ratios, etc. were the same for two groups of practitioners. Group 1 consisted of nurses (the standard for the Nurse-Family Partnership program).

Group 2 consisted of paraprofessionals who had a high school diploma (and no further education) and strong people skills. Group 2 (paraprofessionals) also had greater access to coaching with 2 supervisors for every 10 practitioners compared to 1 for 10 in Group 1 (nurses). The results showed that pregnant women and their newborn children benefited more from Group 1 practitioners (nurses), confirming the need for candidates to have a nursing degree and background to be successful practitioners within the Nurse-Family Partnership program. Given the expense of using nurses vs. paraprofessionals, it is unfortunate there were no fidelity measures and no indications of the variability of outcomes within each group of practitioners. Without fidelity measures, there are no clues regarding the functional ways in which the two groups differed and, therefore, no clues for how to direct future efforts at implementation program development (see the analysis of FFT outcomes by the Washington State Institute for Public Policy, 2002).

These experimental studies suggest that the methods and the criteria for selecting practitioners may be important to achieving eventual intervention outcomes.

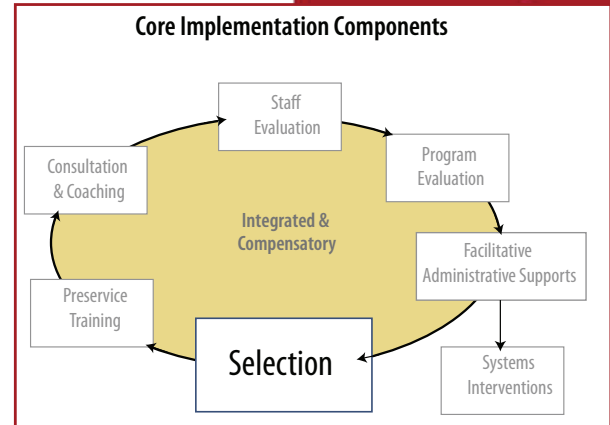
Practitioner Selection: Additional Evidence

Selection of practitioners is essential since it is at this level that evidence-based practices and programs are actually carried out (or not). Ager & O'May (2001) reviewed 103 intervention outcome studies and 42 staff "capacity to deliver" studies with regard to challenging behavior in persons with intellectual disability and acquired brain injury. They found that 25% of the primary deliverers of interventions were "researchers with...no formal or enduring relationship with the service setting," raising significant concerns about the likely success of any attempt at broad scale implementation. This finding points out that it is important to understand who is being employed to deliver evidence-based practices and programs, as reported in supporting research documents as well as during implementation (Diamond et al., 2002; Paine et al., 1984). Information on practitioners could include clear descriptions of inclusion-exclusion hiring criteria, candidate referral sources and interview procedures, exposure to skill building and professional development resources, and participation rates along with the more common

descriptions of academic and demographic characteristics of staff.

Descriptions of procedures and some data have been collected regarding practitioner selection. A manual was developed (Fixsen & Blase, 1996) to codify the process for selecting Teaching-Family homebased treatment

specialists including initial telephone contact to give information about the position and the difficulties of working in people's homes and neighborhoods, basic interview questions to get information about the candidate's capabilities, responses to behavioral vignettes, responses to role play situations, and responses to mini-training that requires behavior change and repractice in another role play. Variations of this selection process are used widely in national implementations of the Teaching-Family program (Blase et al., 1984; Fixsen et al., 1978; Maloney, Timbers, and Blase, 1977). One study analyzed the relationship between selection factors and later job performance for married couples that had applied to be Teaching-Parents in Teaching-Family treatment group homes. Maloney, et al. (1983) collected background information (years married, education, previous work experience) and measured interview behavior (responses to 10 behavioral vignettes, social interaction skills, receptivity to training, and overall interview performance) during the recruitment and hiring process. Compared with couples that were not hired, couples that were hired scored significantly higher on responses to the behavioral vignettes, receptivity to training, and overall interview performance (the social interaction skills factor was not a significant discriminator). Based on an evaluation of their performance on the job (3 - 5 months), the couples that were hired were divided into two groups: above or below the median performance for the group. The better performers were found to have differed significantly on their responses to the behavioral vignettes during the interview (but not the other three interview components). The better performers also had a higher GPA but the other background measures were not significantly different. The higher rated couples also stayed significantly longer on the job.



Research on the selection of staff to do large-scale implementation of evidence-based practices and programs is the next logical requirement in the overall scheme of things.

Another example of a behavior-based, structured selection process was reported by Reiter-Lavery (2004) for selecting therapists for MST programs nationally. Applications are screened for degree (master's preferred) and relevance of training and experience (family therapy, cognitive-behavioral approaches). Applicants then are interviewed. The first interview asks more general questions designed to get to know the candidate's style of interacting with others and solving problems and "fit" with MST ways of working. Those who successfully complete the first interview are invited to a second interview. In this interview, the details of the job are explained (e.g., how work is done, flexible hours) and the candidate's work and life experiences are explored in more detail. The final part of the interview is a series of role-play scenarios where a situation is presented then acted out with the candidate in the role of a family therapist. The candidate's responses are rated along several dimensions including collaborative and strength focused, efforts to overcome barriers, ability to use behavioral language, uses logical thinking, and is open to feedback.

Fisher & Chamberlain (2000) described the core implementation components of the Multidimensional Treatment Foster Care Program (MDTFC) including the methods to select new treatment foster parents. Advertising in various forms led to candidates who were screened for basic eligibility (adequate space in the home, no criminal history) before asking them to complete an application form. Program staff then made a home visit to meet the family, assess the family atmosphere, give detailed information about the program, and explain the training, supervision, and certification requirements. During the home visit they looked for empathy, knowledge of child development, a healthy sense of humor, willingness to take an active role in treatment, and ability to work within a structured program.

Huber et al., (2003) conducted a case study at one large hospital and commented on the fundamental importance of attracting, selecting, developing, and engaging staff in clinical settings to improve care, reduce turnover, and improve morale. In that system they did recruitment and prescreening for basic qualifications and personality characteristics, conducted interviews that consisted of giving information about the goals,

philosophy, and functions of the hospital as well as getting useful information about work experience and interaction styles of the candidates. Again, no data were reported on the outcomes or importance of the processes described. Wanberg & Banas (2000) studied practitioner characteristics in the context of organizational change at HUD and found that resilience, increased information, and self-efficacy were associated with greater acceptance of change in the workplace. These may be important selection characteristics for staff in organizations that are about to undergo changes as part of the implementation of an evidence-based program or practice.

Organization Staff Selection: Additional Evidence

Selection also is said to be important at the organizational level. Blase et al., (1984) and Fixsen & Blase (1993) described the process of selecting trainers, coaches, evaluators, and administrators to carry out the organizational change and development processes at new Teaching-Family implementation sites. Ogden et al., (in press) reported a similar process for selecting staff at the organizational levels in the national implementation of the parent management training Oregon model (PMTO) in Norway. Marks & Gersten (1998) studied the process of coaching with teachers across schools. Coaches were selected based on recommendations by district administrators who assessed candidate's ability to communicate information in a collegial style and ability to effectively teach students with learning disabilities in the regular classroom.

None of these descriptions included any data on the selection processes or criteria. However, a common theme was that the organizational staff needed to have a high level of understanding of the practices being implemented in the organization. For example, trainers or coaches in the Teaching-Family Model, PMTO program, Multidimensional Treatment Foster Care program, and the schools studied by Marks & Gersten (1998) all were required to have been practitioners in the program. In that way, they already had strong experiential knowledge and a detailed understanding of the intervention technology and only had to learn the new skills associated with being a trainer or coach.

Purveyor Staff Selection: Additional Evidence

Selection of staff at the purveyor level has been discussed by Bierman et al., (2002) and Blase et al. (1984) although no criteria or processes were noted. Havelock & Havelock (1974) described a curriculum for training “change agents” that provides a template for approaching training at the purveyor staff level although little information was provided regarding selection of candidates. Research on the selection of staff to do large-scale implementation of evidence-based practices and programs is the next logical requirement in the overall scheme of things.

Staff Selection Summary

Staff selection is a neglected area of implementation research. As implementation of evidence-based practices and programs becomes more of a national phenomenon, workforce issues likely will become much more important. There is increasing recognition of workforce development issues in behavioral health and groups such as the Annapolis Coalition on Behavioral Health Workforce Education (O’Connell et al., 2004) are discussing how to incorporate best practices in teaching methods, content, training sites, and student and instructor characteristics. Others (Morris & Stuart, 2002) are attempting to distill the generic skills needed by front-line practitioners in the behavioral health field (e.g., assessment skills, family and support system involvement, social and cultural engagement skills, treatment skills, methods to optimize recovery and empowerment, consumer relationship skills, and community resource management and coordination skills).

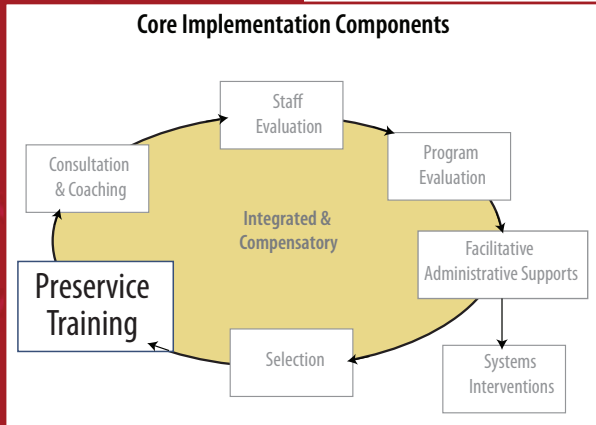
Research is needed to provide guidance to colleges and universities as they redesign their curricula to expose students to the basic theory and functions of evidence-based practices and programs, theories and methods of organizational and systems change, and a variety of evidence-based approaches in human service systems. Research on specific staff selection variables also will help promote success of implementations at each implementation site. Best practices for staff selection (core staff selection components) are not known although background, GPA, and direct observation and assessment of skills in behavioral vignettes may be important aspects of an inter-

view process for evidence-based practices and programs (Maloney et al., 1983; McDaniel et al., 1994; Olds et al., 2002).

Staff Training

Training appears to be a core implementation component for practitioners, agency staff, and purveyor staff. Rubenstein, Mittman, Yano, & Mulrow (2000) noted that, “Clinical services are delivered to patients through actions of health care providers, and the extent to which these actions mirror effective clinical practices determines quality of care. Effective interventions to improve health care reflect an understanding of health care provider behavior, the influences that shape it, and the methods that can be used to change it” (p. I-129). The content of training will vary considerably depending upon the evidence-based practice or program, clinical practice guideline, or management strategy that is being implemented. The methods of training seem to be less variable. There seem to be common approaches to imparting knowledge, skills, and abilities in programs to train practitioners (e.g., Bedlington, Booth, Fixsen, & Leavitt, 1996; Joyce & Showers, 2002; Schoenwald et al, 2000), trainers (e.g., Braukmann & Blase, 1979; Ogen et al., in press), coaches (e.g., Smart, Blase, et al., 1979; Joyce & Showers, 2003), fidelity evaluators (Davis, Warfel, Maloney, Blase, & Fixsen, 1979; Wineman, et al., 1979), and administrators (Baron, Watson, Coughlin, Fixsen, & Phillips, 1979; Atherton, Mbeke, & Nyalusi, 1999). During training, information about history, theory, philosophy, and rationales for program components and practices can be conveyed in lecture and discussion formats geared to knowledge acquisition and understanding. Skills and abilities related to carrying out the program components and practices can be demonstrated (live or on tape) then followed by behavior rehearsal to practice the skills and receive feedback on the practice (Blase et al., 1984; Joyce & Showers, 2002; Kealey, Peterson, Gaul, & Dinh, 2000).

Some programs have developed manuals for training practitioners (e.g., Bedlington et al., 1996; Braukmann & Blase, 1979; Schoenwald et al, 2003; VanDenBerg & Grealish, 1998), training trainers (Dreisbach & Smart, 1980),



The “train-and-hope” approach (Stokes & Baer, 1977) to implementation does not appear to work.

and training behavior rehearsal leaders and confederates (Dreisbach, Luger, Ritter, & Smart, 1979; Luger, Dreisbach, Smart, & Smart, 1979). The authors of these manuals point out a difference between role play (“pretend you are someone else and try this”) and

behavior rehearsal (“you are in your position as a practitioner and you are confronted with the following”). Role plays might sharpen a practitioner’s understanding or empathy. Behavior rehearsals are direct preparation for the real thing and are meant to be as much like the clinical setting as possible.

Factors that Impact Training

Several factors are thought to impact training (again, supporting data are lacking). Buston, Wight, Hart, & Scott (2002), evaluated the implementation of a sex education curriculum in Scottish schools. In the process of doing the study, they found that it was difficult to secure release time for teachers to participate in training, absences and turnover negatively impacted availability for training, and role play was difficult for teachers. Joyce & Showers (2002) noted that new learning that is outside the experience of the trainee or new learning that requires a more complex repertoire of skills is more difficult for trainees to learn and master and demands greater planning and precision from the trainers and coaches.

Joyce & Showers also emphasize that the content of training must be useful and, ultimately, beneficial to consumers. They examined the teacher training content for one state and found that, even if implemented completely, only 5% of the content being taught to teachers was different enough from common practice to have any possible benefit to children. Evidence-based practices and programs that have well defined core intervention components should be able to meet this criterion of potential benefit.

Experimental Research on Training Outcomes

As has been shown in a variety of settings, the “train-and-hope” approach (Stokes & Baer, 1977) to implementation does not appear to work. In the Schectman, et al. (2003) study discussed in Chapter 3, physicians randomly assigned to the physician education and feedback on usage group were not different from the control group with regard to adherence to clinical guidelines. Kelly et al., (2000) randomly assigned HIV service organizations to one of three groups: technical assistance manuals only, manuals plus a 2-day training workshop, or manuals plus training plus follow-up consultation. The addition of training produced a modest gain compared to the manuals-only group but the largest increase in reported adoptions of the HIV service guidelines occurred when consultation was added to training.

Smeele, et al. (1999) randomly assigned physicians to a non-intervention control group or a group that received an intensive small group education and peer review program. The results showed that the physicians in the experimental group demonstrated increased knowledge of the clinical guidelines pertaining to asthma and chronic obstructive pulmonary disease but patient care was not changed. McCormick et al., (1995) randomly assigned 22 school districts to experimental or control conditions. Health teachers and administrators in each group were provided with curriculum materials. In addition, the experimental group health teachers and administrators were given in-depth training on the use of a tobacco use prevention curriculum. The results indicated that teachers who had been trained were more likely to use more of the curriculum compared to control teachers. However, for health teachers in both groups combined, only 23% of the teachers initially used at least 90% of the curriculum and only 14% continued to use the curriculum for one year. Joyce & Showers’ (2002) meta-analysis of research on training and coaching in education was reviewed in detail in Chapter 3. Those results showed little change in classroom performance as a result of teacher training by itself or in combination with feedback on performance. A meta-analysis (Davis, 1995) found similar results in medicine. Davis concluded that, “formal CME conferences and activities, without enabling or practice reinforcing strategies, had little impact” (p. 700).

These experimental studies suggest that train-

ing by itself does not result in positive implementation outcomes (changes in practitioner behavior in the clinical setting) or intervention outcomes (benefits to consumers).

Experimental Research on Training Methods

While they are not effective by themselves for producing changes in clinical settings, training workshops are an efficient way to impart important information to practitioners and, when coupled with coaching, can contribute to important outcomes (e.g., Joyce & Showers, 2002). Some of the core components of training have been identified in experimental studies.

A series of studies was carried out by researchers attempting to implement the Teaching-Family Model. Kirigin et al., (1975) conducted an experimental analysis of the effects of training for Teaching-Parents (married couples who staff Teaching-Family group home programs). Training consisted of a 5-day workshop with presentations and discussion of history, theory, and philosophy; descriptions and demonstrations of skills; and behavior rehearsal of skills to criteria for mastery. Using a multiple-baseline design across participants, the authors found training produced significant improvements in key aspects of the “teaching interaction,” a core component of the Teaching-Family Model. A systematic replication was conducted by Maloney et al., (1975) with similar results: instructions plus practice plus feedback on practice were most effective in teaching skills important to the operation of a Teaching-Family group home.

Additional research on practitioner training was conducted by Dancer et al., (1978). As part of a 6 day, 50 hour preservice training workshop, one section (2 hrs) was for teaching “observing and describing behavior,” a foundation skill for other skills integral to the Teaching-Family Model (e.g., teaching social, academic, and self-care skills; providing feedback to youths regarding their ongoing behavior; and working with teachers and parents). Material was presented using brief lectures, discussions, live and video modeling, behavioral rehearsal to criterion, and constructive feedback. Using a multiple baseline design across groups, measures of observing and describing skills improved substantially after training. Another component of the Teaching-Family treatment program is provid-

ing personal rationales to youths (descriptions of natural and explicit consequences that may result from a youth’s behavior). Braukmann, Kirigin Ramp, Braukmann, Willner, & Wolf (1983) used a multiple baseline design to assess the effects of training consisting of a self-instruction manual, lecture/discussion, and behavior rehearsal on the use of rationales. Social validity was assessed via ratings by girls referred for delinquency issues in a Teaching-Family Model group home. Training produced large changes in the use of rationales and social validity ratings indicated that the girls preferred interactions that included rationales.

These experimental studies combined with the meta-analysis of research studies carried out by Joyce & Showers (2002) indicate that effective training workshops appear to consist of presenting information (knowledge), providing demonstrations (live or taped) of the important aspects of the practice or program, and assuring opportunities to practice key skills in the training setting (behavior rehearsal).

Training Practitioners: Additional Evidence

While there is wide agreement about the need for training as an important part of the implementation process, there are fewer studies that directly assess the impact of training on participants’ implementation in work settings. Dixon et al., (1999) compared implementation in 4 agencies where staff received a standard didactic presentation (lecture and discussion of the model and supporting data) with implementation in 5 agencies where staff received the standard presentation plus intensive training (information, discussion, demonstrations, role play). None of the standard presentation sites changed their approach to family services while 3 of the 5 agencies whose staff received intensive training did enhance their family services to some degree.

Kealey et al., (2000) reported the results of training about 500 teachers in 20 school districts in a smoking prevention program. Training included presentation of theory, description of skills, modeling of new skills and methods, and practice with feedback. A modest level of coaching was provided after the workshop. Ratings of the training workshops were high and teachers reported feeling prepared and confident upon completion of the workshops. Over 85% of the teachers were

Effective training workshops appear to consist of presenting information (knowledge), providing demonstrations (live or taped) of the important aspects of the practice or program, and assuring opportunities to practice key skills in the training setting (behavior rehearsal).

Recommendations for Training:

- Emphasize practice and use feedback on practice to teach the finer points.
- Use practice sessions to help trainees integrate thinking and doing.
- Provide guidance with respect to the boundaries of using the technique, describing when it may be useful and when it may not be useful.
- Provide guidance on the flexible use of the core components.
- Encourage peer and administrative support.

observed during the first year after training and teachers delivered 89% of the smoking prevention lessons according to the protocol. They concluded that practitioners must be motivated to adopt new practices, know what actions constitute the practices, have the tools to perform those actions, and have the ability and confidence to perform those actions (self-efficacy).

Ross, Luepker, Nelson, Saavedra, & Hubbard (1991) evaluated training for health education teachers in experimental schools that adopted the Teenage Health Teaching Modules (THTM). The modules originally were designed to be used without any training for health education teachers because training was thought to be too costly and therefore would hinder use of the curriculum. To test this assumption, training was offered to a group of randomly selected teachers and not offered to another group of randomly selected teachers. The analysis focused on 45 teachers who were trained and 25 who were not trained. Training consisted on 20 hours of orientation to the modules, practice on brainstorming and role-play-instructional methods, and discussion followed by telephone consultation. The results indicated that the trained teachers completed significantly more of the activities required in the modules and modified fewer of them compared to untrained teachers. In addition, students in the classes taught by trained teachers made significant gains in health knowledge and attitude scores while the students in classes taught by untrained teachers were no different pre to post. Thus, while teacher training added to the cost, effective use of the curriculum did not occur without the benefits of the training experience.

Dansereau & Dees (2002) discuss the development and evolution of a process for training counselors to use cognitive mapping, a method for spatially organizing and relating ideas, feelings, and actions with a consumer. Effective training processes were developed through an iterative process of defining the basic components of mapping, teaching those components to a group of counselors, coaching the counselors as they attempted to use mapping, then evaluating how the counselors did with respect to fidelity, competence, and comfort in using the mapping procedures. The coaching and evaluation experiences led to modifications in the next training session and the whole process was repeated until an effective training and coaching system resulted. Based on their

experiences in developing the training process, the authors made five recommendations for training:

- **Emphasize practice and use feedback on practice to teach the finer points of mapping.** Overemphasis on “rules” or drilling trainees on details before having a chance to practice can overwhelm some trainees and put off others who view it as inflexible.
- **Use practice sessions to help trainees integrate thinking and doing.** Didactic training tends to be linear while practice is multidimensional and dynamic. Practice and discussions of practice help integrate “what” and “why” starting with simpler examples and working to the more complex.
- **Provide guidance with respect to the boundaries of using the technique, describing when it may be useful and when it may not be useful.** Coaching is important to helping trainees find appropriate opportunities to use (and practice using) mapping.
- **Provide guidance on the flexible use of the core components of mapping.** Coaching is important to helping trainees adapt mapping to fit their own clinical style while retaining the essential components of the technique.
- **Encourage peer and administrative support** to build a culture of acceptance and support for effective use of mapping with consumers.

The authors caution that, “technologies designed to enhance counselors’ skills ... present a different set of problems. Movement from initial exposure to adoption and long-term practice depends heavily on the counselor’s confidence in executing the skills and a vision of how such skills can be integrated into ongoing activities. In addition to initial training, substantial hands-on coaching and practice may be necessary before a counselor feels comfortable with this new strategy” (p. 226).

Based on a review of teacher training programs, Gingiss (1992) noted that learning generally progresses from orientation and new learning to mechanical use, routine use, refinement, integration, and innovation as new knowledge, skills, and abilities become fully developed.

Training Organizational Staff: Additional Evidence

There is little research information concerning training staff at an *organizational* level. Fixsen & Blase (1993) reported data on attempts to implement the Teaching-Family Model in whole organizations. After developing methods to systematically train site staff (trainers, coaches, fidelity evaluators, administrators), more attempted organizational implementations were successful (30% pre to 80% post). In another study, Fixsen et al. (2001) showed that over 85% of the treatment programs associated with Teaching-Family sites with systematically-trained site staff were sustained over many years compared to about 15% of the treatment programs that operated independently of a site.

Palsha & Wesley (1998) developed a program to train consultants for early childhood education (ECE) centers. They found that 62% of the consultant trainees completed training and pre-post tests showed significant improvements in the quality of ECE provided to children 0 - 5 years old for those centers that were the subject of their consultation.

