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The ARC Organizational and Community Intervention Strategy for Implementing Evidence-Based Children's Mental Health Treatments

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This paper reviews the implications of organizational and community intervention research for the implementation of effective mental health treatments in usual community practice settings. The paper describes an organizational and community intervention model named ARC for Availability, Responsiveness and Continuity, that was designed to support the improvement of social and mental health services for children. The ARC model incorporates intervention components from organizational development, interorganizational domain development, the diffusion of innovation, and technology transfer that target social, strategic, and technological factors in effective children's services. This paper also describes a current NIMH-funded study that is using the ARC intervention model to support the implementation of an evidence-based treatment, Multisystemic Therapy (MST), for delinquent youth in extremely rural, impoverished communities in the Appalachian Mountains of East Tennessee.

KEY WORDS: evidence-based practices; organizational change; community development; delinquency; rural mental health.

Reports from the Institute of Medicine (1998) and Surgeon General (U.S. Department of Health and Human Services, 1999) identified the need to "bridge the gap" between mental health research and practice as a national public health priority. At least part of that "gap" is a function of the fact that treatments shown to work in controlled studies rarely find their way into usual-care, community-based, practice settings. Moreover, there is limited knowledge about how to cultivate the support of payers, providers, and consumers in implementing newly developed evidence-based practices (National Institutes of Health, 1999; Rosenheck, 2001; Schoenwald & Hoagwood, 2001). Nonetheless, several states (e.g., Connecticut, New York, Ohio, South Carolina, Washington, to name a few) have established evidence-based mental health and juvenile justice initiatives. Some of these states (e.g., Connecticut, Oregon, Washington) also passed legislation requiring mental health and juvenile justice agencies to implement empirically tested treatments for youth and families by specific dates.

These states' efforts represent an encouraging endorsement of the value of scientifically tested treatments that extends beyond mental health researchers. But these efforts underscore the need for proven strategies for implementing effective treatments in communities that could benefit from them. As the demand for evidence-based treatments increases by these and other legislative, fiscal, professional, and consumer actions, a supply of effective and sustainable mental health treatments will be needed to meet the demand. Just as important, without strategies for implementing new evidence-based treatments successfully in community practice

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settings, the demand for these treatments is likely to dwindle rapidly. Moreover, attempts to disseminate efficacious treatments without strategies for effectively implementing them may result in the rejection of the new treatments by the community they are intended to benefit or in the adaptation of the treatments in ways that compromise their effectiveness (Glisson, 1978, 1992, 2002; Schoenwald & Hoagwood, 2001).

To manage the challenges of implementing evidence-based practices in community settings, several developers of evidence-based practices established new firms or collaborations with existing firms to implement specific practice models in communities that request them (Schoenwald & Henggeler, 2003). But these implementation efforts have been guided more by practical experience than by pertinent research on the diffusion of innovation, technology transfer, organizational behavior, and community development. Although research on contextual factors (e.g., client, practitioner, organizational, service system, and community) that affect the implementation and outcomes of evidence-based mental health treatments in usual care settings is in its infancy (Chorpita et al., 2002; Hohmann & Shear, 2002; Schoenwald & Hoagwood, 2001; Schoenwald, Sheidow, Letourneau, & Liao, 2003; Schoenwald, Sheidow, & Letourneau, 2004; Torrey et al., 2001), research on the diffusion of innovation, technology transfer, and organizational and community development that has accrued outside the field of mental health offers guidance and directions (Glisson, 2002). The ongoing NIMH-funded study that is described later is informed by research in these areas, as well as by child treatment efficacy and effectiveness research, and constitutes the first test of a specific proactive strategy to cultivate organizational and community support for the implementation of an evidence-based mental health treatment for youth.

The remaining sections of this paper are organized as follows. First, we provide an overview of research pertinent to the implementation of scientifically tested mental health treatments in usual care settings, and the particular challenges that may arise when attempting implementation in extremely impoverished and isolated, rural Appalachian Mountain communities. Next, we describe the theoretical and empirical foundations of a proactive organizational and community intervention strategy, entitled ARC for Availability, Responsiveness and Continuity, that was designed to support effective children's services. Following a brief overview of Multisystemic Therapy (MST) and the viability of its implementation in rural, isolated, impoverished communities, the specific phases and components of ARC as an organizational and community intervention strategy are described using examples that reflect the joint implementation of ARC and MST in the ongoing randomized trial.