A top down, “cascade model” of training trainers was used in Zimbabwe to provide AIDS education nationally (O’Donoghue, 2002, reported in the previous chapter). The evaluation indicated poor results for implementation and for intervention. A similar method is being used in Norway to implement the Parent Management Training Oregon model (Ogden et al., in press). However, in Norway a bottom up approach is being used with the second and third groups of trainers being chosen from the ranks of practitioners who learned the program first hand. Wells, Sherbourne et al., (2000) trained trainers and nurse specialists in 46 primary care clinics to provide clinician and patient training for patients with depression. Leader training, staff training, and monitoring were provided according to the protocol in 100% of the clinics. However, less than 40% of the patients received treatment in keeping with the protocol.

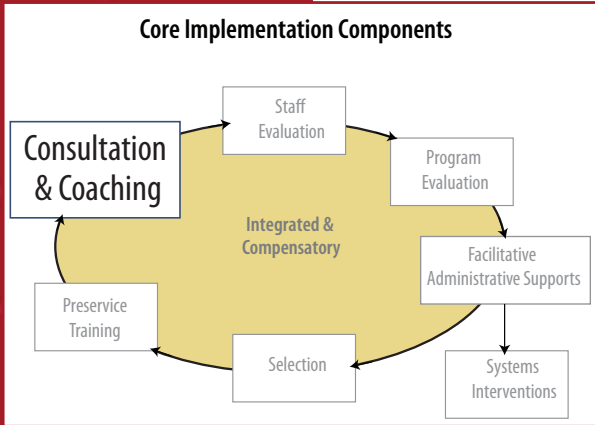
While these studies are encouraging and help to define some relevant aspects of training, none demonstrated a functional relationship between organizational staff training and implementation outcomes at the consumer level.

Staff Training Summary

The essence of implementation is behavior change. Training by itself seems to be an ineffective approach to implementation. However, it appears that the functional components of staff training are knowledge of the program and practices, demonstrations of key skills, and practice to criterion of key skills. Training for trainers and special training for behavior rehearsal leaders and confederates may be required to maximize learning for the trainees. The essential aspects of training may be similar for imparting knowledge and skills to key organizational staff (trainers, coaches, evaluators, administrators) and purveyors as well as practitioners.

Research is needed to assess the most effective and efficient conditions for training practitioners and for training organizational staff. Analyzing staff selection and training interaction effects may be especially useful as implementers of evidence-based practices and programs have to decide the relative merits of working with current staff of agencies (“conscripted staff”) or recruiting and training new staff for important roles (practitioner, trainer, coach, administrator, etc).

The essence of implementation is behavior change.



Staff Coaching

In their review of operations of ministries of health for the World Health Organization, Unger, Macq, Bredo, & Boelaert (2000) stated that systems reform (such as implementation) depends upon “training of field staff, on-the-spot expert

coaching, and promotion of a new organizational structure.” Spouse (2001) noted that formal knowledge (“episteme”) needs to be supplemented with craft knowledge (“phronesis”) so practitioners can learn to see the relevance of what they have learned to the situations at hand. Coaching needs to be work based, opportunistic, readily available, and reflective (e.g., debriefing discussions). Spouse (2001) described four main roles of a coach:

- Supervision
- Teaching while engaged in practice activities
- Assessment and feedback
- Provision of emotional support

After a few decades of research on training teachers, Joyce & Showers (2002) began to think of training and coaching as one continuous set of operations designed to produce actual changes in the classroom behavior of teachers. One without the other is insufficient. Behavior change is difficult for most people (for example, some people hire personal coaches to help them exercise more or change their eating behavior or stop smoking). With newly learned behavior there are several simultaneous problems that must be faced:

Newly-learned behavior is crude compared to performance by a master practitioner. Training usually is designed to introduce the learner to the essential elements of a new set of skills. For example, there are nine components of a “teaching interaction” (Phillips et al., 1974) and these components are taught to and rehearsed by practitioners in a preservice training workshop until they reach mastery criteria (Kirigin et al., 1975). However, there are uncounted nuances of when and how to use the components in various com-

binations in proactive teaching, reactive teaching, conceptual teaching, effective praise, proactive prompting, and so on given the treatment plans for and immediate behavior of particular children, families, or adults. This functional and adaptable set of skills is developed in practice with the help of a consultant/coach who shares craft knowledge as he or she observes, describes, and tutors the practitioner (Smart et al., 1979). With experience and effective coaching, a practitioner develops a personal style that is comfortable for the practitioner while still incorporating the core intervention components of the evidence-based practice.

Newly-learned behavior is fragile and needs to be supported in the face of reactions from consumers and others in the service setting. Behavior change directly impacts others in the environment. For example, when a teacher makes a significant change in his or her behavior in the classroom, 20 to 30 children and their families react to that change. When Nurse-Family Partners make a significant change in their behavior, 25 families and a variety of stakeholders react to that change. Joyce & Showers (2002) recommend having discussions with students and their parents to prepare them for the new ways of teaching that are about to be implemented. Although we could find no data on the topic, this probably is a good idea.

When practitioners change their behavior the reactions from consumers and stakeholders initially may not be positive, effectively punishing the practitioner for making a change. For fragile, new behavior the negative reaction may be enough to discourage the practitioner from persisting. One role of a coach is to prepare the practitioner for potential reactions and support the practitioner through the early stages of implementation until the new behavior is more skillfully embedded in the clinical environment (Joyce & Showers, 2002). Bierman et al., (2002) describe this as a counter-control function of a coach. That is, to help the practitioner engage in the new behavior even though they are not yet proficient and despite the negative reactions to using the new behavior (sometimes poorly).

Newly-learned behavior is incomplete and will need to be shaped to be most functional in a service setting. When designing workshop training experiences, there is only so much that can be accomplished effectively within the time avail-

able. Preservice workshop training can be used to develop entry-level knowledge and skills. Then, coaching can help practitioners put the segmented basic knowledge and skills into the whole clinical context. Coaches can help practitioners see how their personal beliefs and attitudes can be integrated with the skills, knowledge, philosophy, values, and principles of the program as well as other aspects of the clinical context (Smart et al., 1979).

In addition to helping to establish new behavior in the clinical environment, emotional and personal support is another role for a coach (Spouse, 2001). In human services, *practitioners are the intervention*. Evidence-based practices and programs inform when and how they interact with consumers and stakeholders but it is the person (the practitioner) who delivers the intervention through his or her words and actions. In the transactional interplay between practitioner and consumer, each affects the other in complex ways (for example, Fixsen & Blase, (1993) pointed out that each dependent variable is also an independent variable in a treatment environment; in this case, the consumer is “treating” the practitioner as well as being treated by the practitioner). In clinical work, practitioners often come face to face with their own issues and sensitivities as they work with consumers and stakeholders. A coach can help support a practitioner during times of stress or discomfort (Spouse, 2001). However, an overemphasis on emotional support may be counterproductive (Schoenwald et al., 2004).

Factors that Impact Coaching

The amount of time devoted to coaching often is not reported, but seems to vary widely. Diamond et al., (2002) provided 2 hours of coaching per week for therapists using drug treatment models. Supervision in Australian mental health settings typically occurred monthly for about 2 hours (Kavanagh et al., 2003). Coaching of teachers in special education classrooms occurred twice a week for an hour or so (Marks & Gersten, 1998). In Multisystemic Therapy for children and their families in the delinquency system, group coaching (primarily based on practitioner reports) occurs once or twice a week for about 90 minutes for each group of 3 to 4 therapists and the coaches themselves receive individual consultation once a

week for about an hour (Schoenwald et al., 2000). For the Teaching-Family Model, consultation occurs weekly (more often for new practitioners, less often for certified practitioners) with several hours devoted to on-site direct observation of the practitioner while he or she is providing direct services, feedback after the observation, and skill development in keeping with a professional development plan for each practitioner coupled with more frequent telephone consultation and coaching (Smart et al., 1979).

Denton, Vaughn, & Fletcher (2003) reviewed attempts to implement reading programs for students with reading and learning disabilities. While noting that effective coaching was the most critical factor in successful implementation, they cautioned that effective coaching depended upon the availability of coaches who are expert in the content, techniques, and rationales of the program. It is said that good mentors are encouraging, supportive, committed, sensitive, flexible, respectful, enthusiastic, diplomatic, patient, and willing to share information, credit, and recognition (McCormick & Brennan, 2001). In their survey in Kentucky, McCormick & Brennan (2001) found that coaching was impacted by time allotted to do the work, reluctance to seek information from the mentor, role confusion due to the dual role of supervisor and coach, feelings of inadequacy on the part of the mentors, poor match between the coach and practitioner, and lack of availability of coaches in rural areas.

Joyce & Showers (2002) pointed out that leadership, organizational culture, labor-relations, scheduling, interpersonal relationships, and engagement in participatory planning all impact the availability and effectiveness of coaching. In addition, coaches need to be trained and coached to provide specialized coaching functions for teachers, and that requires more organizational leadership and more resources (Marks & Gersten, 1998). Kavanagh et al., (2003) found that high caseloads and inadequately trained supervisors were major impediments to adequate supervision. Bond et al. (2001) noted that coaching sometimes suffered due to lack of information and skills, lack of time, inadequate staff resources, and a focus on paperwork instead of outcomes.

Showers & Joyce (1996) described the evolution of coaching and recommended that coaching

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Coaching relationships should start during training so parts of the training experience (practice new skills, receive feedback, re-practice) can facilitate the development of the coaching relationship.

relationships should start during training so parts of the training experience (practice new skills, receive feedback, re-practice) can facilitate the development of the coaching relationship (a strategy also recommended by Smart et al., 1979).

Experimental Research on Coaching

The value of on-the-job coaching repeatedly appeared in the overall implementation evaluation literature. In Chapter 4 the results of the Joyce & Showers meta-analysis were presented showing that implementation in educational settings occurred primarily when training was combined with coaching in the classroom. A similar result was obtained in a mental health setting (Kelly et al., 2000) and a medical setting (Fine et al., 2003) as reviewed earlier in this chapter.

Van den Hombergh, Grol, Van den Hoogen, & Van den Bosch (1999) compared two different types of coaches in a randomized group design. One group of physicians was assigned to a coach who was a “peer physician” and the other group was assigned to a coach who was a “practice assistant” (not a physician). In each case, the coaches followed a standard protocol to assess practice management and organization (issues not related to direct patient care). The results indicated that both groups improved on many of the 33 measures of practice management but peer-visited physicians showed significantly greater improvement on several practice dimensions. Joyce & Showers (2002) also recommended the use of peer coaches although they did not have experimental data to support their conclusion.

While these studies point to the importance of coaching in any attempt to implement a practice or program, we did not find any experimental analyses of the functional components of coaching. Thus, at this point, we know that coaching is important but we do not know (experimentally) what a coach should do or say with a practitioner to be most effective.

Additional Evidence for Coaching

Some non-experimental data do provide some clues to what may be the functional components of coaching. Kavanagh et al. (2003) conducted a telephone survey of nearly 300 mental health practitioners in Australia. They found that constructive feedback and praise were common components of supervision but there was very little direct observation of clinical practice by the supervisors (median = 0; also see Walker, Koroloff, & Schutte (2002) who found a similar result for persons supervising treatment planning teams). Four factors accounted for 62% of the variance of the perceived impact of supervision on practice: supervisor taught new skills, strengthened confidence, offered safety in sessions, and devoted time to discipline-specific skills (as opposed to generic skills).

Ager & O'May (2001) conducted a literature review of “best practice” for intervention for challenging behavior in persons with intellectual disability and acquired brain injury and found 42 papers that directly addressed the issue of the capacity of direct care for the delivery of interventions. They found that staff training has little impact on staff performance in clinical settings without additional help from a coach. The use of consultants (for feedback, supervision, and support) was found to be necessary for changes in staff performance. Schoenwald et al., (2004) evaluated a Consultant Adherence Measure (CAM) developed to measure clinical consultation in the multisystemic treatment (MST) program. They found that items related to perceived consultant competence (knowledgeable, skilled in MST, able to teach MST) were related to higher Therapist Adherence Measures (TAMS) and better youth outcomes. Items related to MST procedures (use of MST-specific assessment, intervention, and analytic techniques) were not related to TAMS scores for therapists and had mixed results for youth outcomes. Items related to alliance (attentive and supportive of therapists) were associated with lower TAMS scores and poorer youth outcomes. Although the results are not conclusive, this study represents an important step forward in finding ways to measure the interaction of core implementation components, core intervention components, and outcomes for consumers.

Looking at data from the first 17 years of development and implementation of the Teaching-Family Model, Fixsen & Blase (1993) analyzed the success of implementation attempts before and after systematic consultation and supports were provided to Teaching-Parents in Teaching-Family group homes. Only 24% of the attempted group home implementations lasted 6 years or more before and 84% were sustained for 6 years or more after systematic consultation and supports were provided.

Harchik, Sherman, Sheldon, & Strouse (1992) examined the effects of consultation on staff in a community group home for adults with severe mental retardation. They found that consultation had a positive impact on staff members' appropriate use of the token reinforcement system, constructive teaching interactions, and engagement and participation in activities. Kelly et al., (2000) compared technical assistance manuals on how to implement HIV prevention interventions with manuals plus staff training plus consultation on how to conduct implementations of the program. The addition of the consultation component produced a significant improvement in the number of implementations of the prevention program (about 60% adoption rate compared to about 35% for the manuals-only group).

Staff Coaching Summary

As stated earlier, implementation of evidence-based practices and programs cannot occur unless the practitioner is well-prepared to deliver the required practices in his or her interactions with a consumer. Coaching makes clear contributions to the preparation of practitioners, both in the experimental and other research literature. The core coaching components seem to be teaching and reinforcing evidence-based skill development and adaptations of skills and craft knowledge to fit the personal styles of the practitioners (changing form, not function). Support during stressful times was mentioned as a key ingredient by several sources but that function may not be supported empirically (Schoenwald et al., 2004). Given the key interpolative role of coaching between staff selection and training on the one hand and staff performance assessments on the other hand, research is needed that evaluates the relative contributions of selection, training, and coaching and

(especially) the interaction effects among the three factors (e.g., see Schoenwald et al., 2004). One purported aspect of the implementation driver framework is that the components are integrated and compensatory. Thus, the interaction effects may provide very useful information to inform the practice and theory of implementation.

Evaluation and Fidelity

In the reviews of staff evaluation and fidelity, two functions quickly became apparent. First, 46% of the articles reviewed in this section used measures at the practitioners performance level in order to help improve performance in the context of an organizational environment. The performance improvement function usually was embedded in organizations as an essential part of the treatment program. However, the majority (54%) of the articles used measures of staff performance in order to evaluate adherence to research protocols. The protocol adherence function usually is conducted outside the service organization and has utility only for the duration of the evaluation project.

Second, a subset of the articles described fidelity measures at the organizational level. Interestingly, about 2/3 of the articles regarding assessments of staff performance that were part of the treatment programs (including all of those at the organizational level) concerned Fountain House clubhouses, Assertive Community Treatment, or the Teaching-Family Model, three evidence-based treatment programs that have been involved in national implementation since the 1970s. It appears that more mature programs have learned the value of a similar set of practitioner-level and organizational-level performance measures that must be built into any organization using their program.

Staff evaluation and fidelity seem to consist of some combination of measures of context, compliance, and competence (Waltz, Addis, Koerner, & Jacobson, 1993; Forgatch, Patterson, & DeGarmo, in press). With respect to these measures:

- **Context** refers to the prerequisites that must be in place for a program or practice to operate (e.g., staffing qualifications or numbers, practitioner-consumer ratio, supervisor-practitioner ratio, location of service provision, prior completion of training).

Given the key interpolative role of coaching between staff selection and training on the one hand and staff performance assessments on the other hand, research is needed that evaluates the relative contributions of selection, training, and coaching and (especially) the interaction effects among the three factors.

In a highly functional systems, staff evaluation is part of a sequence of supports designed to have good people well prepared to do an effective job.

- **Compliance** refers to the extent to which the practitioner uses the core intervention components prescribed by the evidence-based program or practice and avoids those proscribed by the program or practice.
- **Competence** refers to the level of skill shown by the therapist in using the core intervention components as prescribed while delivering the treatment to a consumer (e.g., appropriate responses to contextual factors and consumer variables, recognizing the key aspects of the presenting problems, understanding the consumer's individual life situation, sensitivity of timing, recognizing and acting on opportunities to intervene).

Table 2 provides some examples of these forms of fidelity measures. How fidelity is measured is described briefly in the left hand column. Specific questions asked to measure context, compliance, or competence are then provided in the other three columns. For example, supported employment programs measure context fidelity by asking about caseload size and consumer eligibility for participation (among others). These are prerequisite conditions for providing supported employment as defined by the researchers. Assertive Community Treatment programs measure compliance fidelity by asking where the work is done (“in the community rather than office”) and who does supervision (among others). These examples of compliance measures tell program managers and others whether or not a procedure or process is in place. The Parent Management Training Oregon Model measures competence fidelity by directly observing the performance of practitioners as recorded on videotaped sessions. Their measures (among others) assess the occurrence of clinical episodes (“therapist sets up role

play”) and how well the practitioner performed when those episodes occurred (“capitalizes on opportunities,” “balances verbal teaching and active teaching”). These examples of competence measures tell practitioners,

coaches, managers, and others how well the practitioner is performing the core intervention components of an evidence-based program or practice.

Staff Evaluation for Performance Improvement

Huber et al., (2003) described highly effective hospital management systems that included recruitment and prescreening for basic qualifications and personality characteristics; interview procedures designed to give information about the goals, philosophy, and functions of the hospital as well as obtaining information about work experience and style; post-hiring orientation to the workplace and the specific role of the person; ongoing training and education focusing on specific skills needed, cross training on related roles, and in-services and monthly dinners for discussion; performance evaluations based on direct observation to assess practice knowledge, communication skills, and use of time with prompt verbal feedback followed by a write up with recommendations; and quality improvement information systems to keep the system on track (see Core Implementation Components).

In a highly functional systems, staff evaluation is part of a sequence of supports designed to have good people well prepared to do an effective job. In these cases, assessments of performance are well integrated with what has been taught and coached and there are no surprises for the practitioner.

The feedback from the more formalized assessment provides information for the coaching process (Phillips et al., 1974; Davis, Warfel, Fixsen, Maloney, & Blase, 1978; Smart et al., 1979; Schoenwald et al., 2000) and is an outcome measure for the quality of coaching (Blase et al., 1984; Schoenwald et al., 2004).

In the Teaching-Family Model practitioners are selected, trained, coached, and then evaluated at 6 months, 12 months, and annually thereafter with respect to their performance, the satisfaction of the consumers they have treated, and the satisfaction of the stakeholders with whom they have contact (Phillips et al., 1974; Wineman & Fixsen, 1979). Performance is evaluated by two trained evaluators who directly observe a practitioner for 2 to 3 hours as he or she provides treatment (Davis et al., 1978). A standard form is used to make detailed comments on the practitioner's performance and provide a rating for each of several areas that

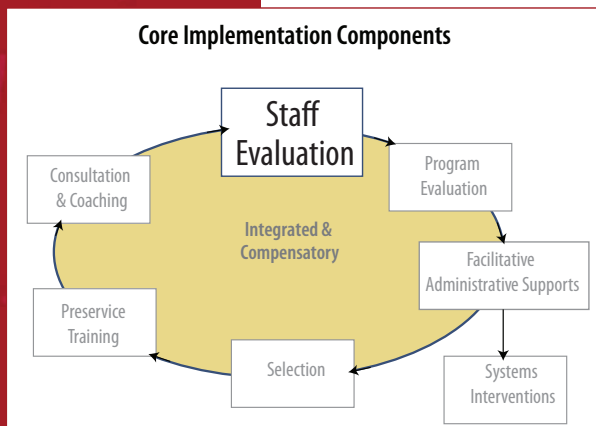


Table 2
Examples of Different Types of Fidelity Measures Across Programs

Program	Type of Fidelity Measurement		
	Context Measures	Compliance Measures	Competence Measure
Supported employment (Bond, et al., 1997) — 15 items, 5-pt. scale, interview a knowledgeable staff person	Employment specialists manage caseloads of up to 25 clients	“Employment specialists provide only vocational services”	
	No eligibility requirements for consumer participation	“Job search occurs rapidly after program entry”	
Assertive Community Treatment (Teague, et al., 1998) — 26 items, interview knowledgeable staff or managers, record review	Vocational specialist, nurse, psychiatrist, substance abuse specialist on staff	“Staff monitors status and develops skills in the community rather than office”	
	Client-provider ratio of 10:1	“Supervisor provides direct services as well”	
	Responsible for crisis services	“High number of service contacts, high amount of time”	
Teaching-Family Model homebased treatment (Fixsen, et al., 1992) — survey of children, parents, and stakeholders; direct observation of performance by trained evaluator	Family Specialist-family ratio of 1:2	Treatment plan for each family	“Family Specialist engages family members in the treatment process (building partnerships with parents, active participation by family members, family investment of time and energy)”
	Completion of 60-hour preservice workshop and access to at least weekly inservice coaching and consultation	Paperwork done promptly	“Family Specialist provides conceptual feedback (useful strength and improvement concepts, adequate specific examples, convincing rationales)”
Multisystemic Therapy (Henggeler, et al., 1992) — 27 items, 5-point scale, interview parent	Completion of 5-day training workshop	“The therapist recommended that family members do specific things to solve our problems”	“The therapist tried to understand how my family’s problems all fit together.”
	On-going involvement by consultants at MST Services Inc.	“Family members and the therapist agreed upon the goals of the sessions”	“There were awkward silences and pauses during the session”
Parent Management Training Oregon Model (Forgatch, et al., in press) — direct observation of video- taped sessions		Follows an agenda	“Therapist sets up role play and capitalizes on opportunities”
		Includes appropriate sections	“Therapist balances verbal teaching and active teaching while engaging the family and providing rationales”

have been demonstrated to be core intervention components in the Teaching-Family Model (e.g., relationship development, teaching, self-determination, use of motivation systems). The individual consumer interview asks about the fairness, helpfulness, and concern of the practitioners. In addition, another set of questions asks each consumer about staff practices that may be unethical or illegal to help assure the safety of consumers (especially in residential treatment settings like group homes or foster homes). Finally, a brief set of questions is mailed to stakeholders who are asked to rate and provide comments concerning the practitioners

performance (an 80%+ response rate is typical). The specific stakeholder questions were derived from interviews with consumers and practitioners and from the overall mission and goals of the program (e.g., cooperation, communication, respect for opinions, effectiveness, helpfulness, concern). Detailed verbal and written reports of the findings, conclusions, and recommendations are promptly provided to the practitioner, coach, and manager. Staff evaluations are conducted by evaluators in a Certified Organization and are reviewed in detail as part of the Organizational Certification process (described below).

The discriminant validity of the practitioner fidelity measures was tested by comparing Teaching-Family treatment homes with other group homes and with a state detention center. Teaching-Family practitioners scored higher on ratings by school teachers and administrators, parents, and youths. There were no differences in ratings by juvenile court personnel, social services personnel, or members of the Boards of Directors (Kirigin & Fixsen, 1974; Kirigin, Fixsen, & Wolf, 1974). Predictive validity was tested by Kirigin, Braukmann, Atwater, & Wolf (1982) who correlated staff evaluation and fidelity measures with eventual youth delinquency outcomes and found that higher fidelity was associated with greater reductions in delinquency. Kirigin et al., (1982) also found that overall consumer and stakeholder ratings discriminated between Teaching-Family and control group homes with significant differences for youth and school teacher/administrator ratings. There were no differences in ratings by parents, juvenile court personnel, social services personnel, or members of the Boards of Directors. These findings were extended by Solnick, Braukmann, Bedlington, Kirigin, & Wolf (1981) who correlated a measure of one core intervention component (the “teaching interaction”) with self-reported delinquency and found a high level of correspondence between more teaching and less delinquency and between more teaching and higher satisfaction ratings by the youths in Teaching-Family group homes.

The multisystemic treatment (MST) program has monthly assessments of practitioner adherence to the 9 principles that are the foundation of the program (Schoenwald et al., 2000). Monthly fidelity assessments (called the TAM: Therapist Adherence Measure) occur via a telephone call (or other contact) with a parent who is asked to rate the practitioner on 27 items. After practitioners are selected and trained in a 5-day workshop, they begin work with youths and families with the support of a local supervisor. The web-based fidelity data are collected by MST Services, Inc. and the information is used to inform a chain of consultants including those employed by MST Services, Inc. to consult with area or organization-based MST consultants who consult with team supervisors who consult with practitioners.

At the practitioner level, Henggeler, Melton, Brondino, Scherer, & Hanley, (1997) found that higher fidelity scores during treatment were associated with better delinquency outcomes for youths. Schoenwald, Halliday-Boykins, & Henggeler (2003) conducted an interesting study that related fidelity to characteristics of the youths served. They found that practitioner fidelity was lower when working with youths who were referred for a combination of criminal offenses and substance abuse. In addition, practitioner fidelity was lower when working with youths who had more pretreatment arrests and school suspensions. Practitioner fidelity measures were higher when working with youths with educational disadvantage and higher when there was an ethnic match between practitioner and parent. Recently, the Consultant Adherence Measure (CAM) has been developed and tested to assess adherence to the MST consultant protocol. In an important study that linked the TAM, CAM, and youth outcomes, Schoenwald et al., (2004) found that higher consultant fidelity was associated with higher practitioner fidelity, and higher practitioner fidelity was associated with better youth outcomes. In another study, Schoenwald et al., (2003) found that practitioner fidelity was associated with better outcomes for youths but fidelity was not associated with measures of organizational climate. Organizational climate was presumed to be a mediation variable for adherence but this hypothesis was not borne out by the data.

Fidelity measures for the highly individualized Wraparound process (J. D. Burchard, S. N. Burchard, Sewell, & VanDenBerg, 1993) are being developed and tested (Bruns, Burchard, Suter, Force, & Leverentz-Brady, 2004; Bruns, Henggeler, & Burchard, 2000; Bruns, Suter, Burchard, Leverentz-Brady, & Force, in press; Bruns et al., 2004; Epstein, Jayanthi, McKelvey, Frankenberry, Hary, Potter, et al., 1998). The Wraparound Fidelity Index (WFI) consists of asking wraparound team facilitators, parents, and youths to rate 11 dimensions of the services for a family (voice and choice, youth and family team, community-based supports, cultural competence, individualized, strength-based, use of natural supports, continuity of care, collaboration, use of flexible resources, outcome based). When high fidelity implementations were compared to those

with low fidelity as measured by the WFI, high fidelity implementations resulted in improved social and academic functioning for children, lower restrictiveness of placements, and higher levels of satisfaction (Bruns et al., in press). High fidelity implementations were associated with training, coaching, and supervision for providers and the consistent use of data collection systems to inform the overall process.

The Washington State Institute for Public Policy (2002) evaluated the statewide implementation of the Functional Family Therapy (FFT) program for juvenile offenders (Alexander, Pugh, Parsons, & Sexton, 2000). The results showed that youths and families treated by therapists with high fidelity scores had significantly better outcomes. FFT, Inc. (the purveyor of FFT) conducted therapist fidelity measures and found that 19 (53%) of the 36 therapists were rated as competent or highly competent, and those therapists treated a total of 48% of the families in the study. When compared to the control group, youth with a highly competent or competent therapist had a lower 12-month felony recidivism rate. However, within this group of highly competent or competent therapists, the recidivism rates varied considerably. The authors lamented the lack of fidelity measures at the organizational level and speculated that variations in the amount or quality of training, supervision, or organizational support may have been important to therapist fidelity and youth outcomes. They also noted that measures of FFT fidelity built into local organizations might be more useful as a tool to guide the implementation process compared to having this function performed centrally by FFT, Inc.

Organization-Level Fidelity Assessments

The International Center for Clubhouse Development (ICCD) developed a measure of fidelity for Fountain House clubhouse organizations (Macias, Propst, Rodican, & Boyd, 2001). The measure was developed over a period of 5 years and is well-grounded in a series of workshops, surveys, and pilot studies involving nearly all of the international clubhouse community. Criterion validity was established when results of the fidelity measure were compared to the results of a more exhaustive 3-day site visit by trained evaluators to determine ICCD Certification.

ICCD Certification was established in 1994 to certify clubhouse organizations that meet all the criteria set forth by the ICCD. The certification process has a manual, a process to select and train site evaluators, and a review board that judges the quality and makes certification recommendations. Prior to a site visit, the clubhouse prepares a detailed self-study. The 3-day visit consists of record reviews, interviews with members and staff, visits with collaborators, and direct observations of the daily activities. An in-depth report and consultation is provided at the end of the visit and a written report is prepared after the visit (20-40 pages). Site visitors remain on call for continuing consultation and to make return visits to assess implementation of any agreed-upon changes.

The Teaching-Family Association developed a two-tier system of fidelity review and certification in 1978 (Blase et al., 1984; Wolf et al., 1995). Organizational Certification (the first tier) has a process to select and train site evaluators and a national Certification Committee that assesses quality and makes certification recommendations to the Board of Directors of the Association. Certification consists of a full report of organization activities related to the program (e.g., selection, training, coaching, staff evaluation, administrative supports) and an organizational consumer evaluation (360-degree evaluations internally as well as external stakeholder evaluations by funders, referral sources, others) conducted by the national Certification Committee. The 2 to 3-day site visit involves interviews with practitioners, consumers, and members of the Board of Directors; observations of on-going treatment; and interviews with trainers, coaches, and staff evaluators regarding the technical aspects of the program. A detailed report of the findings, conclusions, and recommendations (often 100+ pages) is prepared for the organization and the Certification Committee. The second tier is Practitioner Certification (described in the previous section) conducted by trained evaluators employed by a Certified Organization.

McGrew, Bond, Dietzen, & Salyers (1994) described a process for evaluating organizations providing Assertive Community Treatment (ACT). Experts rated a pool of 73 items proposed as critical to ACT operations. Based on the expert review, a 17-item subset was used to construct a

Another approach to program evaluation has been taken in the state of Michigan where they have instituted a state-wide continuous monitoring system.

fidelity index with 3 subscales:

- Staffing — client-staff ratio, team size, psychiatrist on team, nurse on team
- Organization — team as primary therapist, location of team, shared caseloads, daily team meetings, coordinator provides direct client service, 24-hour availability, time-unlimited resources
- Service — frequency and hours of face-to-face contact, in office contact, all contact

In applications of the fidelity scale to 18 ACT programs, internal consistency of the items was acceptable and higher total scale scores and scores for the staffing and organization subscales were associated with greater reductions in days spent in psychiatric hospitals. The fidelity measure also detected program drift; scores were linearly related to successive iterations, or "program generations."

Teague, Drake, & Ackerson (1995) found similar results in a comparison of ACT with standard case management at 7 sites over a 27-month period. Teague, Bond, & Drake (1998) revised the ACT fidelity scale and applied it to four groups known to differ in their approach. Fidelity scores were highest for ACT, with an average score above 4 on a 5-point scale, demonstrating discriminant validity. In these studies, the staff and service components of the ACT fidelity scale accounted for more of the variance in outcome measures than organization subscale. It is interesting that ACT does not have a practitioner-level staff fidelity measure.

Another approach to program evaluation has been taken in the state of Michigan where they have instituted a state-wide continuous monitoring system using the Child and Adolescent Functional Assessment Scale (CAFAS) as a common measure (Hodges & Wotring, 2004). Over a period of 6 years, the monitoring system was implemented, a culture of using evidence to aid decision-making was created among clinical professionals in the state, and the overall benefits of mental health treatments for over 5,000 children with serious emotional disturbance were assessed (Hodges, Xue, & Wotring, 2004). By analyzing the characteristics of the children for whom treatments were most successful and least successful, the Michigan evaluation system was able to identify those problems that were most intractable in the "treatment as

usual" system and, therefore, good candidates for implementing evidence-based programs (Hodges, Xue, & Wotring, 2004; Xue, Hodges, & Wotring, 2004). A similar approach has been taken by the Nurse-Family Partnership program, the Functional Family Therapy program, and the Multidimensional Treatment Foster Care program where program evaluation measures have been built into the paperwork flow and outcome measures are collected via a web-based reporting system. Korfmacher et al. (1998) analyzed the program evaluation information for 228 infants and their mothers who were served by the Nurse-Family Partnership program in Tennessee. They were able to assess how closely the clinical applications of the program compared to the experimental versions and they began an analysis of the contributions of individual program components to the outcomes for infants and their mothers.

While the relationships between fidelity measures and outcome measures are consistent across programs, they are correlational. The results so far could be related to therapist enthusiasm or consumer characteristics (e.g., Schoenwald et al., 2003) or other aspects of the therapeutic situation rather than to the core intervention components. Thus, the actual relationship between fidelity to the prescribed core intervention components of evidence-based practices and programs and their outcomes must await the results of eventual experimental analyses of those relationships.

Factors that Impact Staff Evaluation for Performance Improvement

McGrew et al., (1994) noted that the development of fidelity measures is hampered by 3 factors: (1) most treatment models are not well defined conceptually, making it difficult to identify core intervention components, (2) when core intervention components have been identified, they are not operationally defined with agreed-upon criteria for implementation, and (3) only a few models have been around long enough to study planned and unplanned variations.

Staff evaluations need to be practical so they can be done routinely in an organization (Blase et al., 1984; Henggeler et al., 1997) and staff evaluators need to be prepared for their roles. Wineman & Fixsen (1979) developed a detailed procedure manual for conducting a rigorous staff evaluation in the context of a Teaching-Family treatment group home. Freeman, Fabry, & Blase (1982) developed a comprehensive program for training staff evaluators for national implementations of the Teaching-Family Model. The staff evaluator training included instruction in direct observation of practitioner behavior, conducting record review, youth, parent and stakeholder evaluations, and analysis and presentation of evaluation findings to practitioners, coaches and managers. Workshop training included practice to criterion on the critical skills and was followed by a series of “co-evaluations” at implementation sites to assess agreement and provide opportunities for coaching on staff evaluation skills (Blase et al., 1984; Fixsen & Blase, 1993).

Given the integrated nature of any organization, it is likely that administrative decisions, changes in budget, office moves, etc. can have unintended and undesirable impacts on practitioner behavior and, therefore, impact fidelity. However, no measures were found in the literature.

Experimental Research on Evaluation

The review of the general implementation evaluation literature provided many examples of the importance of staff evaluation, implementation fidelity, and program evaluation. However, no experimental analysis of staff or program evaluation methods or outcomes appeared in the review. Experimental analyses of staff and program evaluation methods seem to be warranted given the presumed importance of evaluation-driven feedback loops and the resources necessary to routinely measure practitioner and organizational performance. Experimental exploration of evaluation efforts could yield more effective and efficient methods that could be adopted by purveyors of evidence-based practices and programs.

Staff Evaluation for Performance Improvement: Additional Evidence

Most of the research makes use of the staff performance data as predictors of consumer outcomes showing that programs with higher fidelity produce better outcomes for consumers (e.g., Felner et al., 2001; Henggeler et al., 1997; Henggeler, Pickrel, & Brondino, 1999; Kirigin et al., 1982; Kutash, Duchnowski, Sumi, Rudo, & Harris, 2002; Solnick et al., 1981). An interesting case study by Hodges, Hernandez, Nesman, & Lipien (2002) demonstrated how a theory of change exercise can help programs clarify their strategies and develop fidelity measures to assess their use of those strategies. Similarly, Shern, Trochim, & LaComb (1995) used concept mapping to develop fidelity measures for an adult mental health program. In another interesting study, Forthman, Wooster, Hill, Homa-Lowry, & DesHarnais (2003) found that feedback, provided in a timely fashion (short feedback loops, recurring), and delivered personally by a respected source was most effective when accompanied by written material and attended to the motivation of the audience (e.g. interest in improving quality for patients).

Testing Validity of Fidelity Measures

- Reliability across respondents
- Internal structure of the data
- Known groups
- Convergent validity
- Predictive validity

Organization-Level Fidelity Assessments: Additional Evidence

The research cited above regarding the ACT program established the validity and reliability of the organizational fidelity measures used for that program. A General Organizational Index has been recommended for use with the adult toolkits that were developed by SAMHSA (SAMHSA's Mental Health Information Center, 2004) but no data support its use. Fixsen & Blase (1993) and Fixsen et al., (2001) used organizational fidelity as an outcome to measure organizational implementation success but did not assess the measure itself.

Staff Evaluation to Measure Adherence to Research Protocols

The majority of articles that measured adherence to a research protocol simply reported the outcomes of having done so. In a review of 34 programs deemed to be effective by the Prevention Research Center (Domitrovich & Greenberg, 2000), 59% included some rating of fidelity and adherence in their implementation data but only 32% used the implementation measures as a source of variance in their data analysis. Gresham, Gansle, & Noell (1993) reviewed 158 articles in the *Journal of Applied Behavior Analysis* (1980-1990) to see how many assessed "implementation of the independent variable." After the articles were coded, the results showed that 34% of the studies provided an operational definition of the independent variables and 16% reported levels of treatment integrity. In a broader review of the literature, Moncher & Prinz (1991) reviewed 359 outcome studies (1980-1988). A detailed assessment of the studies showed that 32% used a treatment manual, 22% supervised the treatment agents, and 18% measured adherence to the protocol. Only 6% did all three (manual + supervision + adherence) while 55% did none of the three. They also found that 26% of the studies reported training the practitioners and only 13% of those assessed practitioner competence in using the protocol.

Factors that Impact Staff Evaluation to Measure Adherence to Research Protocols

None were found in the literature reviewed. Again, most measures of adherence to research protocols simply reported the measures and results. Well-funded research efforts may have fewer issues with measures of adherence compared to those that are built into organizational routines and consume a variety of organizational resources. Nevertheless, given the importance of measuring the degree of implementation of independent variables, it may be useful for researchers to report the factors that enable or compromise such measures.

Staff Evaluation to Measure Adherence to Research Protocols: Additional Evidence

Bond, Becker, Drake, & Vogler (1997) developed a fidelity scale (questions regarding staffing, organization, service) for the Individual Placement and Support (IPS) model of helping consumers find employment. They tested the scale with 9 IPS programs, 11 other supported employment programs, and 7 other vocational rehabilitation programs. The majority had been in existence for at least one year. The results showed the scale distinguished between the programs that were utilizing the IPS model and those that were not. As expected, the IPS programs had greater consistency with the IPS model scale than other supported programs. However, other supported employment programs were more "partially consistent" with the IPS model than the non-supported employment (other vocational rehabilitation) programs. Thus, the scale showed discriminant validity. Brekke & Test (1992) constructed a fidelity scale for the Assertive Community Treatment (ACT) program. They used questions related to client characteristics, location of services, mode of delivering services, frequency and duration of contact with consumers, staffing patterns, and continuity of care. Nearly all of the data were collected from record reviews, a time consuming process. The results demonstrated the ability of the fidelity measure to discriminate among intensive community programs.

Mowbray et al., (2003) point out that fidelity is important to internal validity and can enhance statistical power by explaining more of the variance. Fidelity can assess whether the program (independent variable) is really there in the experimental

condition and not there in the control condition, if it is really there in multi-site studies, and if it is really there across studies in a meta-analysis. After describing a developmental process (similar to that used by McGrew et al., 1994), the authors recommended testing several forms of validity:

- **Reliability across respondents** (various measures of agreement)
- **Internal structure of the data** (factor analysis, cluster analysis, internal consistency reliability)
- **Known groups** (apply measures to groups that are known to differ in ways important to the program)
- **Convergent validity** (correlating various measures from different sources with the fidelity measure)
- **Predictive validity** (relate fidelity scores with important outcome measures)

Another approach to developing a fidelity scale was taken by Paulsell, Kisker, Love, & Raikes (2002). When developing a scale to assess implementation in early Head Start programs, they based the items on the Head Start Program Performance Standards published by the government. The scale included items related to services (assessments, frequency, individualized, parent involvement), partnerships (family, community), and management supports (staff training, supervision, compensation, retention, morale). In 1997, after about 1 year of operation, 6 (35%) of the 17 programs had reached full implementation. By 1999, 12 (70%) had reached full implementation. The biggest improvements were in community partnerships (from 8 to 15 fully implemented) and management systems and procedures (from 7 to 14 fully implemented). The smallest gains were in the areas of child development (from 8 to 9 fully implemented) and family partnership (from 9 to 12 fully implemented). Early implementers started with a strong child development focus, had low staff turnover, and consistent leadership. Later implementers responded promptly to feedback from early site reviews, shifted from family support to a child development focus, and had early changes in leadership. Incomplete implementers had trouble responding to feedback from site visits, had trouble shifting to a child development focus, had higher staff turnover, had turnover in leadership, and had difficulties in community partnerships.

Forgatch et al., (in press) are developing an extensive fidelity measure for the Parent Management Training Oregon (PMTTO) model, a clinical program being implemented in parts of the US and nationally in Norway. The fidelity measure consists of detailed coding and analyses of videotapes of treatment sessions. Trained observers use a 9-point scale to rate 5 dimensions of practitioner performance during the session: knowledge of PMTTO, use of PMTTO structures, teaching, clinical process, and overall quality. Their study found a significant positive relationship between practitioner fidelity and improvements in the parenting behaviors of mothers and stepfathers in the families being treated.

Evaluation and Fidelity Summary

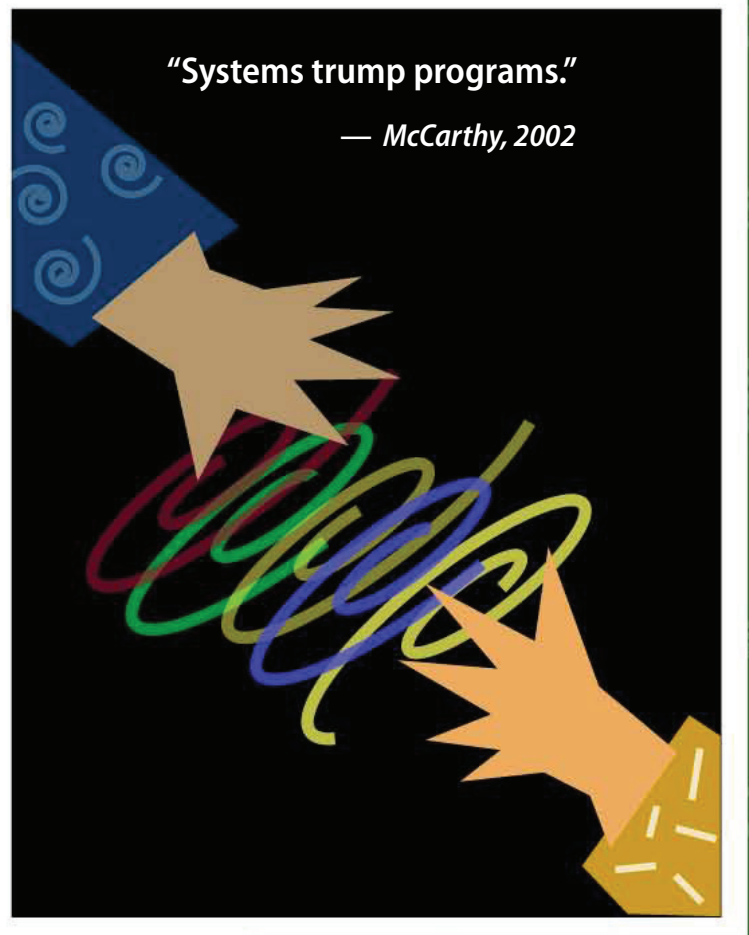
The most effective intervention will not produce positive effects if it is not implemented. Thus, assessments of performance are a critical component of implementation. Context fidelity measures describe the necessary precursors to high-level performance (e.g., completion of training, acceptable practitioner-coach ratio, acceptable caseload, availability of colleagues with special skills, availability of certain resources) for a particular program or practice. Compliance fidelity measures provide an outline of the core intervention components and their use by the practitioner. Competence fidelity measures are essential for determining the extent to which the core intervention components were delivered with skill and attention to the craft when interacting with consumers. The results of fidelity measures and staff evaluations seem to have many practical uses. Coaches can use the information to sharpen their professional development agendas with practitioners. Administrators can use the information to assess the quality of training and coaching. Purveyors can use the information as a guide for implementation at the practice and program development levels. And, researchers can use the information as an outcome measure for some studies and as an independent variable in others.

The most effective intervention will not produce positive effects if it is not implemented. Thus, assessments of performance are a critical component of implementation.

Chapter 6

Organizational Context & External Influences

- Literature Related to Organizational Components and External Influence
- Organizational Change and Development





Organizational Context and External Influences

No matter how good the program may be, if national policy changes and certain services are no longer funded, those services will disappear.

Without hospitable leadership and organizational structures, core implementation components cannot be installed and maintained. Without adequate pay, skillful evidence-based practitioners will be hard to find and keep and programs will falter. Like gravity, organizational and external influence variables seem to be omnipresent and influential at all levels of implementation.

Based on years of experience, Rosenheck (2001) sees “organizational process as a largely unaddressed barrier and as a potential bridge between research and practice” (p. 1608). “Large human service organizations ... are characterized by multiple and often conflicting goals, unclear and uncertain technologies for realizing those goals, and fluid participation and inconsistent attentiveness of principal actors. It is in this field of competition, ambiguity, and fluid managerial attention that efforts to import research findings into practice take place” (p. 1608). The challenges and complexities go beyond individuals and the organizations for which they work. Goldman et al. (2001) state that a “major challenge is to identify policy interventions that facilitate implementation of evidence-based practices but also minimize barriers to implementation” (p. 1592).

The importance of facilitative administration is often discussed and rarely evaluated with respect to implementation outcomes. The impacts of external influence factors on evidence-based practices and programs are even deeper in the shadows of empirical findings. Consequently, there is little to “conclude” from the implementation evaluation literature. Based on the literature review, we have a few speculations about the findings in these areas:

1. It seems that the work of implementation is done by the core implementation components (i.e., training, coaching, and feeding back information on the performance of practitioners).
2. It seems that assuring the availability and integrity of the core implementation compo-

nents is the functional work of an organization. An organization decides to proceed with implementation, selects and hires/reassigns personnel, provides facilitative administrative support, works with external systems to assure adequate financing and support, and so on to accomplish this core function.

3. It seems that organizations exist in a shifting ecology of community, state, and federal social, economic, cultural, political, and policy environments that variously and simultaneously enable and impede implementation and program operation efforts.

The potential relationships among core implementation components, organizational features, and influence factors are shown in Figure 5. Various authors (Bernfeld, Blase, & Fixsen, 1990; Bernfeld, Farrington, & Leschied, 2001; Edwards, Schoenwald, Henggeler, & Strother, 2001; Morton, 1991; Paine et al., 1984; Salasin & Davis, 1977; Schoenwald & Hoagwood, 2001) have described such a multilevel approach to understanding the transactional effects shared by these domains. As discussed in the previous chapter, the core implementation components appear to be essential to changing the behavior of practitioners and other personnel who are key providers of evidence-based practices within an organization. The core components do not exist in a vacuum. They are contained within and supported by an organization that establishes facilitative administrative structures and processes to select, train, coach, and evaluate the performance of practitioners and other key staff members; carries out program evaluation functions to provide guidance for decision making; and intervenes in external systems to assure ongoing resources and support for the evidence-based practices within the organization. Thus, as shown in Figure 5, the core implementation components must be present for implementation to occur with fidelity and good outcomes. The organizational components must be present to enable and support

those core components over the long term. And, all of this must be accomplished over the years in the context of capricious but influential changes in governments, leadership, funding priorities, economic boom-bust cycles, shifting social priorities, and so on.

We postulate that our understanding of the contributions of organizational and external influences on the effectiveness of core implementation components will be furthered when all three levels are measured simultaneously. Table 3 suggests some possible fidelity outcomes and sustainability outcomes for different combinations of strong or weak core implementation components and organizational components within the context of policy and funding environments that generally are enabling or hindering.

For example, Glisson & Hemmelgarn (1998) found a positive link between organizational culture and climate and organizational outcomes in typical child welfare environments. A similar study using data from MST implementation sites failed to replicate that relationship (Schoenwald et al., 2003) It may be that this is a comparison of an “enabling-strong-weak” configuration in the Glisson & Himmelmarn study vs. an “enabling-strong-strong” combination for MST. Typical MST implementations have well-designed and executed core implementation components that may override many inconsistencies or inadequacies within an organization. Thus, the influence of comparatively weak variables such as organizational culture and climate would not be detected in an MST implementation site.

Interestingly, in keeping with this speculation, Schoenwald et al., (2003) found that organizational culture and climate were associated with practitioner fidelity when fidelity was low, but not when fidelity was high. In another example, Klinger, Ahwee, Pilonieta, & Menendez (2003) noted a linear relationship between implementation and administrative support for teachers learning new instructional methods for inclusive classrooms (enabling-strong-weak). That is, when teachers perceived that the instructional practice was valued by their school leader, there was a greater likelihood they would implement the practice. However, Gersten, Chard, & Baker (2000) suggest that teachers who have developed a high degree of mastery of an innovation may

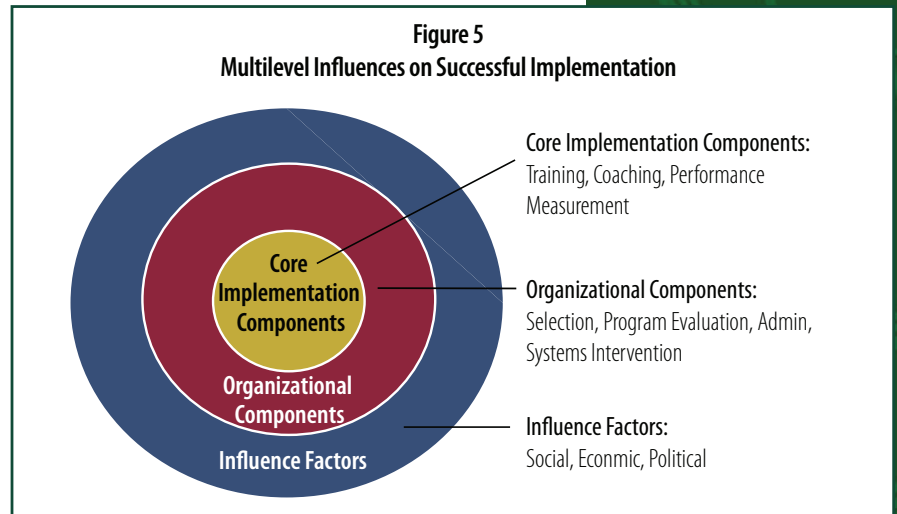


Table 3
Postulated Relationships Among Core Implementation Components, Organizational Components, and External Influence Factors that may Help Explain Various Implementation Outcomes

External Influence Factors	Organizational Components	Core Implementation Components	Possible Fidelity Outcomes	Possible Sustainability Outcomes
Generally Enabling	Strong	Strong	High	Long term
		Weak	Low/Medium	Medium term
	Weak	Strong	High	Medium term
		Weak	Low	Short term
Generally Hindering	Strong	Strong	High	Medium term
		Weak	Low	Medium term
	Weak	Strong	Medium/High	Short term
		Weak	Low	Short term

be able to persevere in their implementation despite changes in administration (enabling-weak-strong). Thus, organizational factors may have a greater impact on new learning and less impact on well-established repertoires and routines. It is likely that answers to these riddles will be found when we simultaneously measure core components, organizational components, and influence factors and assess their interactive contributions to implementation. It seems likely that the desired outcomes of sustainable high fidelity practices best will be achieved when strong core implementation components are well-supported by strong organizational structures and cultures in an enabling mix of external influences.

Literature Related to Organizational Components and External Influence

The framework depicted in Figure 5 and Table 3 can be used to help make sense of the literature. Flanagan, Cray, & Van Meter (1983) described a consultation and training team that was developed to make changes in several residential units at a large state mental health facility. After 7 years of experience, they described their view of the keys to successful implementation:

- working in units that were under close external and internal scrutiny because of serious problems (increased motivation for change and greater flexibility) (INFLUENCE FACTOR)
- gaining top management support (ORGANIZATIONAL COMPONENT)
- gaining middle management and line staff support (ORGANIZATIONAL COMPONENT)
- training for line staff (information, modeling, behavior rehearsal) (CORE COMPONENT)
- coaching for line staff (based on performance assessments and staff development plans) (CORE COMPONENT)
- staff performance assessment and feedback (based on direct observation, checklists) (CORE COMPONENT)
- supervisory and management development (ORGANIZATIONAL COMPONENT)
- intervention sustainability (institutionalize procedures and processes in the residential unit and in management practices) (ORGANIZATIONAL COMPONENT)
- implementation team sustainability (access to hard money after the three-year demonstration project was completed) (ORGANIZATIONAL COMPONENT/ INFLUENCE FACTOR)

Thus, in their experience, all three levels (influence, organizational, and core components) contributed to successful implementation of quality care practices and programs for residents.

After many years of implementing public policy in New York, Chase (1979) presented a framework for examining obstacles to the implementation of human services delivery programs. These

obstacles appear to arise from three basic sources: the operational demands implied by a particular program concept (CORE COMPONENT), the nature and availability of the resources required to run the program (ORGANIZATIONAL COMPONENT), and the need to share authority with, or retain support of, other bureaucratic and political actors in the implementation process (INFLUENCE FACTOR). Within these three broad categories, Chase summarized 15 areas that must be considered when starting any new project (p. 385):

1. The people to be served
2. The nature of the service
3. The likelihood of distortions or irregularities
4. The controllability of the program
5. Money
6. Personnel
7. Space
8. Supplies and technical equipment
9. Intersections and overhead agencies
10. Other line agencies
11. Elected Politicians
12. Higher levels of government
13. Private-sector providers
14. Special-interest groups
15. The press

Once again, the “nature of the service” combines with organizational and influence factors to enable and support the service that is being implemented. In the article, Chase (1979) concludes by stating, “One must have a keen sense of the political and bureaucratic terrain where the program is taking place and be able to walk through, step by step, all the functions involved in the program’s continuing operation, all the actions necessary to assemble the required resources, and all likely intersections with relevant political and bureaucratic actors that will affect the process of setting up and managing the program” (p. 387).

Adams (1994) provided a detailed case study of the Edna McConnell Clark Foundation’s promotion of the Homebuilders family preservation services model and the interaction of the innovation with public policymaking. Adams was critical of the Clark Foundation’s methods and noted they mirror those outlined by Wenocur & Reisch (1989) regarding how “members of an aspiring

occupation construct a professional enterprise” and create a monopoly by attending to:

- “economic tasks such as creating a marketable commodity and acquiring control of outlets for distribution and sales,
- “political tasks such as defining boundaries so as to include and exclude desirable and undesirable members,
- “ideological tasks such as convincing legitimating bodies that the enterprise is worth sanctioning” (p. 420)

According to Adams (1994), these activities create a demand where none existed before, prevent the development of alternative forms of services, create a tendency to become evangelical about the model and not the science of the model, establish elements that function as markers of brand identity to enhance marketability, and enforce fidelity to avoid program drift (drift allows innovation and alternatives). Adams pointed out these methods combined with millions of dollars of the Foundation’s private funding contributed to the national diffusion of the Homebuilders family preservation services model. According to Adams, the creation of such a social technology monopoly (although difficult to achieve and maintain in human services) can have adverse results. An evidence-based program may be a “quick fix which offers a cheap substitute for policies which would seriously address structural sources of abuse and neglect” (Adams, 1994, p 418). Despite the critical tone, Adams’ article provides a case study of the critical interactions between evidence-based practices and programs (CORE COMPONENTS) and the influence of policy makers and funders at state and federal levels (INFLUENCE FACTORS).

A multilevel description of the national implementation of the DOTS program in India was provided by Khatri & Frieden (2002). The Directly Observed Therapy System (DOTS) developed through the World Health Organization involves directly observing patients taking the full dose of their medicine (essentially, a fidelity system at the patient level). From inception in 1998 through 2002 a well-implemented DOTS strategy for tuberculosis (TB) control in India served over 1 million patients within an inadequate public health infrastructure, saved over

200,000 lives, and saved over \$400 million. The authors summarized ten elements contributing to the success of the national implementation of the DOTS program:

1. Getting the science right and ensuring technical excellence (CORE COMPONENTS). Before embarking on large-scale expansion, all technical policies and detailed training modules for every level of staff were written, extensively revised, field tested over a period of several years, finalized, and disseminated widely. In addition, prior findings were used to determine effective methods to treat patients and improve the intervention. For example, it was found that treatment on an intermittent basis was more effective than daily treatment. Additionally, outcomes were more promising when someone outside the family instead of a family member observed treatment.
2. Building commitment and ensuring the provision of funds and flexibility in their utilization (INFLUENCE FACTORS). They noted that government commitment is the engine that drives any health program. However, it was recognized that commitment to a public health program waxes and wanes. Thus, the developers started with a coherent set of policies and an effective pilot program and worked to gain the support of wider arrays of successive groups of policy makers and stakeholders.
3. Maintaining focus and priorities (ORGANIZATIONAL COMPONENTS). “Only by focus and prioritization can success be achieved.”
4. Systematically appraising each geographic region before starting service delivery (CORE COMPONENTS). The appraisal process serves as a quality control mechanism for the implementation of the program by ensuring that each district meets a minimum standard before starting service delivery.
5. Ensuring an uninterrupted drug supply (ORGANIZATIONAL COMPONENTS). Frequent meetings and communication by phone, fax, and email are used to ensure information flow about drug requirements and supply. The introduction of computerized monitoring greatly improved the distribution of drugs.

6. Strengthening the established infrastructure and providing support for staff (ORGANIZATIONAL COMPONENTS). Regular interaction (training, mentoring, coaching) among all levels of staff has led to the creation of a large body of highly skilled, motivated, and accountable workers.
7. Creating and supporting the infrastructure required in urban areas (ORGANIZATIONAL COMPONENTS). Staff members have been specifically provided to areas lacking an effective healthcare infrastructure. The state and district societies (non-governmental organizations) make decisions on budget formation, hire contractual staff, purchase whatever items are necessary, and oversee program planning, implementation, and monitoring.
8. Ensuring full-time independent technical support and supervision, particularly during the initial phases of implementation (CORE COMPONENTS). The World Health Organization (WHO) and the Central Tuberculosis Division began hiring, training, and deploying doctors to act as consultants.
9. Continuous supervision at all levels (CORE COMPONENTS). “Supervise, supervise, and supervise. What gets supervised gets done.” (p. 461).
10. Monitoring intensively and giving timely feedback (CORE COMPONENTS). Intensive monitoring and supervision of all aspects of the program at every level were seen as essential.

This large scale program was very complex in its design and implementation in various local organizations over many years. Attending to the 3 levels of “getting the science right” and aligning organizational, infrastructure, policy, and political supports resulted in impressive benefits to patients and the national health system.

Influence Factors at Work

Some pervasive influence factors have been identified in the literature. Once again, the data are all but non-existent. Nevertheless, influence factors identified in the literature included federal and state laws, local ordinances, departmental administrative policies, funding priorities, com-

munity resources, interests of local consumers, and advocates’ concerns (Corrigan, 2001; Zins & Illback, 1995).

Organizational supports were identified as critical by Felner et al., (2001) in their evaluation of the School Transitional Environment Project (STEP), a prevention and promotion program involving whole school improvement and restructuring. The model seeks to modify the ecology of schools and schooling in order to build the principles of prevention and promotion into “whole school” change. It takes a number of years of effort to get full implementation that is associated with strong effect size and gains. The focus of the STEP program is on structuring the physical environment by:

- Establishing small schools within large schools by assigning 60-100 students to a “team” and keeping students together in their classes to increase connectivity.
- Locating STEP classrooms in close proximity to each other increasing the likelihood of students and teachers informally interacting and keeping students away from older students.

Teacher support is increased by:

- Expanding the role of the homeroom teacher so it is more comprehensive, taking on some of the roles of guidance counselor (e.g. communication with parents, choosing classes, counseling) and linking to the rest of school and to parents.
- Training and consultation for teachers with continuing supervision from school guidance staff coupled with additional training for all in team building and student advisory skills.
- Regular team meetings and peer support among the STEP teachers in their team.

Across multiple trials, implementation of the STEP program was associated with clear declines in drop out rates in high school of 40-50% or more. STEP students also had lower levels of behavioral difficulties and were more likely to maintain academic performance and achievement levels. Common dimensions of high-performing schools included five interdependent components of implementation that need to be part of the implementation planning efforts of policy makers and practitioners:

1. *Structural and organizational characteristics of schools* (e.g. common planning time, class size, student-teacher ratios) were deemed to be “necessary, but certainly not sufficient, elements to obtain the gains in achievement and performance that were above those levels at which the student entered” (p. 189).
2. *Attitudes, norms and beliefs of staff*; staff buy-in initially and over time.
3. *Climate/empowerment/experiential characteristics* (e.g. levels of stress, safety, feeling empowered to make decisions).
4. *Capacity/Skills*; skills and knowledge teachers need to implement classroom changes.
5. *Practice and procedural variables* that can be used to build and convey high expectations throughout the school.

Administrative support and internal advocacy appeared to impact implementation in a study of a suicide prevention program in 33 of the 46 public high schools in one county (Kalafat & Ryerson, 1999). After the program had been implemented, suicide rates for the state decreased from 8.72 (5 years pre-implementation) to 7.90 (5 years post-implementation) while the rates for the county dropped from 7.26 to 4.38 during the same periods (pre to post). These schools were surveyed and key personnel interviewed about 10 years after implementation originally had been attempted. The survey found that about 80% of the schools had adopted written policies and all but one continued to provide student education on suicide prevention. The interviews found that all the schools modified the curriculum to some degree but only one change was to a core intervention component. In addition, all teachers using the program had received special training (many were still there from 10 years ago) and felt that administrative support facilitated the program (time and scheduling, committed staff). The two schools that had dropped the program entirely lacked an in-school advocate. In both schools the trained Coordinator left after one year, one principal left after the first year and the new one did not support the program, and one faculty group was negative about the program.

Organizational resources were deemed to be important by Denton et al., (2003) who described taking research-based practice in reading inter-

vention to scale. In their estimation, successful programs for students with learning disabilities (LD) are highly related to two factors:

1. The extent to which the general education teacher has the time, skills, knowledge, and interest in providing an appropriate education for students with LD; and
2. The extent to which other personnel, such as the special education teachers, are able to control their schedules and case loads so that they are able to provide explicit and systematic instruction each day to a small group of students with LD (even if for only 45 minutes).

If either of these two factors is not in place, appropriate instruction in reading for students with LD is unlikely. Administrative support and leadership also seemed to be closely related to the sustained use of an educational practice.

Maloney et al., (1977) demonstrated the first use of the Teaching-Family Model in an organizational context. That is, implementation of a number of Teaching-Family Model group homes in communities that are in close proximity to an organization designed to facilitate and support their operations at a high level of fidelity. In one of the few long term follow up studies of implementation effects, Fixsen et al. (2001) examined the first 792 implementations of the Teaching-Family Model of group home treatment for juvenile delinquents and other populations in 32 states and 1 Canadian province. The analysis of implementation attempts revealed that proximity discriminated early failures from successes (those homes closer to the training staff got more personal, on-site observation and feedback). Given this, implementation efforts shifted to developing Teaching-Family Sites instead of individual group homes. Longer-term data showed that this had a large impact on sustainability (over 85% of the group homes associated with a Teaching-Family Site lasted 6+ years compared to only 17% that lasted 6+ years for homes not in close proximity to a Teaching-Family site). Teaching-Parents attained high levels of fidelity at about the same rate under both conditions. These data suggest that housing evidence-based practices in the context of supportive organizations may have a very positive effect on program sustainability.

These results and experiences led to more attempts to implement the Teaching-Family Model in organizations nationally. Fixsen & Blase (1993)

“To be effective, any design process must intentionally be, from the beginning, a redesign process.”

—Felner et al., 2001

showed that attempts to replicate whole Teaching-Family organizations (Teaching-Family Sites) were successful about 30% of the time until they began to systematically train staff for organizational roles (trainers, consultants, evaluators, administrators) and actively help organizations through the change process. After making organizational change a systematic component of the implementation process, over 80% of the organizational development attempts were successful.

Organizational Change and Development

As described earlier in this monograph, implementation of evidence-based practices and programs almost always requires organizational change. That is, “To be effective, any design process must intentionally be, from the beginning, a redesign process” (Felner et al., 2001, p. 189; Fixsen, Phillips, Baron et al., 1978; Kirkwood, Smith, & Tranfield, 1989; Phillips et al., 1978). It also was noted that, “Successful implementers carefully monitored entire change processes, regulating and controlling social and political issues as they arose” (Neufeld & Roper, 2003, p. 255). In the literature, the elements often described as important to organizational change included:

- **commitment of leadership to the implementation process;** a meta-analysis of studies of leadership regarding implementing management by objectives (MBO) procedures (Rodgers, Hunter, & Rogers, 1993) found that productivity gains were five times higher when management commitment was high rather than low. Leadership takes many forms, such as to:
 - ♦ initiate and shepherd the organization through the complex change process (Corrigan & Boyle, 2003; Fairweather et al., 1974; Klinger et al., 2003; Premkumar, 2003);
 - ♦ set explicit goals, communicate them clearly throughout the organization, resolve conflicts with other goals, and reinforce persistence (Rodgers et al., 1993);
 - ♦ help create the details of activities, processes, and tasks in order to operationalize implementation policies (Schofield, 2004);
 - ♦ inspire, guide, and provide direction (Hodges et al., 2002); and
 - ♦ recruit, select, train, locate, advance, promote, or dismiss employees to further the aims of implementation policies (Van Meter & Van Horn, 1975),
- **involvement of stakeholders in planning and selection of programs to implement** (Bachman & Duckworth, 2003) to encourage buy-in and ownership during implementation and continuing operations (Bierman et al., 2002; Felner et al., 2001; Klinger et al., 2003) and to keep negative forces at bay (Fox & Gershman, 2000);
- **creation of an implementation task force made up of consumers, stakeholders** (including unions, Joyce & Showers, 2002), and community leaders to oversee the implementation process (Dewan et al., 2003);
- **suggestions for “unfreezing” current organizational practices** (including the use of external consultants or purveyors, Fairweather et al., 1974; Neufeld & Roper, 2003), changing those practices and integrating them to be functional, and then reinforcing the new levels of management and functioning within the organization (Cheung & Cheng, 1997; Fixsen, Phillips, Baron et al., 1978);
- **resources for extra costs, effort, equipment, manuals, materials, recruiting, access to expertise, re-training for new organizational roles,** etc. associated with implementation of an innovation (Fixsen, Phillips, Baron et al., 1978; Fleuren, Wiefferink, & Paulussen, 2004; Phillips et al., 1978);
- **alignment of organizational structures to integrate staff selection, training, performance evaluation, and on-going training** (Blase et al., 1984; Fixsen & Blase, 1993; Fixsen, Phillips, Baron et al., 1978; Huber et al., 2003; Morrissey et al., 2002; Phillips et al., 1978) along with human resource functions such as changed job descriptions, compensation, retention, and attention to morale (Paulsell, Kisker, Love, & Raikes, 2002; Wafa & Yasin, 1998);
- **alignment of organizational structures to achieve horizontal and vertical integration** (including training for managers and executive

- staff) and liaisons with resources and partners (Unger et al., 2000; Wafa & Yasin, 1998); and
- *commitment of on-going resources and support for providing time and scheduling for coaching, participatory planning, exercise of leadership, evolution of teamwork*, etc (Joyce & Showers, 2002; Park & Han, 2002) and for generating and using data locally (Milojicic et al., 2000).

Evaluations of Core Organizational Components

Research focused on implementation has begun to operationalize the important aspects of organizational supports for evidence-based practices and programs and for practitioners who are expected to implement them. For example, Chamberlain, Moreland, & Reid (1992) noted the difficulties associated with recruitment and retention of foster parents since both parents often work, it is hard to obtain liability insurance, reimbursement rates are low, there is a lack of training and support, and the problems of children are difficult. In addition, many foster parents have trouble getting their reimbursements on time and complain about a lack of respite care. Chamberlain et al., (1992) evaluated the effects of training and administrative support variables. They compared foster care as usual ($N = 27$ children 4 - 7 years old), with a group that received increased payments of \$70 a month ($N = 14$), and another group ($N = 31$) that received increased payments plus training and enhanced support consisting of weekly group sessions and telephone contact at least three times a week. All foster parents were highly experienced, having cared for an average of 21 foster children (range from 1 to 215). Most of the foster parents had project and non-project children placed in their homes. Over a two year period, the results showed a foster parent drop-out rate of 9.6% for training plus payment, 14.3% for payment only, and 25.9% for regular foster parents. Greater stability was found for the children as well with a 29% failure rate in the two payment conditions combined compared to 53% in the regular foster care group. Enhanced payments and administrative support seem to be important to the stability of foster parents and child placements.

Access to adequate resources was associated with implementation of school health education for over 30,000 children (grades 4 - 7) in 1,071 classrooms in 20 states who participate in the School Health Curriculum Project, Project Prevention, Health Education Curriculum Guide, or the 3 Rs and High Blood Pressure program. In a summary of the overall evaluation results, Connell, Turner, & Mason (1985) found that the results of the health education efforts generally were positive but mixed across schools and classrooms. In their analyses, much of the observed variation was accounted for by measures of the degree of program implementation in each classroom and the degree of implementation was related to the allocation of school resources (time and program support materials) to health curricula. Lack of resources was associated with less use of the curricula and fewer benefits to children.

Organizational supports were associated with the satisfaction of staff in group homes. Connis et al., (1979) assessed organizational functions and the satisfaction of Teaching-Parents (married couples who staff Teaching-Family group homes) and staff operating other (non-Teaching-Family) group homes. For all staff, they found that salary, private living space, free-time, time off, availability of relief staff, vacation time, administrative structure, fringe benefits, and annual budget correlated highly with their satisfaction with their work. They also found that organizational supports and satisfaction were higher among Teaching-Parents than among staff in other (non-Teaching-Family) group homes. Thus, administrative structures and functions that support residential treatment staff in these ways seem to be important to satisfaction and, perhaps, longevity.

After several years of developing new organizations and managing the change processes in existing organizations, purveyors of the Teaching-Family Model developed a list of factors critical to the operation of any residential program (cited in Bernfeld, 2001). As shown in Table 4, treatment procedures that had been the subject of years of research turned out to be one variable out of 37 deemed to be essential. The other organizational and influence variables were equally essential to program operations and sustainability but had not been given the same amount of research attention. In discussions over the years, purveyors

Table 4
Factors Deemed to be Critical
to the Operation of a Residential
Treatment Program

ADMINISTRATION RELATED

- Organization Structure
- Administrative Style & Philosophy
- Communication Systems
- Planning & Policy Development
- Ethics
- Safety & Security
- Construction & Maintenance
- Accountability Procedures
- Inter-Agency Interactions

FUNDING RELATED

- Licensing
- Laws and Regulations
- Recordkeeping
- Financial Management, Reporting, Auditing
- Board of Directors Relations
- Community & Political Support

PERSONNEL RELATED

- Staff Recruitment, Selection, Employment Conditions
- Laws and Regulations
- Salary Administration
- Staff Training
- Staff Supervision & Performance Evaluation
- Crisis Assistance

CLIENT RELATED

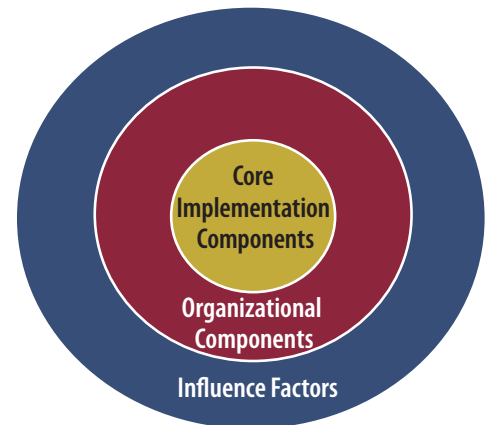
- Referral Sources
- Admission, Placement, & Termination
- Laws and Regulations
- Recordkeeping
- Treatment Planning
- Treatment Procedures
- Setting Management
- Health
- Education
- Recreation
- Nutrition
- Transportation
- Employment
- Aftercare Services
- Client Supervision
- Inter-Agency Cooperation

say they rarely “lose” an implementation site due to program technology problems (e.g., fidelity, consumer outcomes). When one fails, it is almost always due to organizational or systems issues such as those described in this section (“systems trump programs”).

Summary

The literature suggests that core implementation components, organizational components, and influence factors interact to produce implementation outcomes. Core implementation components exist in the context of organizational and influence factors that can support or hinder their availability, operations, and effectiveness. The literature is helpful in pointing out areas of influence and candidates for systems intervention in order to successfully implement and sustain programs and practices over the long term. However, there is very little information about the processes used to gain access to and secure the cooperation of individuals, organizations, departments, and political groups. Thus, organizational and systems intervention strategies and skills represent a critical research and practice area for national implementation of successful practices and programs.

Multilevel Influences on Successful Implementation



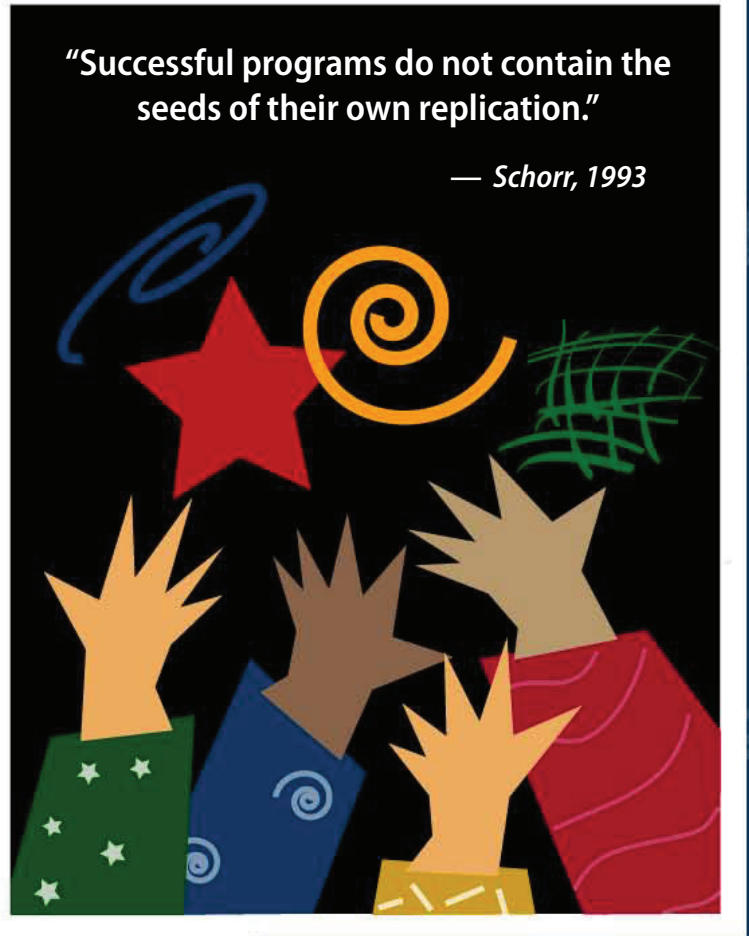
Chapter 7

Conclusions and Recommendations

- Recommendations for State and National Policy Makers
- Recommendations for Research on Implementation
- Recommendations for Effectiveness Research on Practices and Programs
- Recommendations for Purveyors of Well-defined Practices and Programs

“Successful programs do not contain the seeds of their own replication.”

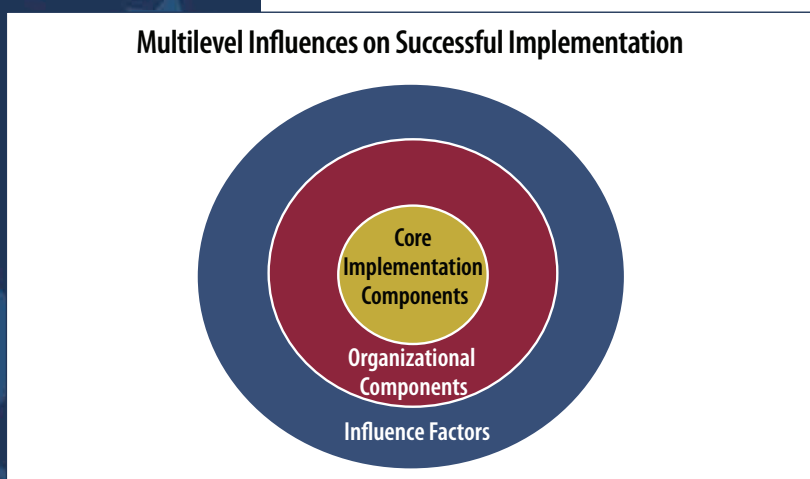
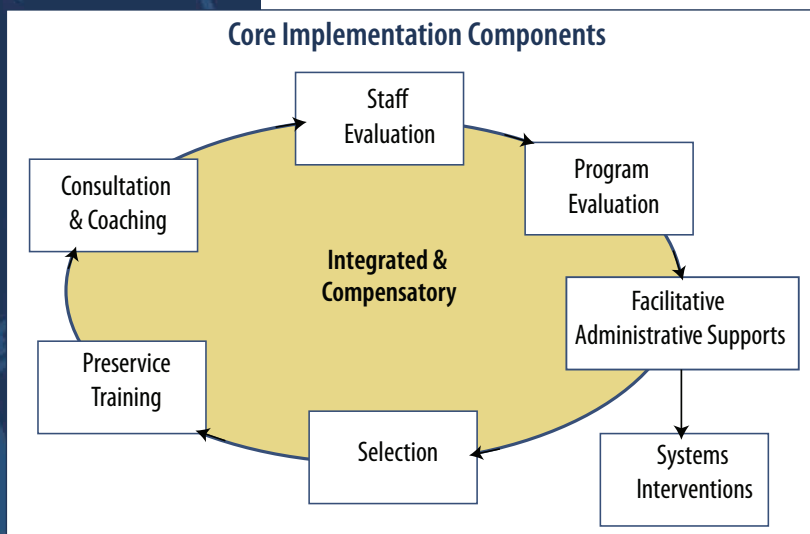
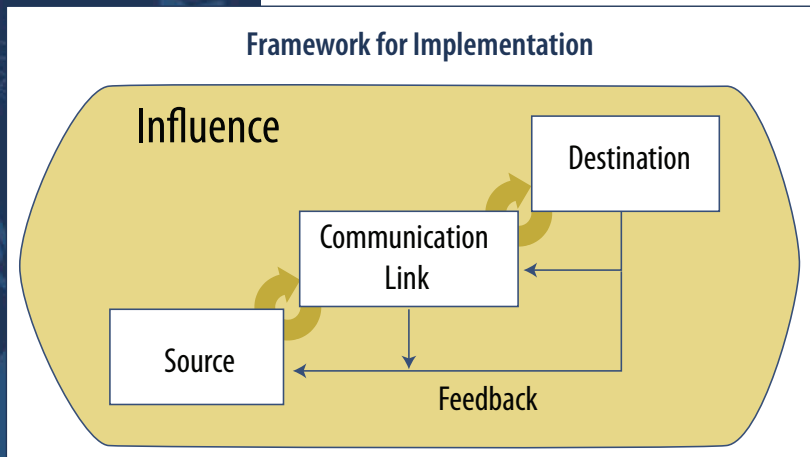
— Schorr, 1993





Conclusions and Recommendations

The literature reviewed for this monograph clearly points to the importance of implementation variables in the essential work of making science useful to service.



Implementation practices function in a complex ecology of best intervention practices, organizational structures and cultures, policy and funding environments, and community strengths and needs. Given the preponderance of evidence from a variety of sources, implementation appears to be a crucial component of moving science to service with fidelity and good outcomes for children, families, and adults. In this chapter conclusions and recommendations are presented for policy makers, state planners, purveyors, managers of provider organizations, and researchers.

At this point, the growing body of literature on implementation is sufficient to benefit human services. The review of the literature described in this monograph assesses the evidence and provides a topographical view of the characteristics of successful implementation activities and efforts across domains. The review resulted in the identification of implementation factors and the development of frameworks for helping make sense of the findings. These include an overall framework for implementation (Chapter 3, Figure 1), a framework for core implementation components (implementation drivers; Chapter 4, Figure 3), and a framework for understanding how organizational and external factors might influence the functioning of core implementation components (Chapter 6, Figure 5). In addition, several possible stages of implementation were identified (Chapter 3). It was encouraging to note that similar core implementation components seem to apply equally well to a broad range of programs and practices across a variety of domains. These commonalities bode well for guiding current planning and policy efforts, and research to further the development of the science and practice of implementation.

This report is based on a broad-based search of the literature and a full text review of 1,054 sources. The full text review further reduced the number of sources to 743 that were empirical studies, meta-analyses, or literature reviews related to implementation factors. About half (377) of the sources were judged to be “significant” (i.e.,

implementation articles that met one of the following three criteria: (1) well-designed experimental evaluations of implementation factors, or (2) careful reviews of the implementation literature, or (3) well-thought-out but more theoretical discussions of implementation factors). Only 22 articles reported the results of experimental analyses (randomized group or within subject designs) or meta-analyses of implementation variables. The extent of the available literature related to implementation confirms the findings of two other recent reviews in the medical field. Greenhalgh, Robert, MacFarlane, Bate, & Kyriakidou (2004) conducted a search of the health care literature that specifically looked more broadly at diffusion, dissemination, implementation, or routinization of innovations. Their search resulted in 1,024 full-text reviews and 495 sources that met their criteria for inclusion. Of the 495 sources, 213 were empirical studies and 282 were non-empirical. Ellis, Robinson, Ciliska, Armour, Raina, Brouwers, et al. (2003) examined strategies that have been evaluated to disseminate cancer interventions, did full text screening for 456 articles, and ended up with 31 studies that focused on implementation or diffusion factors themselves.

Thus, in the panoply of articles published over the last few decades regarding important issues and practices in human services, these reviews agree that scant attention has been given to evaluation of clear and effective methods to move science to service and transform human service systems nationally.

The diversity of literature sources, language, definitions of concepts, and data collection methods posed many problems in searching for and reviewing the implementation literature (Chapter 1). After their review of implementation of cancer research, Ellis, et al. (2003) also concluded that the wide variation in methodology, measures, and use of terminology across studies limited interpretation and prevented meta-analyses. While this diversity is frustrating during the review process and does limit statistical approaches to meta-analysis, it also has some benefits with respect to conclusions from the review. That is, conclusions can be stronger when there is agreement across evidence sources from so many different domains, different conceptual orientations, different approaches to measurement, and different qualitative and quan-

Table 5
The Interaction of Intervention Effectiveness and Implementation Effectiveness.

		Effectiveness of <i>Implementation</i> Practices	
		Effective	Ineffective
Effectiveness of <i>Intervention</i> Practices	Effective	Good Implementation Outcomes Good Consumer Outcomes	Poor Implementation Outcomes Poor Consumer Outcomes
	Ineffective	Good Implementation Outcomes Poor Consumer Outcomes	Poor Implementation Outcomes Poor Consumer Outcomes

titative research methods. In essence, the convergence of factors, themes and evidence across such diverse parameters allows a clearer view of the commonalities that seem to exist with respect to implementation factors separate and apart from the particular program or practice that is being implemented. In addition, to the extent that there was overlap, there was a high level of agreement between the findings from experimental studies and non-experimental studies. Such agreement lends support to the validity of the conclusions provided below.

As noted in the review (Chapter 1), good outcomes for consumers occur when effective practices are implemented effectively. As shown in Table 5, when effective intervention practices are implemented ineffectively, poor results occur for consumers. On the other hand, good implementation outcomes can occur regardless of the effectiveness of the intervention practices. That is, even poor intervention programs can be implemented effectively and achieve good implementation outcomes (such as high levels of practitioner compliance with protocols and competence in delivery of the intervention, see Chapter 4). Even though poor intervention practices are effectively implemented they still produce poor consumer outcomes because the intervention practices themselves are not effective. As noted in Chapter 1, this is a compelling rationale for measuring both intervention and implementation outcomes so that outcome data can be interpreted. For policy makers, state planners, managers of provider organizations, and researchers, it is important to give as much attention to the development and measurement of implementation practices as is given to intervention practices. By doing so, intervention effectiveness problems can be discrimi-

It was encouraging to note that similar core implementation components seem to apply equally well to a broad range of programs and practices across a variety of domains. These commonalities bode well for guiding current planning and policy efforts, research to further the development of the science and practice of implementation.

nated from implementation effectiveness problems and services to consumers can be improved. The ability to make this discrimination can lead to more appropriate strategies that more efficiently and effectively address ineffective outcomes. It is important to remember that strategies to address implementation problems will be different from strategies to address the ineffectiveness of the intervention itself.

The following sections present the conclusions and recommendations from this review. While the current interest in implementation stems from the current interest in evidence-based practices and programs and closing the gap between science and service, the literature makes it clear that effective implementation procedures are applicable to any well-defined policy, program, or practice or any well operationalized set of beliefs, values, or philosophies. As seen in the review (Chapter 4), knowing the core components is critical to implementation success. Thus, clarity of the operations that define procedures is more important to implementation success than the amount or quality of data regarding the effectiveness of those procedures. In the conclusions and recommendations, evidence-based practices and programs will be mentioned only when there is some special applicability.

Findings & Conclusions

The findings of this review can help guide current efforts to implement programs and practices in human service settings. The information resulting from the literature review provides an overview of the “best evidence” with respect to implementation garnered from researchers, evaluators, and purveyors across a number of domains from mental health to manufacturing.

At this point, there is good evidence for what does not work, reasonable evidence for what does work, and a clear lack of evidence in other areas. The conclusions based on the evidence are presented in this section.

First, the best evidence points to what does not work with respect to implementation. Although there are few experimental studies (summarized in Appendix C), the results of those carefully designed studies confirm the results of the overall review of the implementation evalua-

tion literature (also see the reviews by Ellis, et al., 2003 and Greenhalgh, et al., 2004):

- Information dissemination alone (research literature, mailings, promulgation of practice guidelines) is an ineffective implementation method, and
- Training (no matter how well done) by itself is an ineffective implementation method.

Although these have been two of the most widely used methods for attempting implementation of policies, programs, and practices, they repeatedly have been shown to be ineffective in human services, education, health, business, and manufacturing. This finding has clear implications for policy makers, state planners, managers of provider organizations, and purveyors. A different approach needs to be taken to implement policies, programs, and practices effectively.

Second, there is good evidence that successful implementation efforts designed to achieve beneficial outcomes for consumers require a longer-term multilevel approach. The literature reviewed in Chapters 3 and 4 provides evidence related to practice-based practitioner selection, skill-based training, practice-based coaching, practitioner performance evaluation, program evaluation, facilitative administrative practices, and methods for systems interventions. In addition, a framework for thinking about these implementation components as part of an overall integrated and compensatory effort is presented in Chapter 3. The strongest evidence concerns skill-based training and practitioner performance or fidelity measures. Good evidence also supports the need for coaching and practitioner selection. The evidence is sparse and unfocused with regard to program evaluation, facilitative administrative practices, and system intervention methods. Based on extensive data and a conceptual framework, policy makers, state planners, managers of provider agencies, and purveyors can now include a more complete set of components (Chapters 3 and 4) in their implementation plans in order to more effectively implement policies, programs, and practices.

Third, there is little evidence related to organizational and system influences on implementation (Chapter 6), their specific influences, or the mechanisms for their impact on implementation efforts. Yet, there seems to be little doubt about

the importance of these organizational and influence factors among those who have attempted broad-scale implementation. The task of aligning system and organizational structures with desired practices seems to be a continuous one that engages policy makers, state planners, managers of provider agencies, and purveyors of programs and practices. This is an important area with little data to inform decision making. A framework for trying to understand the relationships among system, organizational, and practice variables was presented in Chapter 6 as a possible guide to planners and purveyors.

Fourth, perhaps the most noticeable gap in the available literature concerns interaction effects among implementation factors and their relative influences over time. Tantalizing tidbits have been provided in recent studies by Panzano, et al. (in press), Schoenwald, et al. (2003; 2004), Fixsen, et al. (2001), Felner et al., (2001), Joyce & Showers (2002), and Khatri & Frieden (2002). These authors have begun a process to carefully evaluate the various links among implementation stages, implementation components, and purveyor approaches with adoption rates, program and practitioner effectiveness, and implementation site sustainability as the dependent measures. However, analyzing interaction effects is a difficult task given the sheer number of implementation variables identified as important in this review. The study of interaction effects over time will require planning among researchers, policy makers, federal and state funders, and purveyor groups to develop a multi-year program of research to tease out the most useful combinations of implementation factors at each stage of implementation site development.

Implementation and the Status Quo

It is important to recognize that the current structures and processes of many human service organizations (especially behavioral and physical health organizations) and related systems may make it difficult to systematically implement programs and practices. First, human service organizations frequently serve a large population base with a wide range of age groups and complex combinations of presenting problems, many of whom do not neatly fit the more specific inclusion/exclusion criteria that typify evidence-based practices and programs.

Second, most of the behavioral health organizations operate on what is essentially a “credentialed practitioner model,” a model that also is well entrenched in professional associations, human resource policies, state laws, and funding requirements. In this staffing model, individual therapists are hired with the appropriate academic and/or licensing credentials. The clinical practice of the therapist stems from his or her unique education and training experiences. The individual credentialed practitioner staffing model results in an “eclectic” approach to treatment in any given organization, not one focused on a particular program or practice for particular populations or consumers.

Third, supervision in human service organizations usually does not focus on adhering to a particular model but is more oriented toward administration (paperwork, procedures, policies) and solving challenges related to particular consumers. Feedback from supervisors often is related to meeting productivity standards that impact billing and income rather than competence.

Fourth, staff evaluation typically relies on the opinion of the supervisor and manager and is not based on performance or adherence to a defined set of practices.

Fifth, organizational credentialing bodies (e.g., JCAHO, CARF, COA) are geared more towards procedures (i.e., paper implementation or process implementation as described in Chapter 1) and do not hold organizations accountable for client-level outcomes (i.e., performance implementation).

Sixth, funding often depends upon the number of “billable hours” with clear guidelines for what constitutes a billable activity. Activities related to implementation (e.g., exploring and planning, time spent in training, time spent with

Using systematic methods and having data as feedback provides the opportunity for purveyors to “learn to learn” and become more effective and efficient with experience.

a coach, staff performance evaluation, de-briefing and innovating) typically are not funded by these mechanisms.

Finally, many human service organizations are thinly resourced and face high rates of turnover at practitioner and leadership levels that are disruptive to any attempts to systematically implement practices of any kind.

Because the status quo is so thoroughly entrenched, the implementation of evidence-based practices and programs initially may take persistent efforts over longer periods of time. As seen in this review, organizational change and systems interventions are viewed as necessary parts of implementation processes (Chapter 6) and need to be strategically and persistently utilized to change the status quo. The difficulty of changing the status quo was recognized when implementation research first began. For example, Williams (1975) described the need for persistent effort when he concluded that “the implementation period for complex social programs is not a brief interlude between a bright idea and opening the door for service... the translation into useful field concepts often demands long, hard work” (p 531-532). The difficulties remain today as noted by the NIMH National Advisory Mental Health Council Workgroup on Child and Adolescent Mental Health Intervention Development and Deployment (2001) that found, “in the complex area of interventions for child mental health disorders, effective knowledge transfer is labor-intensive and expensive” (p 71). The time frames for implementation with fidelity may be reduced as purveyors use systematic implementation methods and collect information on their implementation outcomes. Using systematic methods and having data as feedback provides the opportunity for purveyors to “learn to learn” and become more effective and efficient with experience. For example, after several years of implementation experience and data collection, Fixsen, Blase, Timbers, & Wolf (2001) reduced by 50% the average time needed to help a new site achieve full implementation. Transforming current human service systems nationally will require a dedicated effort to install effective programs and create performance-oriented cultures in human service organizations and supporting systems.

Recommendations

The recommendations are divided into four areas: recommendations for state and national policy makers, recommendations for research on implementation, recommendations for effectiveness research on practices and programs, and recommendations for purveyors of evidence-based practices.

Recommendations for State and National Policy Makers

Greater attention to implementation policies and practices is crucial to the process of transforming human services from its current state of providing highly variable, often ineffective, and sometimes harmful services to consumers (Institute of Medicine, 2001; U.S. Department of Health and Human Services, 1999; 2001). As noted above, most human services currently are practitioner-centered. That is, practitioners have individual educational and life experiences that lead them to provide treatment in a particular way. As experience is gained, knowledge and skill improvements are accumulated by the practitioner. When one practitioner is replaced by another, the accumulated knowledge is lost and the treatment program is altered to reflect the philosophy, approach, and skill levels of the new practitioner. This practitioner-centered approach to providing services within organizations may account for a considerable proportion of the variability in approaches and levels of effectiveness lamented by national reviews.

In a transformed human service system, services are program-centered or practice-centered rather than practitioner-centered. That is, well-specified practices and programs (along with beliefs, values, and philosophies; Chapter 4) are chosen to solve particular problems and are implemented with fidelity in organizations and systems designed to facilitate the implementation of those practices and programs. Based on the experiences within and across implementation sites, knowledge and innovations are accumulated by purveyors and by implementation sites. The accumulated knowledge and innovations are used to continuously improve the practices and programs themselves with resulting benefits to consumers, practitioners, organizations, and human service systems.

In order to promote state and national policies that facilitate the implementation of well-defined practices and programs to help transform human services, the areas that follow require immediate attention.

First, policy makers and planners at state and federal levels need to become aware of the information regarding implementation then begin to build their knowledge into state and federal policies and guidelines that impact human services. “Alignment” of policies, procedures, and practices to promote desired changes is a common theme in the business literature and is directly applicable to human services (Table 3 in Chapter 6). Steps to raise awareness and create action agendas were outlined by Edwards et al. (2000) and reviewed in Chapter 2. With respect to the steps described by Edwards et al. (i.e., from no awareness, denial, and vague awareness to preplanning, preparation, and action), many federal and state policy makers and planners are probably engaged somewhere in the first three steps. Recent developments in the implementation field are not well known or commonly understood in public service systems. Thus, researchers, purveyors, and others knowledgeable about implementation issues need to actively involve themselves in creating awareness at federal and state levels and help policy makers and planners move toward greater support of implementation efforts. Policy makers and planners work from the best information available to them. The implementation community of practice needs to help them obtain better information about best practices in implementation.

Second, in order to benefit consumers of human services nationally, federal and state governments need to invest in the development and use of implementation strategies and methods that are grounded in research and elaborated through accumulated experience. This is similar to the investments that governments have made in computers and information technology over the past 20 years. Over many years, scientists and programmers created computer hardware and software. State and federal governments then adopted particular computer systems, paid for their installation, hired specialists to help assure their usefulness and maintenance, paid for upgrading of skills among the workforce, and continue to pay for replacements and upgrades each year

as needs change and technology advances. The implementation of computer technology has become an accepted part of budgets in human services (Wotring, 2004). A similar investment in using implementation technology will be required to bring the benefits of well-defined practices and programs to consumers in each state. However, to continue the computer analogy, implementation of programs and practices should not be viewed as “plug and play,” where, somehow, new practices can be successfully added to ongoing operations without impacting those operations in any significant way. Instead, implementation of new practices in an organization should be viewed as changing operating systems, from a Microsoft disk operating system to an Apple operating system perhaps, while the computer is plugged in and successfully performing on-going operations.

Third, federal and state funding strategies for human services are critical to implementation of well-defined practices and programs. The analysis of funding and its relationship to implementation should be a priority for state and federal initiatives interested in system reform and transformation. Given what is known about implementation, federal, state, and private foundation efforts to support system transformation and the promulgation of well-defined programs and practices need to develop a four-point approach to funding. These four funding streams include:

- Funding for start up costs associated with the practice or program (e.g., exploration and planning, running current services while new services come on line, equipment, infrastructure),
- Funding for the often intensive implementation services provided by purveyors (e.g. attendance at community forums, working meetings, assessments, program installation, providing the core implementation components, initial implementation, organizational change),
- Funding methods for the service itself on an on-going basis with an eye to creating a good fit between the service provision requirements and funding regulations, and
- Funding and regulations that support and facilitate the ongoing operation of the infrastructure required for continued fidelity and

1. Infuse knowledge about implementation into state and federal policy
2. Invest in development and use of implementation technologies
3. Develop funding strategies to support implementation of evidence-based programs
 - start up costs
 - purveyor support
 - adequate funding for services
 - ongoing support of infrastructure for sustainability

“Without theory it is hard to talk about practice and without practice, theory has no meaning.”

—Moll 1990

sustainability (e.g., continual training, supervision and coaching, fidelity measures, outcome data collection). This may include ongoing costs associated with service and accountability requirements of purveyors.

Given the range and complexity of implementation activities described in this review of the literature, enabling legislation, new regulations, and financial support are urgently needed. As we have seen throughout this review, successful implementation strategies take time and resources. Half-hearted attempts or ill-advised attempts to implement well-defined practices and programs are a waste of time and resources and may only further frustrate and disillusion human service consumers, providers, and system managers. This will require a change in priorities at the federal level. The essential challenge is to ensure that the incentives, structures, and operations at the systems, organizational, and practitioner level are consistent with each other and aligned in a way that supports the desired practitioner behavior.

Recommendations for Research on Implementation

Since the beginnings of the field, the difficulties inherent in implementation have “discouraged detailed study of the process of implementation. The problems of implementation are overwhelmingly complex and scholars have frequently been deterred by methodological considerations ... a comprehensive analysis of implementation requires that attention be given to multiple actions over an extended period of time” (Van Meter & Van Horn, 1975, p. 450 - 451; Greenhalgh, Robert, MacFarlane, Bate, & Kyriakidou, 2004). The studies in this review demonstrate that implementation needs to be treated as a process with interactive components that are integrated and compensatory.

Research that focuses specifically on implementation will be useful to the extent that it improves practice and advances our conceptual and theoretical understanding (generalizable knowledge) of the important factors involved. As Moll (1990) pointed out, “Without theory it is hard to talk about practice and without practice, theory has no meaning.” Advancing theory and improving implementation strategies depend on having more and better research. Research funding and research review criteria as well as priori-

ties within the federal government and private foundations need to focus considerably more research attention on implementation strategies and components.

Pronovost, Rinke, Emery, Dennison, Blackledge, & Berenholtz (2004) note that 99% of the medical research budget is devoted to understanding disease biology and developing effective therapies while 1% is devoted to learning how to implement those therapies safely with patients. While this is better than it used to be (up from one-fourth of 1% in 1977, Brown & Flynn, 2002), the disparity may help explain the current science to service gap. It appears from this review that having well-researched practices and programs is a good start but the eventual benefits of those practices and programs nationally may rest on understanding how to create functional and hospitable socio-political contexts and effective implementation strategies. If, as it seems, implementation efforts across widely divergent domains successfully use similar strategies and core implementation components, then research on implementation factors can have wide-ranging benefits to all human services.

There are several general recommendations for research on factors important to successful implementation. In addition, some specific hypotheses have been developed to encourage research in areas revealed by this review. The specific hypotheses are provided in Appendix D. The general recommendations are provided in this section.

First, considerably more research attention needs to focus on core intervention components to open up the “black boxes” of evidence-based practices and programs (Chapter 4). National implementation efforts can be facilitated by careful specification of what “it” is that is being implemented. As noted in Chapter 4, research that assesses the effectiveness of individual intervention components is essential for defining the core components of an evidence-based program or practice. Knowing the core intervention components may allow for more efficient and cost effective implementation and lead to more confident decisions about what can be adapted to suit local conditions and what must be preserved at an implementation site. Given that there are over 550 named therapies already (Hoagwood, 2004), a side benefit of intervention component research may

be to identify core components that seem to be a part of many successful interventions (Chorpita, Yim, & Dondervoet, 2002; Embry, 2004). To increase external validity, these components need to be researched in applied settings and need to include a measure of social validity (i.e., consumer and family satisfaction with the goals, specific procedures, and particular outcomes). Eventually, these core intervention components (e.g., relationship development, skill teaching, consumer voice and choice, collaboration) could be taught to practitioners more generally, perhaps as part of secondary education curricula and other workforce development initiatives, in order to enhance the pace of implementation nationally.

Second, research needs to be conducted to determine the effectiveness of implementation strategies and procedures as they are actually used in practice. Just as in intervention research, implementation research also will need to carefully define and measure the independent variables that are connected to the dependent variables associated with changes in practitioner, program, and systems behavior. For example, with respect to practitioners, it is not enough to say “practitioners were trained in a 3-day workshop.” All that statement tells us is that all (most?) of the practitioners sat in a room for 3 days as someone attempted to teach them something. Was the trainer well trained and competent? Did the content accurately reflect descriptions of the core intervention components? Were the training procedures based on effective methods as documented in the literature? Are pre-post knowledge and skill assessments routinely performed to see if trainees actually acquired key knowledge and skills? Are training strategies adjusted regularly based on immediate and longer-term outcome data? Similar research questions could be asked with respect to practitioner selection, coaching /consultation / supervision procedures, methods to assess staff performance and fidelity to prescribed procedures, and methods to effectively support intended procedures administratively.

Third, research needs to be conducted on implementation outcomes that are independent of the content of the specific practice or program being implemented. Implementation practices within an organization and implementation programs and strategies offered by purveyors need to be evaluated in their own right. Toward this end,

research is needed to help develop measures that reflect implementation processes and outcomes (as opposed to intervention processes and outcomes) at multiple levels. Scientifically reliable and valid measures can operationalize implementation practices, enhance understanding, and allow tests of hypothesized components and their linkages in conceptual frameworks. Once practical measures are in place purveyors and researchers can begin to assess the range of interaction effects across components and across time. Given the complexities of multi-level influences on implementation efforts, a full range of quantitative and qualitative research methods will need to be employed. At this point in the development of the field, any data are better than no data and simultaneously collected data at several levels can lead to incremental improvements in implementation knowledge and research methods. However, these data will not be produced until reliable and valid measures of implementation processes are developed.

Fourth, research related to organizational and socio-political factors that directly influence implementation efforts can help define hospitable practices and environments in which the probability of successful implementation and sustainability is increased. There will need to be organized efforts (e.g., centers of excellence, state and local committees) that solicit feedback and listen to the early adopters and implementers of well defined programs and practices. This feedback (e.g. backward policy mapping) can guide policy development that is based on barriers encountered and recommendations for facilitative policies and regulations. Descriptions of apparently effective practices can lead to research in this difficult area. Implementation science was initiated in the policy area (Pressman & Wildavsky, 1973) and further research can help develop a better understanding of the socio-political variables and organizational contexts that impact implementation.

1. Identify core intervention components of evidence-based programs and practices
2. Determine effectiveness of implementation procedures as they are actually used in practice
3. Measure implementation outcomes independent of a specific program or practice
4. Describe organizational and socio-political factors hospitable to implementation

Recommendations for Effectiveness Research on Practices and Programs

Most articles reporting research evidence on programs and practices do not operationalize the strategies and conditions that could advance replication and implementation agendas (Chapter 1). There are several factors that appear to militate against reporting information relevant to implementation in the context of effectiveness trials. First, communication between scientists and practitioners seems, more often than not, to be unidirectional with the result that practice issues may poorly inform science. Beutler, Williams, Wakefield, & Entwistle (1995) conducted a national survey of 325 psychologists who were clinicians or researchers. They found that psychological practitioners value research and consider their practices to be augmented by scientific findings. However, “to the degree that communication is going on between scientists and clinicians in psychology, it is largely uni-directional: Clinicians value and listen to science more than scientists value and listen to clinicians” (p. 989). For example, Mimura & Griffiths (2003) did an exhaustive literature review regarding an important practice issue in nursing (workplace stress, burn-out, and high turnover for nurses). They found only 7 studies and those had small effect sizes (not enough change in stress to have much chance of influencing turnover). The authors pointed out that clinicians and agencies face many practical issues that are not well researched by the university-based research community and the transfer of science to service might be facilitated by research that is more relevant to current issues faced in clinical settings. Second, as Burns (2000) pointed out, the external validity of research is greatly enhanced when interventions are developed and studied in the field with real-world adult, child and family consumers. Applied research done in context addresses the concerns often raised about closely controlled efficacy studies that serve highly select populations under conditions that are not found in the community at large. Third, researchers are not writing for the purpose of implementation, they are writing for publication in journals with page limits. With limited space in scientific journals, the focus is on data analyses and results. Consequently, there is not enough detail in the

methods section to inform implementation (Backer, Liberman, & Kuehnel, 1986). “A recent meta-analysis of indicated prevention programs found that 68.5% of the programs were described too broadly to be replicated and very few included measurement of treatment fidelity” (Domitrovich & Greenberg, 2000, p. 197).

Bull, Gillette, Glasgow, & Estabrooks (2003) recommended the RE-AIM framework (www.re-aim.org) for conducting and reporting research so that it has a better chance of being translated to practice. This framework focuses on the inclusion of and attention to data that likely will be highly relevant to implementation. Bull, et al. (2003) analyzed research on work-site health promotion (e.g. nutrition, exercise, smoking cessation) with respect to the inclusion of data related to the RE-AIM framework. A summary of the RE-AIM framework and the findings from Bull, et al. (2003) are as follows:

- **Reach (individual level):** Data about the participants in the study. *Data on characteristics of participants versus nonparticipants were reported in fewer than 10% of the studies.*
- **Efficacy/Effectiveness (individual level):** Data about impact on participants, on process and primary outcomes, and on positive and negative outcomes (including quality of life). *None reported on quality of life issues for participants, none measured potential negative outcomes, 67% reported behavioral outcomes, and 54% reported attrition rates by post-test.*
- **Adoption (setting level):** Data about the settings (e.g., exclusionary criteria, number participating out of those approached, representativeness of the settings). *Only 25% of the studies reported on intervention adoption.*
- **Implementation (setting/agent level):** Extent to which interventions were delivered as intended. *Implementation data were reported in 12.5% of the studies.*
- **Maintenance (individual and setting):** Long-term effect for individuals and attrition. *Only 8% of the studies reported any type of maintenance data.*

Thus, research planning with a focus on implementation variables, routine inclusion of a broader array of variables, and reporting of implementation-relevant research findings will better inform

future implementation efforts related to those programs or practices. This could be aided by more applied research that focuses specifically on service-related issues and by research reports that describe interventions (independent variables) as carefully as research and statistical methods.

Recommendations for Purveyors of Well-defined Practices and Programs

Given the transactional nature of implementation, research on implementation needs to reflect the complexity of the effort with simultaneous multilevel measures of implementation efforts and outcomes (e.g., Panzano, et al., in press; Schoenwald, Sheidow, & Letourneau, 2004). As noted previously, such research likely will be done across multiple implementation sites that are being established by various program models and will require considerable advance planning and collaboration among purveyors. What can purveyors do to increase successful implementation and contribute to the science of implementation? Developing on-going partnerships with researchers over a considerable period of time will be required if the complexities of multi-site and multi-program research agendas are to be pursued successfully. Purveyors and researchers can create open and mutually beneficial partnerships that have purveyors setting agendas that are important to implementation outcomes and that can be developed for theory-building with the help of researchers skilled in participatory research and community partnerships.

In addition, purveyors can commit to on-going relationships with implementation sites for the purpose of identifying beneficial innovations, creating a community of practice that has functional processes to facilitate the integration of innovations. A community of practice functions as a self-sustaining “learning community” (McDermott, 1999a; Rosenheck, 2001) where members with diverse experiences interact frequently to share their collective wisdom and determine new courses of action that might benefit many of the members. Creating a community of practice also benefits workforce development. Practitioners, administrators, and researchers in a community of practice can become increasingly knowledgeable not only about the specific practice

or program but also about the science and practice of implementation. Systematic replications of well-defined programs and practices with new populations will more likely be implemented with fidelity in shorter timeframes.

In addition to the need for communities of practice that are program or practice specific, there also is a strong need for private foundation support to establish a community of practice related to implementation. Up to this point, purveyors have worked in teams to implement specific practices or programs with fidelity and good effect. However, as found in manufacturing, teams that perform at peak levels also tend to become isolated and become “silos” themselves. A “double knit” organizational scheme that crossed manufacturing teams with communities of practice was required to keep the teams fresh and exposed to diversity and new ideas (e.g., McDermott, 1999b). Similar benefits also might accrue in the nascent field of implementation of well-defined practices and programs. For human services, this means that members of highly functional purveyor teams (e.g., MST Services, Inc., Incredible Years, Nurse Family Partnerships) also would be members of various communities of practice (e.g., trainers, coaches, evaluators, administrators, etc. from a number of different purveyor teams). And importantly, diverse groups of purveyor teams can come together to discuss and create new learning around agendas related to implementation.

In summary, the science of implementation is beginning to yield data and information that can help ensure that what is known through science is implemented with integrity. Research, policy, and practice agendas related to implementation need to be nurtured, debated, studied, and translated into practical advice that can transform human services. We are optimistic that learning and practice can advance all human services as common principles, procedures, and practices are illuminated through research and the development of communities of science and practice.

Recommendations for Purveyors

1. Develop partnerships with skilled researchers
2. Establish a community of practice at implementation sites
3. Share lessons learned across functional purveyor teams from different programs



Appendices

Appendix A

Review Methods

Appendix B

W.T. Grant Project Literature Review Codebook

Appendix C

Experimental Studies

Appendix D

Hypotheses for Advancing Implementation Science



Appendix

A



Review Methods

The goal of the literature review is to synthesize research in the area of program replication and implementation. As a first step, some members of the research team were trained in the use of Thomson ISI Researchsoft EndNote citation management software in order to create a database to house implementation citations, abstracts, and notes found in the literature search. The EndNote citation manager allowed researchers to complete the literature search and reviews more efficiently.

The researchers completed background research on the citation databases to be used in the literature search in order to determine the scope, features, functions and limitations of each citation database. Databases searched included PsycINFO, Medline, Sociological Abstracts, CINAHL, Emerald, JSTOR, Project Muse, Current Contents, and Web of Science.

Electronic Databases Searched

Electronic Database	Description
PsycINFO	Covers the professional academic literature in psychology and related disciplines including medicine, psychiatry, nursing, sociology, education, pharmacology, physiology, linguistics, and other areas. Coverage is worldwide, and includes references and abstracts to over 1,300 journals and to dissertations in over 30 languages, and to book chapters and books in the English language. Over 50,000 references added annually.
Sociological Abstracts	Abstracts and indexes the international literature in sociology and related disciplines in the social and behavioral sciences. The database provides citations from 1963 to the present to journal articles, book reviews, books, book chapters, dissertations, and conference papers. Records for journal articles added after 1974 contain in-depth abstracts. Major areas of coverage include culture and social structure; demography and human biology; economic development; environmental interactions; evaluation research; family and social welfare; health and medicine and law; history and theory of sociology; management and complex organizations; mass phenomena and political interactions; methodology and research technology; policy, planning, forecast and speculation; radical sociology; religion and science; rural and urban sociology; social development; social differentiation; social psychology and group interaction; sociology of the arts, business, education; studies in violence and power; substance abuse and addiction; welfare services; women's studies.
CINAHL (Cumulative Index to Nursing & Allied Health Literature)	Provides indexing and abstracting for over 1,600 current nursing and allied health journals and other publications dating back to 1982. In addition, CINAHL offers access to health care books, nursing dissertations, selected conference proceedings, standards of practice, educational software, audiovisuals and book chapters.
Emerald	Contains 35,000 articles from over 100 management journals, complete with full text archives back to 1994. Covers the major management disciplines including strategy, leadership, information management, marketing and human resource management.
JSTOR (Journal storage)	Provides image and full-text online access to back issues of selected scholarly journals in history, economics, political science, demography, mathematics and other fields of the humanities and social sciences.

Electronic Database	Description
Project Muse	Provides full-text online access to all journals published by the Johns Hopkins University Press. Disciplines covered are humanities, social sciences, and mathematics. A brief bibliographic description of each title is given.
Current Contents	Current Contents Connect is a weekly table-of-contents database which presents the contents pages of current issues of the world's scholarly and technical journals, books, and proceedings literature. Includes the Current contents print version editions: Agriculture, Biology & Environmental Sciences (ABES), Social & Behavioral Sciences (SBS), Clinical Medicine (CM), Life Sciences (LS), Physical, Chemical & Earth Sciences (PCES), Engineering, Computing & Technology (ECT), Arts & Humanities (AH).
Web of Science	Provides access to current and retrospective multidisciplinary information from approximately 8,700 of the most prestigious, high impact research journals in the world. Access to the Science Citation Index® (1945-present), Social Sciences Citation Index® (1956-present), Arts & Humanities Citation Index® (1975-present), Index Chemicus® (1993-present), and Current Chemical Reactions® (1986-present).
Medline	Indexes more than 3,500 journals in the areas of clinical and experimental medicine, nutrition, dentistry, pathology, psychiatry, toxicology, health administration and nursing.

The Louis de la Parte Florida Mental Health Institute, University of South Florida Librarian trained researchers on techniques for database searching, specific database language issues, such as direct order entry, controlled vocabulary, natural vocabulary and term creation. The research team then met to create a controlled vocabulary for the implementation literature search, as well as term combinations for use in citation database searches. The implementation controlled vocabulary was distributed and used by team members for literature searching. Search strategies were developed as an iterative process with the help of the controlled vocabulary.

Search Definitions: A Controlled Vocabulary for the WT Grant Literature Review

Adherence	The extent to which a practitioner uses prescribed interventions and avoids those that are proscribed.
Coaching	Personal observation, instruction, and feedback or other forms of training on the job
Community	A group of people living in a particular area or having characteristics in common (e.g., city, neighborhood, organization, service agency, business, professional association); the larger socio-political-cultural context in which an implementation program is intended to operate.
Competence	The level of skill shown by a practitioner in delivering an intervention (e.g., appropriate responses to contextual factors such as client variables, particular aspects of the presenting problems, client's individual life situation, sensitivity of timing, recognizing opportunities to intervene).
Core components	This phrase may refer to the most essential and indispensable components of an intervention practice or program ("core intervention components") or the most essential and indispensable components of an implementation practice or program ("core implementation components").

Data	Broadly defined as any information that is based on something other than the author's opinion
Evidence-based practices	Skills, techniques, and strategies that can be used when a practitioner is interacting directly with a consumer. They are sometimes called core intervention components when used in a broader program context.
Evidence-based programs	Organized, multi-faceted interventions that are designed to serve consumers with complex problems. Such programs, for example, may seek to integrate social skills training, family counseling, and educational assistance, where needed, in a comprehensive yet individualized manner, based on a clearly articulated theory of change, identification of the active agents of change, and the specification of necessary organizational supports.
Fidelity	Correspondence between the program as implemented and the program as described
Implementation	The process of putting a defined practice or program into practical effect; to pursue to a conclusion
Implementation site	The evidence-based practice or program as it is imbedded in the context of a new host organization (provider organization) and/or in the context of the community; the specific agency that houses, supports, and funds the implementation of a program or practice; also referred to as an intermediary organization (e.g., the purveyors of a program work with the community to develop an intermediary organization that will in turn help to develop, support, and sustain one or more replication programs).
Management	Direction (e.g., mission, philosophy, goals) and control of the use of program resources (e.g., personnel, funds, space)
Organizational Change	Planned modification of organizational structures or practices
Performance Evaluation	Assessment of the accomplishment of a defined set of activities
Program	A coherent set of clearly described activities and specified linkages among activities designed to produce a set of desired outcomes.
Purveyor	An individual or group of individuals representing a program or practice who actively work with implementation sites to implement that practice or program with fidelity and good effect.
Socio-Political Systems	Larger systems at the state and federal levels; common practices and beliefs at the community level
Training	Specialized instruction, practice, or activities designed to impart greater knowledge and skill

The citations of key implementation articles identified by the principal investigators were entered into the EndNote implementation database. After the literature searching exercise had begun, the research team met again to discuss guidelines for citation retrieval. Once the research team had completed the literature search, nearly 2,000 titles and abstracts were identified in the literature search for the review. Then the principal investigators reviewed the titles and abstracts and eliminated from the implementation database any literature that did not meet the guidelines for citation retrieval.

Guidelines for Citation Retrieval

Criterion	Decision
Articles or books that report some form of empirical information based on an attempt to implement a described intervention (case study, quasi-experimental, experimental). Those with more rigorous designs or multi-layered data/information were singled out as “significant.”	Inclusion
Reports of extensive literature reviews or meta-analyses	Inclusion
Titles that contained one or more of the key words on our list	Inclusion
English language	Inclusion
Published 1970 or after	Inclusion
Articles or books that consist of discussions of importance or expositions of theory without any empirical information	Exclusion



W.T. Grant Project Literature Review Codebook

Once all the articles had been retrieved for the literature review, the principal investigators developed an initial list of codes and definitions to be used for the content analysis. Content analysis refers to any qualitative data reduction and sense-making effort that takes a volume of qualitative material and attempts to identify core consistencies and meanings. The core meanings found through content analysis are often called patterns or themes. The research team met many times to revise and refine the codes and their definitions and a final codebook was created for use in the content analysis.

Active Agents of Change

Active agents of change identified: Descriptions or measures of the key components (e.g. structural, intervention, organizational) of a program that have been stated to be critical to the success of the program (based on research, evaluation, or experience) and, thus, must be present in any attempted replication of that program.

Active agents of change operationalized: Descriptions or measures of the extent to which each active agent of change has been clearly described in operational terms.

Active agents of change replicated: Descriptions or measures of attempts to replicate the active agents of change that define the prototype program.

Adaptation & Evolution

Adaptation of the program: Descriptions or measures of actual modifications that are made in a program to accommodate the context and requirements at an implementation site.

Applications to new populations: Descriptions or measures of the use of a program with populations other than those that were included in the testing of the prototype program(s).

Applications to new settings: Descriptions or measures of the use of a program in service settings, organizations, or circumstances unlike those that were part of the testing of the prototype program.

Local adaptation (duplicate in FIT): Descriptions or measures of changes in any aspect of an implementation site in response to identified needs or opportunities within the federal or state system, local community or host organization.

Evolution of interventions: Descriptions or measures of changes in intervention procedures or processes used to assist clients in response to issues or opportunities that arise in the course of providing treatment at an implementation site.

Evolution of supports: Descriptions or measures of changes in staff selection, training, coaching, or fidelity measures; program evaluation routines; or facilitative administrative practices in response to issues or opportunities that arise in the course of providing those supports at an implementation site.

Evaluation

Program evaluation: Outcome and process measures related to the functioning (e.g. referrals, LOS) of an implementation site or of components within an implementation site.

Evaluation methodology: Descriptions of the methods used to collect data related to any of the activities described in the codes.

External Factors

Socio-political factors: Refers to socio-political factors at the regional, state and federal levels of government (e.g. mandates, funding, regulations, policy) as well as community level factors (e.g. service delivery structures, local service planning) that impact the planning, development or sustainability of a program (e.g. common practices and beliefs at the community level that impact the overall planning, development, and sustainability of a program).

System evolution (duplicate in ORG):

Descriptions or measures of actual changes in policy, management, or operating structures or methods in response to experiences gained with the operations of a new program at an implementation site.

Community/political support: Descriptions or measures of activities related to securing continuing support from community leaders, consumers and political systems for the ongoing functions of an implementation site.

Regulatory environment: Descriptions or measures of the regulatory environment or of the time, effort, resources, etc. needed to satisfy the various regulatory or licensing bodies that directly impact an implementation site.

Multi-jurisdictional system factors: Descriptions or measures of policies, procedures, or practices in one system (e.g., mental health) that are different from those in other systems (e.g., child welfare) and have some bearing on the operation of the implementation site.

Policy & regulations: Descriptions or measures of laws, regulations, licensing standards, and other general rules at federal or state levels that impact the development or operation of an implementation site. Activities related to developing, modifying, or sustaining legal and regulatory rules and regulations that relate to the operation of an implementation site.

Leadership (duplicate in ORG): Descriptions or measures of characteristics of leadership or opinion leaders or “champions” or discussion or data regarding the influence of leadership with respect to implementation activities.

Fidelity

Intervention fidelity: Descriptions or measures of the correspondence in service delivery parameters (e.g. frequency, location, foci of intervention) and quality of treatment processes between implementation site and the prototype site (Sometimes a standard measure that has been developed by the purveyors of a program; sometimes called an adherence or certification measure at a practitioner level).

Organizational fidelity: Descriptions or measures of the correspondence in overall operations (e.g., staff selection, training, coaching, and fidelity assessments; program evaluation; facilitative administration) between implementation site and the prototype site. (Sometimes a standard measure that has been developed by the purveyors of a program; may be referred to as adherence, organizational fidelity measures or certification criteria at an organizational level).

Program drift: Descriptions or measures of variations in a program that are stated to be undesirable or that impede the achievement of the overall goals and effectiveness of implementation site.

Fit

Values: Descriptions or measures of activities related to collecting, sharing, and assessing information about the values, beliefs, and philosophy held by the program, the potential implementation site, and the community leaders.

Fit in the service array: Descriptions or measures of activities related to describing the range of services and the connections among services in the community and how the new program contributes to and fits into that array.

Local adaptation: Descriptions or measures of changes in any aspect of an implementation site in response to identified needs or opportunities within the federal or state system, local community or host organization.

Relationship to prevailing practices: Descriptions or measures of the degree to which the program is similar to or different from forms of practice that are well known and already accepted in the field.

Funding

Financing: Descriptions or measures of activities related to collecting, sharing, and assessing information regarding the costs of a program and potential revenue sources.

Funding evolution: Descriptions or measures of activities related to adapting to changes in funding sources or modifying funding requirements and access to support the new program at an implementation site.

Costs: Descriptions or measures of the actual costs of providing services to clients at an implementation site (e.g. per diem or per client costs, overall costs or cost categories).

Funding adaptations: Descriptions or measures of activities related to changing external or internal policies or practices to secure a better or longer term fit between funding sources and program resource needs.

Fiscal incentives: Descriptions or measures of funding policies that encourage certain programs or practices.

Cost factors: Descriptions or measures of the cost of operating a program or the cost factors associated with the installation and maintenance of the implementation site and the extent to which funding for those operating and installation costs may be routinely available and deemed to be affordable in the service sector.

Organizational Issues

Program Characteristics

These characteristics are aspects of the prototype or replication program that interact with other factors to facilitate or hinder the overall planning, development, and sustainability of an implementation site.

Create organizational fit: Descriptions or measures of activities designed to increase the correspondence between what a program needs with respect to space, personnel, policies, procedures, etc. and what the potential implementation site has in place currently

System evolution: Descriptions or measures of actual changes in policy, management, or operating structures or methods in response to experiences gained with the operations of a new program at an implementation site.

Organizational structure: Descriptions or measures of the configuration of an implementation site, including deployment or arrangement of staff, supervisors, managers, and executives and descriptions of their functions and interrelationships.

Organizational culture/climate: Descriptions or measures of the attitudes of the staff about their work environment, the formal and informal patterns of behavior and the overall atmosphere (positive or negative) at an implementation site.

Degree of organizational change identified: Descriptions or measures of the degree to which implementation of the program requires more or less change in a typical host organization's standard structures, practices, or culture.

Leadership (duplicate in EXTERNAL): Descriptions or measures of characteristics of leadership or opinion leaders or "champions" or discussion or data regarding the influence of leadership with respect to implementation activities.

Readiness/capacity to change: Descriptions or measures of activities related to collecting, sharing, and assessing information about the motivation and ability of the potential implementation site and the community to make the changes needed to accommodate the requirements of a new program.

Organizational change: Descriptions or measures of actual modifications that are made at an implementation site to accommodate the requirements of a new program.

Population – Culture

Characteristics of population served: Descriptions or measures of the demographic characteristics of the population actually being served at an implementation site.

Cultural competence: Descriptions or measures of activities related to assuring a cultural, linguistic, racial, ethnic, and religious fit among the staff, community, stakeholders, and clients at an implementation site.

Racial, ethnic, cultural fit: Descriptions or measures of the correspondence between the racial, ethnic, and cultural mix of the staff at an implementation site and the racial, ethnic, and cultural mix of the community or the clients OR descriptions of the activities of an implementation site to understand, build on strengths and celebrate the racial, ethnic, and cultural differences of the community or clients and make modifications in the program to better serve the diverse communities.

Replication

Intervention unit replicated: Descriptions or measures of the results of attempts to replicate an intervention unit (a foster home, a group home, a small group of home based family specialists).

Support components identified: Descriptions or measures of the key staff selection, training, coaching, and fidelity evaluation; program evaluation; and facilitative administration components that have been stated to be critical to the successful operation of the program (based on research, evaluation, or experience) and, thus, must be present in any attempt to replicate that program.

Support components operationalized: Descriptions or measures of the extent to which the support components of a program have been codified in written protocols, training materials, coaching guidelines, evaluation measures and routines, facilitative administrative policies and procedures, and so on.

Replication/implementation components identified: Descriptions or measures of the key components of the replication and implementation strategies that have been stated to be critical to the successful replication of the program (based

on research, evaluation, or experience) and, thus, must be present in any attempt to create new implementation sites.

Manuals of replication/implementation procedures: Descriptions or measures of the extent to which the strategies and methods for successful replication of the program have been codified in written protocols (e.g. site assessment, infrastructure needs, consumer involvement).

Implementation site characteristics identified: Descriptions or measures of the desirable and undesirable aspects of implementation sites that seem to bear on the success of replication attempts and, thus, may be important factors in selecting future implementation sites.

EBP purveyor responsibility: Descriptions or measures of the extent to which the purveyors of a program are accountable for the population and organizational outcomes at each implementation site (e.g., implementation site staff fidelity and client outcomes belong to the purveyor organization until the implementation site is certified as fully functioning).

Staffing – Implementation Drivers

Staff selection: Descriptions or measures of activities related to recruiting, interviewing, or hiring new practitioners or redeploying existing practitioners at an implementation site.

Staff training: Descriptions or measures of activities related to providing specialized information, instruction, or skill development in an organized way to practitioners and other key staff at an implementation site.

Staff coaching/consultation: Descriptions or measures of activities related to individualized or group, on-the-job observation, instruction, modeling, feedback, or debriefing of practitioners and other key staff at an implementation site.

Facilitative administration: Descriptions or measures of activities related to establishing structures and processes within the implementation site that support and actively pursue agendas to ease the tasks and facilitate the implementation of the program by practitioners and supervisors.

Career paths for staff: Descriptions or measures of promotion possibilities within a position title (e.g., Supervisor I, II, or III) or promotion possibilities to other positions (e.g., from practitioner

to trainer) within or across implementation sites or with the purveyors.

Staff professional development: Descriptions or measures of activities related to helping staff members increase their skills and knowledge beyond the program-related training that is provided.

Staff retention: Descriptions or measures of activities, policies, procedures, or practices related to the retention of skilled staff members; measures of staff turnover or length of service.

Organizational staff selection: Descriptions or measures of activities, criteria, or processes related to recruiting, interviewing, and hiring new staff (e.g., managers, supervisors, trainers, coaches, evaluators, etc. — NOT practitioners) or redeploying existing staff to work at an implementation site.

Stages

Exploration

A variety of circumstances and setting events lead the purveyors of a program and leaders in a community to make contact and begin exploring the possibility of replicating the program in the community. Individuals get to know one another, information is exchanged and assessed, and activities proceed to the next stage (or not).

Searching/marketing: Descriptions or measures of activities related to how the community determined its needs, searched for and made initial contact with a program. Activities related to purveyors of a program sharing information so that others can understand the program and decide to use it in their organization or community.

Mutual selection: The purveyors of a program, the potential implementation site, and the community create an agreement to proceed with implementation (or not).

Installation

Once the decision to proceed is made, preparatory activities begin. This may involve arranging the necessary space, equipment, and organizational supports; establishing policies and procedures related to personnel, decision making, and management; securing funding streams; selecting and hiring new staff and redeploying current staff; and so on. These

activities are in advance of actually implementing the program as doing the actual work.

Initial Implementation

The beginning of this stage is marked by the point at which the program begins to function. Staff are in place, referrals begin to flow, organizational supports and functions begin to operate, external agents begin to honor their agreements, and individuals begin to receive services.

Full Implementation

As the new program staff become skillful and the procedures and processes become routinized, the program is fully operational with all the realities of “doing business” impinging upon the implementation site. Systems integration (integration of the new service with the existing services and/or selection, training, coaching, evaluation and administration are integrated), MIS feedback loops, and attention to solving ongoing management, funding and operational issues are notable features of advanced implementation.

Sustainability

At this point, a new program is no longer “new.” As the implementation site settles in to standard practice, internal and external factors impinge on a program and lead to its demise or continuation. Coping and adaptation are notable features of sustainability with respect to continuous training for practitioners and other key staff (as staff turn over), changes in priorities and funding streams within local systems, changes in leadership, changes in community or client composition, etc.

Innovation

Each implementation site is different and local factors can lead to novel and effective solutions within the context of the overall program that is being implemented. It is important to discriminate innovation (desirable) from program drift (undesirable).

Stakeholders and Consumers

Stakeholder involvement/buy in: Descriptions or measures of activities related to the involvement of stakeholders in discussions and decisions regarding assessment of program options and planning for program implementation, including stakeholder buy in.

Consumer satisfaction: Descriptions or measures of the satisfaction of the clients or other direct consumers with important aspects of a program.

Stakeholder satisfaction: Descriptions or measures of the satisfaction of those who have an association with or direct interest in the quality of service provided to the direct clients and the processes implemented by the program (stakeholders may include referral agents, external monitors or licensing agents, funders, school teachers, collateral service providers, and so on).

General

These codes may be incorporated with any of the other codes to help explain some aspects of the content.

Introductory information: Information of a general nature that pertains to implementation factors (e.g., barriers or facilitators) or helps to illustrate the context in which implementation activities occur.

Overall strategies: Descriptions of overall planning or approaches described as important to implementing a program or practice.

Communication: Discussion or data related to methods or styles of communications among the parties

ISO related: Activities or information related to the International Organization of Standards

Other: Any other information that seems important but does not readily fit into any given code. Please write a memo describing why you think it is important.

The research team then met to discuss how individual articles would be assessed. The Atlas.ti coding strategy originally proposed was abandoned in order to do more conceptual reviews of the implementation literature. Given the great variety in language and procedures found among the articles, the Atlas coding produced too many “fragments” that were hard to interpret without the context of the overall article. Instead the researchers used a data extraction tool called the article summary to look for meaning rather than mentions. The coding scheme was not abandoned entirely but was used in a flexible and non-restrictive way to find meaning in the 1,054 full-text articles that were reviewed. The codes served as our key words for searching the EndNote implementation database we had created to house the implementation citations, abstracts, and article summaries.

The team developed the Article Summary in which the following areas were evaluated: Domain, Topic, Methods, Results & Findings, Code(s) or Stages, Quotations, References, and Memos. Each of the topics listed is described. In addition, the reviewers were asked to code an article as “significant” if it met one of the following three criteria: 1) well-designed experimental evaluations of implementation factors, or 2) careful reviews of the implementation literature, or 3) well-thought-out but more theoretical discussions of implementation factors. For example, “significant” articles included literature describing experimental designs, meta-analyses, or literature reviews pertaining to specific implementation factors; literature describing useful frameworks or theoretical summaries; or qualitative analyses of specific implementation efforts. Literature that focused on author-generated surveys of those involved in implementation efforts, poorly described implementation factors, or primarily presented the opinions of the authors were not included as “significant” articles.

Each of the five reviewers was trained to write article summaries by reading selected articles on program implementation and going through several hours of discussion of possible dimensions of program implementation and definitions of those dimensions. In order to determine the effectiveness and reliability of the article summary process each of the five reviewers was assigned approximately four articles to review and sum-

marize using the established format. The research team then met to discuss experiences reading articles and using the article summary format. Suggestions were made by research team members to refine the article summary format. The article summary format was then revised and duplicate articles were assigned to reviewers. The assignment of duplicates were unknown to all but one member of the study team, in order to determine inter-rater reliability and comparison of article summary content. After approximately 100 article summaries had been created, the review team met to refine codes by clarifying definitions and wording. Team members were asked to re-review each article with respect to methods, design, and coding. The codes were primarily revised to be more inclusive.

Full text screening was performed on 1,054 articles, reports, unpublished papers, and book sections. Any articles that did not meet the criteria for inclusion were deleted from the database. The reviewers wrote summaries of their assigned articles using the article summary outline as their guide and the summaries were entered into EndNote. After all the articles had been reviewed, 743 articles remained in the database that were representative of the published literature on implementation that met the study inclusion/exclusion criteria. Of these 743 articles, 377 articles were identified as “significant” for implementation. Article summaries were sorted into content areas and the principal investigators reviewed each area for common implementation themes and patterns in preparation for writing this monograph.

WT Grant Literature Review—System for Reviewing Articles

Outline:

- a. Describe the domain (e.g., mental health, child welfare, manufacturing)
- b. Describe the main topic of the article (staff training, funding policy, readiness assessment)
- c. Describe the research/evaluation methodology (e.g., participants, design, measures)
- d. Describe the findings (e.g., data, their more factual conclusions)
- e. Describe the results, themes, or patterns related to implementation
- f. List the key words that best describe the contents of the article (use the implementation codes as a reference but create new ones [with definitions] as needed)
- g. Any notable statements made by authors can be copied with quotation marks. Be sure to state the page number so we can cite the quote properly.
- h. Any notable references cited by authors can be copied as well along with a brief note as to why it was notable.



“There is virtually no definitive evidence to guide implementation of specific evidence-based practices.”

— Goldman et al.
(2001)

Experimental Studies

Of the 743 citations that resulted from the review of the implementation evaluation literature, 20 were identified as experimental studies that employed within subject or randomized group designs and 2 were identified as meta-analyses of experimental studies. Four implementation themes emerged from our review of the experimental studies: (1) guidelines, policies, and/or educational information alone or practitioner training alone are not effective, (2) longer-term multilevel implementation strategies are more effective, (3) analyses of components of practitioner selection and training provide guidance for providing effective implementation services to new sites, and (4) not enough is known about the functional components of implementation factors.

Experimental Research: Ineffective Implementation Strategies

Information alone has little impact on practitioners' performance. Azocar et al. (2001, 2003) randomly assigned clinicians in a managed care organization to one of three groups: a general dissemination group (single mass mailing of best-practice guidelines), a targeted dissemination group that received guidelines with a letter targeting a specific patient, and a control group that was not mailed guidelines. This research demonstrated that dissemination of evidence-based treatment guidelines was not effective in influencing the behavior of mental health clinicians, even when accompanied by the presence of a managed behavioral health organization. Four months after mailing the guidelines, only 64% of clinicians reported receiving guidelines and less than half of them reported reading the quick reference sheet or the 8-page reference booklet. In addition, there was no difference in guideline-consistent practices between clinicians who received the general mailing and those who did not receive the guidelines. A similar result was found by Fine, et al. (2003). Physicians in the experimental and control groups each received mailed information regarding an evidence-based guideline for use with patients with pneumonia. The guideline was designed to change practices to reduce the duration of intravenous

antibiotic therapy and length of hospital stay. Information alone had no effect on the clinical practice of the control group. Physicians in the experimental group received the information and had the support of specially trained nurses who made patient assessments, informed the physician when the patient met the guideline criteria, placed prompt sheets in the patient's file, and offered to take an order for antibiotics and arrange for nursing home care. Physicians in the experimental group prescribed antibiotics significantly more often but there was no change in length of hospital stay. Schectman, et al. (2003) conducted an assessment of clinician adherence to acute and low back pain guidelines. Clinicians were randomly assigned to one of four groups: no intervention, physician education and feedback on usage, patient education materials, or a group that combined physician education and feedback on usage and patient education materials. No effect was found for the first three groups. A modest effect was found for the group that combined physician education, feedback on guideline usage, and patient education materials (guideline usage by 5.4% as opposed to the control group who decreased guideline usage by 2.7%). Schofield, et al. (1997) randomly assigned primary and secondary schools to two groups. Group 1 received mailed education materials and information on the SunSmart skin program in Australia. Group 2 received the mailed information and a staff development module for preparing staff and changing school policies to reduce sun exposure and eventual skin cancer. The results indicated that Group 2 schools adopted sun protection policies at a rate twice that of Group 1 schools. However, there were no differences in the sun protection practices in either group of schools. Ellis, Robinson, et al. (2003) conducted a thorough review of the experimental literature regarding cancer control interventions. They concluded that passive approaches (diffusion) such as mailings and educational presentations were ineffective. These experimental studies confirm the findings from the review of the overall implementation evaluation literature: dissemination of information does not result in positive implementation outcomes (changes in practitioner behavior) or intervention outcomes (benefits to consumers).

As has been shown in a variety of settings, the train-and-hope (Stokes & Baer, 1977) approach to implementation does not work. In the Schectman, et al. (2003) study, physicians randomly assigned to the physician education and feedback on usage group were not different from the control group with regard to adherence to the clinical guidelines. Kelly, et al. (2000) randomly assigned HIV service organizations to one of three groups: technical assistance manuals only, manuals plus a 2-day training workshop, or manuals plus training plus follow-up consultation. The addition of training produced a modest gain compared to the manuals-only group but the largest increase in reported adoptions of the HIV service guidelines occurred when consultation was added to training. Smeele, et al. (1999) randomly assigned physicians to a non-intervention control group or a group that received an intensive small group education and peer review program. The results showed that the physicians in the experimental group demonstrated increased knowledge of the clinical guidelines pertaining to asthma and chronic obstructive pulmonary disease but patient care was not changed. Joyce & Showers' meta-analysis of research on training and coaching in education was reviewed in detail in Chapter 3. Those results showed little change in classroom performance as a result of teacher training by itself or in combination with feedback on performance. Another meta-analysis by Davis (1995) in medicine found similar results. Davis concluded that, "formal CME conferences and activities, without enabling or practice reinforcing strategies, had little impact" (p. 700). These experimental studies seem to confirm the findings from the review of the overall implementation evaluation literature: training by itself does not appear to result in positive implementation outcomes (changes in practitioner behavior in the clinical setting) or intervention outcomes (benefits to consumers).

Experimental Research: Effective Implementation Strategies

As noted in Chapter 4, a high level of involvement by program developers on a continuing basis is a feature of many successful implementation programs. In their classic study, Fairweather, Sanders, & Tornatzky (1974) randomly assigned hospitals who had agreed to develop lodges to one of two groups. Group 1 received printed materials and a manual. Group 2 received printed materials, a manual, and face-to-face consultation. All received telephone consultation and had free access to making calls to consultants any time. There was significantly greater implementation of the lodge model in Group 2. On-site face-to-face time with staff, managers, and directors provided opportunities to help explain the lodge model and to resolve the structural and policy issues associated with the implementation process. Wells, Sherbourne, et al. (2000) matched (on several dimensions) primary care clinics in 6 managed care organizations. They then randomly assigned one of each matched trio to usual care (mailing of practice guidelines) or to 1 of 2 quality improvement (QI) programs that involved institutional commitment to QI, training local experts and nurse specialists to provide clinician and patient education, identification of a pool of potentially depressed patients, and either nurses for medication follow-up (QI-meds) or access to trained psychotherapists (QI-therapy). The managed care organizations did not mandate following the guidelines for treating depression. Over the course of a year, the QI programs resulted in significant improvements in quality of care, mental health outcomes, and retention of employment for depressed patients without any increase in the number of medical visits. The value of these multilevel approaches to implementation was confirmed in a meta-analysis of cancer control program implementation strategies (Ellis, Robinson, et al., 2003). They found 31 studies of cancer program implementation factors and concluded that active approaches to implementation were more likely to be effective in combination.

Experimental Research on Selection

The factors involved in staff selection interviewing (education and background, exchange of information, role play/behavior vignettes) were the subject of a meta-analysis of research on those factors in business (McDaniel, Whetzel, Schmidt, & Maurer, 1994). An analysis of selection criteria (education and background) for the Nurse-Family Partnership prevention program was conducted by Olds, Robinson, et al. (2002). In this study, training, consumer: practitioner ratios, etc. were the same for two groups of practitioners. Group 1 consisted of nurses (the standard for the Nurse-Family Partnership program). Group 2 consisted of paraprofessionals who had a high school diploma (and no further education) and strong people skills. Group 2 (paraprofessionals) also had greater access to coaching with 2 supervisors for every 10 practitioners compared to 1 for 10 in Group 1 (nurses). The results showed that pregnant women and their newborn children benefited more from Group 1 practitioners (nurses). Given the expense of using nurses vs. paraprofessionals, it is unfortunate there were no fidelity measures and no indications of the variability of outcomes within each group of practitioners. Without fidelity measures, there are no clues regarding the functional ways in which the two groups differed and, therefore, no clues for how to direct future efforts at implementation program development (see the analysis of FFT outcomes by the Washington State Institute for Public Policy, 2002). Nevertheless, it is apparent in this study that the criteria for selecting practitioners are important implementation factors.

Experimental Research on Training

While they are not effective by themselves for producing changes in clinical settings, training workshops are an efficient way to impart important information to practitioners. A series of studies was carried out by researchers attempting to implement the Teaching-Family Model. Kirigin, Ayala, et al. (1975) conducted an experimental analysis of the effects of training for Teaching-Parents (married couples who staff Teaching-Family group home programs). Training consisted of a 5-day workshop with presentations and discussion of history, theory, and philosophy; descriptions and demonstrations of skills; and behavior rehearsal of skills to criteria

for mastery. Using a multiple-baseline design across subjects, the authors found training produced significant improvements in key aspects of the “teaching interaction,” a core component of the Teaching-Family Model. A systematic replication was conducted by Maloney, Phillips, Fixsen, & Wolf (1975) with similar results: instructions plus practice plus feedback on practice were most effective in teaching skills important to the operation of a Teaching-Family group home. Additional research on practitioner training was conducted by Dancer, Braukmann, Schumaker, Kirigin, Willner, & Wolf (1978). As part of a 6 day, 50 hour preservice training workshop, one section (2 hrs) was for teaching “observing and describing behavior,” a foundation skill for other skills integral to the Teaching-Family Model (e.g., teaching social, academic, and self-care skills; providing feedback to youths regarding their ongoing behavior; and working with teachers and parents). Material was presented using brief lectures, discussions, live and video modeling, behavioral rehearsal to criterion, and constructive feedback. Using a multiple baseline design across groups, measures of observing and describing skills improved from 21% during baseline to about 66% after training. Another component of the Teaching-Family treatment program is providing personal rationales to youths (descriptions of natural and explicit consequences that may result from a youth’s behavior). P. D. Braukmann, Kirigin Ramp, C. J. Braukmann, Willner, & Wolf (1983) used a multiple baseline design to assess the effects of training consisting of a self-instruction manual, lecture/discussion, and behavior rehearsal on the use of rationales. Social validity was assessed via ratings by girls in a Teaching-Family Model group home. Training produced large changes in the use of rationales, from about 20% during baseline to about 80% after training occurred. Social validity ratings indicated that the girls preferred interactions that included rationales and rated them as 4.8 on a 5-point scale of importance. These studies combined with the meta-analysis of research studies carried out by Joyce & Showers (2002) indicate that effective training appears to consist of presenting information (knowledge), providing demonstrations (live or taped) of the important aspects of the practice or program, and assuring opportunities to practice key skills in the training setting (behavior rehearsal) with feedback.

Experimental Research on Coaching

The value of on-the-job coaching repeatedly appeared in the overall implementation evaluation literature. In Chapter 4 the results of the Joyce & Showers meta-analysis were presented showing that implementation in educational settings occurred primarily when training was combined with coaching in the classroom. A similar result was obtained in a mental health setting. Kelly, et al. (2000) randomly assigned HIV service organizations to one of three groups: technical assistance manuals only, manuals plus a 2-day training workshop, or manuals plus training plus follow-up consultation. They found that the largest increase in reported adoptions of the HIV service guidelines occurred when consultation was added to training. As described earlier, Fine, et al. (2003) randomly assigned physicians to two groups. The experimental and control groups each received mailed information regarding an evidence-based guideline for use with patients with pneumonia. Physicians in the experimental group also had the support of specially trained nurses who made patient assessments, informed the physician when the patient met the guideline criteria, placed prompt sheets in the patient's file, and offered to take an order for antibiotics and arrange for nursing home care. With coaching from the nurses, physicians in the experimental group prescribed antibiotics significantly more often but there was no change in length of hospital stay. Van den Hombergh, et al. (1999) compared two different types of coaches in a randomized group design. One group of physicians was assigned to a coach who was a "peer physician" and the other group was assigned to coach who was a "practice assistant" (not a physician). In each case, the coaches followed a standard protocol to assess practice management and organization (issues not related to direct patient care). The results indicated that both groups improved on many of the 33 measures of practice management but peer-visited physicians showed significantly greater improvement on several practice dimensions. Joyce & Showers (2002) also recommended the use of peer coaches although they did not have experimental data to support their conclusion. While these studies point to the importance of coaching in any attempt to implement a practice or program, we did not find any experimental analyses of the functional components of coaching. Thus, at this point, we know that coaching is important but we do not know

(experimentally) what a coach should do or say with a practitioner to be most effective.

Experimental Research on Evaluation and Administration

The review of the general implementation evaluation literature provided many examples of the importance of staff evaluation (fidelity), program evaluation, and facilitative administrative practices. However, no experimental analyses appeared in the review. Experimental research is needed to fill this important gap in implementation knowledge.

Conclusions

The results of the experimental studies confirm the results of the overall review of the implementation evaluation literature. Information dissemination alone or training by itself are ineffective implementation methods. Implementation to achieve beneficial outcomes for consumers seems to require a longer-term multilevel approach. At this point, we still do not know enough about the important factors required for implementation nor do we understand what makes those factors work.

Human services can capitalize on research done in other fields to design effective practitioner selection methods. Research in human services already has demonstrated some of the functional components of practitioner training. Research has pointed to the critical importance of coaching but we know very little about the functional components of coaching. As we saw in Chapter 5, there are many studies that correlate practitioner performance (fidelity) and consumer outcomes and a few that relate purveyor performance and implementation outcomes. However, the review did not uncover any experimental analyses of staff evaluation, program evaluation, or administrative practices.

The results of this review and that of Ellis, Robinson, et al. (2003) show how meager the experimental literature is with respect to implementation. On the one hand, the non-experimental literature underscores how essential implementation is to moving science to service with success. On the other hand, these two reviews show how little has been invested in research on critical implementation factors or components.



Hypotheses for Advancing Implementation Science

As stated earlier, the science of implementation is in its infancy. However, what follows are reasonable tenets based on the review. Of course, each broad hypothesis can engender a number of related hypotheses that must be developed and tested in order to fully explore the implications as well as interaction effects. The following is only an attempt to set the broadest possible agenda for consideration. There is very challenging work ahead related to partnerships with purveyors and new implementation efforts, gaining access to settings for implementation research, theory building, hypotheses testing, measurement development, and creating research pathways.

As noted earlier, in the complex world of program implementation every dependent variable is an independent variable. Thus, the outcomes of implementation effectiveness become the inputs for intervention effectiveness. Research efforts will be facilitated by the development of both proximal and longer-term measures of implementation at practice, program, and systems levels. Proximal measures at the implementation practice level might examine the presence and relative effectiveness of various implementation drivers. For example, coaching and supervisory practices might be examined with respect to ability of a new implementation site to deliver coaching services to practitioners on a required schedule and the practitioners' perception of usefulness of the coaching and supervision in providing effective service. Longer-term practice measures related to coaching and supervision might examine the relationship of coaching and supervision practices to the time required for practitioners to reach 'fidelity' and the subsequent correlation of fidelity with consumer outcomes.

At the program level, implementation drivers can be examined with respect to longer-term program functioning (e.g. staff turnover, timeliness of training for new staff, relationship of staff evaluation outcomes to coaching and supervision data). For example, the implementation driver of recruitment and selection ("scores" obtained

during the interview process) might be causally related to measures of practitioner fidelity and longevity.

There is a transactional relationship between measures and hypotheses. That is, hypothesis testing may be constrained by available measures or the ability to create new measures. Similarly, as new, reliable, and valid measures are developed, new hypotheses with greater explanatory power may become testable. Longer-term measures of implementation may be aimed at the systems level with a focus on the timeframes, conditions, and impact of defined implementation drivers and strategies on organizational development, sustainability, and fidelity of practice over time and across cohorts of practitioners at an implementation site. These longer-term implementation outcomes may result in organizational and systems fidelity measures that are in turn highly correlated with practitioner fidelity measures.

There are significant methodological, logistical, funding, and political challenges related to partnerships that would facilitate multi-site and multi-program implementation research agendas. However, as the science of implementation matures, the benefits of discerning the effectiveness of common implementation variables (e.g. common functions) across sites and programs holds the promise of system transformation built on science and evidence-based implementation strategies. The RE-AIM framework and principles (Bull, Gillette, Glasgow, & Estabrooks, 2003) and recommendations for conducting effectiveness research also will need to be applied to implementation research efforts (e.g. percent of successful implementations in relation to total implementation attempts). Having RE-AIM data would allow comparisons between implementation programs operated by different purveyors and within a given implementation program over time (Fixsen, Blase, Timbers, & Wolf, 2001). Such comparisons could lead to greater understanding of "what works" with respect to broad implementation strategies and activities and could help focus future research agendas.

D


In the complex world of program implementation every dependent variable is an independent variable.

Hypotheses

Some hypotheses described below will be more amenable to rigorous research designs than others. Rosenheck (2001) advocated for process measures that would allow a view of the functioning of various parts of an implementation effort. Over time, more rigorous experimental designs could be used to test refined hypotheses.


Core Intervention Components


Implementation is facilitated by having a practice or program that is well-defined and clearly operationalized. That is, the core intervention components of a practice or program are identified through research on the original version of the program and tested, expanded, and modified during attempts to replicate the program. The core intervention components are those aspects of a practice or program that are most clearly tied to consumer benefits and, therefore, define the most essential components that must be in place at new implementation sites as well.

 **Hypothesis 1: Practices and programs that have clearly described and operationalized core intervention components will be associated with higher levels of practitioner fidelity at new implementation sites.**

Core Implementation Components

The methods to implement evidence-based practices and programs need to be developed and clearly operationalized. The implementation drivers (staff selection, training, coaching, performance evaluation; program evaluation; facilitative administration; systems intervention) are based on best practices and developed, tested, expanded, and modified during attempts to develop implementations sites. The implementation drivers are the strategies used by the purveyor to develop a new implementation site.

 **Hypothesis 2: Implementation drivers that are clearly described and operationalized by the purveyor will result in higher levels of practitioner fidelity at new implementation sites.**

 **Hypothesis 3: Use of all of the identified implementation drivers will result in higher levels of practitioner fidelity and higher levels of organizational fidelity within a shorter timeframe.**

The Exploration Stage


Exploration activities and strategies impact the success of implementation efforts. Purveyors and potential users make contact during an exploration stage that seems to encompass a wide range of activities and strategies.

Some common activities at this stage relate to the community (city, neighborhood, organization) and other activities relate to the behavior of the evidence-based program (purveyor). The community comes to recognize that it has a problem to be solved, becomes aware of evidence-based practices and programs as possible solutions, and seeks information about possible solutions. The continuing involvement of members of the community helps to identify/create local champions, encourages “buy-in” and support among stakeholders, and results in a broader base of support for the decision that is made regarding potential solutions to the identified problem.

Interactions with external influence systems also are likely to be a prominent feature during this stage of implementation. Initial contacts with external influence systems may be initiated by the community and/or the purveyor. Or those external influence systems (e.g., state initiatives, funding mechanisms, regulatory changes) may feature prominently in this phase by actively stimulating, encouraging, and promoting exploration of evidence-based programs and practices. Purveyors of evidence-based practices and programs interact with community members and groups and with the external influence systems to understand the community, share information about the evidence-based program in a variety of venues, make clear the benefits and limitations of the evidence-based program, and specify the conditions under which the program can operate successfully (organizational supports, referrals, funding, agency/system collaboration).


The result of this overall process is an assessment of the fit between community needs, systems’ supports, and evidence-based program or practice benefits; an assessment of the potential risks and benefits associated with implementation; consideration of the abilities of the community, external systems, and purveyor to manage the risks and produce the benefits; and the development of a positive working relationship among the community, systems’ partners, and purveyor

group. The exploration stage ends with a mutual decision among the engaged parties to proceed (or not) with implementation of a given evidence-based program or practice.

 **Hypothesis 4: Higher levels of “readiness” (e.g. measures of the specification of community needs, involvement of key stakeholders, existence of champions, extent of stakeholder knowledge of the potential risks and benefits of the program, confidence in dealing with risks, confidence in being able to implement the program, ability to specify and ensure funding and referral sources, and knowledge of the initial and on-going requirements of the program) will result in higher levels of practitioner fidelity and organizational fidelity and shorter timeframes to reach full implementation status at new implementation sites.**


The Implementation Team

Another result of the exploration process is the creation of an implementation team made up of community members and system stakeholders who are advised and assisted by the purveyor. The implementation team has clear plans with assignments of tasks, timelines, and estimations and sources of costs related to organizational changes and system changes. Ideally, members of the implementation team represent each organization or system whose cooperation is required to successfully install and operate the evidence-based program or practice at the implementation site and who have the authority to make changes in their organization or system to accommodate the evidence-based program. Keeping the implementation process focused and solving problems that arise are essential functions of the implementation team.

 **Hypothesis 5: Communities that have an identified implementation team with relevant and influential membership and clear lines of accountability will result in higher levels of practitioner fidelity and shorter timeframes to reach full implementation status at new implementation sites.**

Application & Adaptation of Implementation Drivers

The purveyor’s understanding and systematic use of the implementation drivers will impact the success of the implementation effort. In the exploration and planning process it is important for the purveyor to communicate the relevant dimensions of the implementation drivers with respect to the purveyor’s specific evidence-based program or practice. The purveyor needs to provide clear information and advice and create appropriate expectations about staff selection practices, staff training practices, coaching practices, staff evaluation practices, program evaluation methods, organizational change methods, and approaches to aligning policy and external influences. As noted in the review, these implementation drivers impact practitioner behavior, organizational functioning, and systems supports and may ultimately determine whether the benefits of the evidence-based practice or program can actually be delivered to consumers. Knowing the relevant dimensions of these implementation methods provides direction and content for the planning process and guidance with respect to what is negotiable and what is essential to the success of the implementation effort.

 **Hypothesis 6: Clearly described and operationalized dimensions of each implementation driver will result in more effective planning and lead to higher levels of practitioner fidelity and organizational fidelity at new implementation sites.**

Installation: Organizational Change Process

Purveyor attention to organizational change efforts during installation increases the likelihood of a successful implementation effort. As the purveyors and the implementation team begin their work, preparations intensify and plans become reality. During the installation stage funding contracts are signed, personnel are reassigned/hired, organizational policies and procedures are modified, human resource policies are changed, and personnel and time are reallocated to prepare the organization, systems, and staff for implementation of the evidence-based practices. Promises and agreements made during the exploration stage are acted upon during the installation stage. This is the beginning of the organizational change process. Purveyors are very active during this stage. They are working to align organizational and system policies and procedures with the requirements of the evidence-based program. In addition, purveyors provide advice and/or direct assistance with selection of staff and conduct training for those staff in preparation for providing services to the first consumers of the new program. Purveyors and the implementation team also make specific plans for coaching, fidelity evaluations, and program evaluation and begin to prepare personnel and the organization for continuing those functions. Adequate resources (time, staff, funding, cooperation) and management commitment are important during this challenging start-up period.



Hypothesis 7: Systematic efforts to bring about organizational change during installation will result in higher levels of practitioner fidelity, shorter time frames to reach full implementation status, and longer-term sustainability at new implementation sites.



Hypothesis 8: Active work to assure adequate local resources prior to and during installation will result in higher levels of practitioner fidelity and shorter time frames to reach full implementation status at new implementation sites.


Initial Implementation

Initial implementation begins when practitioners begin using evidence-based practices in their contacts with their first consumers. This stage involves creating new realities for and transactional connections among practitioners, organizations, and supporting systems. Trainers and coaches from the purveyor group are helping practitioners learn the rudiments of new clinical or intervention skill sets in the process of creating mastery of the evidence-based practices. Considerable effort is put into helping the first practitioners be successful with the first consumers of the new program in order to demonstrate the value of the program in the new location. Purveyors also are working with directors and managers to define roles, learn new skill sets, and further the process of creating new organizational cultures to support performance-based operations. Staff selection, training, coaching, and evaluation require well-informed and skilled trainers, coaches, evaluators, and administrators. These functions appear to be essential to the initial and continuing success of an implementation site and careful thought needs to be given to how the implementation site can become self-sufficient with respect to the skillful use of the implementation drivers (or develop long-term relationships with outside contractors to gain access to those resources). Fidelity measures, staff performance measures, and program evaluation measures are carefully monitored and the information is acted upon promptly.

Another key feature of the initial implementation stage is maintaining and expanding relationships with community leaders, system directors and managers, and others who are in a position to support or hinder the development of the new implementation site. The purveyor group and the implementation site administrators provide information and request changes as needed to assure initial and continuing support. An active process of matching program needs and identifying and accessing resources seems to be an on-going task.





Hypothesis 9: Efforts that include clearly described and operationalized implementation drivers will result in higher levels of organizational fidelity at new implementation sites.

 **Hypothesis 10: Efforts that embed all of the identified implementation drivers into an implementation site (i.e., selection, qualified trainers, coaches, evaluators, administrators) will result in higher levels of organizational fidelity and improved sustainability.**

Reaching Full Implementation


The beginning of the full implementation stage is the beginning of the exit strategy for the purveyor. Once all the core intervention components are in place and the implementation drivers (selection, training, coaching, staff and program evaluation, facilitative administration, and systems interventions) are operational and fully implemented, the new program staff (with coaching from the purveyor) can focus on continued development of each component and, especially, on their integration. Alignment of content defines integration. During initial implementation, the purveyor helps to assure that what is taught in training workshops is fully supported and expanded in coaching and forms the basis for staff evaluation measures. Cross training for organizational staff is another method for helping to assure integration of content. For example, particular sections of workshops to begin the training process for new practitioners (due to turnover or expansion) may be taught by a designated trainer, one or more of the coaches, a practitioner, an evaluator, and an administrator. Coaching may be done primarily by full-time coaches but an administrator also may coach one group of practitioners. During the full implementation stage, a purveyor may have some form of “graduation” (site review, certification) to indicate the departure of the purveyors or the start of a less intensive relationship with the purveyor.


 **Hypothesis 11: Increased on-site, face-to-face interaction between purveyors and implementation site staff will result in higher levels of practitioner fidelity at new implementation sites within a shorter timeframe.**

 **Hypothesis 12: Efforts by the purveyor that make use of systematic routines to directly observe and coach implementation site practitioners, trainers, coaches, evaluators, and administrators will result in higher levels of practitioner fidelity, higher levels of organizational fidelity, and shorter timeframes to reach full implementation status.**

Sustainability


Sustainability of implementation sites begins during the exploration stage and continues thereafter. Commitments, agreements, and supports essential to the successful operations of a program often reside in systems that are fluid and open to rapid change. These commitments during the exploration stage are realized during the installation and initial implementation stages then expanded and modified thereafter. It appears that sustainable programs continue to work to expand the depth and breadth of community and political support over the years with a steady flow of information (data on benefits to consumers, organizational efficiency) and personal contact.

 **Hypothesis 13: Sustainability with fidelity is directly related to the degree to which the organization can routinize the use of the implementation drivers in their organization.**

 **Hypothesis 14: Implementation sites that are well integrated into a local system of care (as measured by stakeholder surveys, for example) will result in higher levels of practitioner fidelity, higher levels of organizational fidelity, and longer-term sustainability.**

Innovation and Drift

The first goal of the implementation process is to establish the evidence-based program or practice as described, with high levels of fidelity to the original. After that, changes in core intervention practices may occur with experience. Having well described core intervention components and a clear plan for organizational change and implementation at a new site provides a basis for detecting changes and modifications as they occur. Some changes may be beneficial innovations that may help to re-define the evidence-based program itself. Some changes may be undesirable and call for corrective action. In either case, the purveyor and implementation site staff need to be able to notice the change, describe it, discuss the merits of it, analyze and evaluate it, and decide if it is an innovation (desirable) or program drift (undesirable).

 **Hypothesis 15: Implementation sites that consistently meet practitioner fidelity and organizational fidelity standards will be a greater source of beneficial innovations that are more likely to be shared with others using the evidence-based program or practice.**

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Citations related to
implementation of
programs & practices





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