THE IMPLICATIONS OF ORGANIZATIONAL AND COMMUNITY INTERVENTION RESEARCH FOR IMPLEMENTING NEW MENTAL HEALTH TREATMENTS

Theoretical work and empirical studies on the diffusion of innovation (Rogers, 1995), sociotechnical models of organizational effectiveness (Rousseau, 1977; Trist, 1985), the transfer of technology (Backer, David, & Soucy, 1995), interorganizational domain development (Gray, 1990; Trist, 1985), and organizational development (Burke, 1993; Molgaard, 1997; Nadler & Tushman, 1977; Porras & Robertson, 1992; Tichy, 1983) explain, in part, the challenges facing the implementation of evidence-based mental health treatments. These literatures share the idea that new technologies (e.g., evidence-based treatments) are implemented within social contexts defined by organizations and communities. The characteristics of these social contexts determine (1) which technologies are adopted and, once adopted, (2) the extent to which the technologies are implemented as intended or *adapted* and *changed* by those social contexts. Organizational and community intervention strategies can be used in either of the two phases or in both phases. That is, the strategies can be used to facilitate the selection or adoption of new technologies and the strategies also can be used to facilitate the implementation of new technologies once the decision has been made to adopt them. The ongoing study described here is examining the use of these strategies in the second phase, the implementation of a new technology.

According to the organizational and community change literatures, the successful implementation of an innovative technology such as an evidence-based practice depends on the "fit" between the new technology and the social context of the organizational and community settings in which the new practice is implemented (Glisson, 1978, 1992). However, few transport strategies for new mental health treatments have been informed by these

organizational and community change literatures and the implications of socio-technical, innovation diffusion, and related development models for implementing evidence-based mental health treatments have not been tested empirically (Glisson, 2002).

THE IMPLEMENTATION OF EVIDENCE-BASED TREATMENTS IN RURAL AREAS

Rural communities vary widely on many factors, including population density, income, ethnicity, and social structure. Mental health risks and the availability of mental health services in rural areas also vary. Significant mental health risks are found in the most impoverished and isolated rural areas and effective mental health services are needed for the children in those areas who are most at risk (Costello, Angold, Burns, Erkanli, et al., 1996; Costello, Angold, Burns, Stangl, et al., 1996; Costello, Farmer, Angold, Burns, & Erkanli, 1997). But there are unique geographical and cultural barriers to implementing mental health services in these rural settings that include physical isolation, poor communications infrastructures, a lack of transportation, limited resources, social mores that emphasize self-sufficiency, closed social systems and stigmatized views about mental health issues (Fox, Berman, Blank, & Rovnyak, 1999; Hoyt, Conger, Valde, & Weihs, 1997; Jones, McDanal, & Parlour, 1985; Kane & Ennis, 1996; Melton, 1983). Counties in the rural Appalachian Mountains of East Tennessee are among the poorest in the country and were targeted for the present study because they have the lowest incomes and highest rates of delinquency and related social problems in the state. However, little is known about how to implement efficacious treatments in these types of rural areas and almost no studies have examined strategies for overcoming the barriers to service that are compounded by the isolation and economic disadvantage of these areas (Bergland, 1988; Fox, Merwin, & Blank, 1995; Hoyt et al., 1997; Human & Wasem, 1991; Isserman, 1996; Spoth, 1997).

Scholars in community and rural mental health suggest that mental health services in rural areas should be implemented using models that are appropriate and responsive to the unique characteristics of the rural community in which they are provided (Beeson, Britain, Howell, Kirwan, & Sawyer, 1998; Yuen, Gerdes, & Gonzales, 1996). Appropriate models leverage the strengths of rural communities to compensate for the barriers to care (Kane & Ennis, 1996; Melton, 1983; Molgaard, 1997). Strengths in the rural Appalachian communities studied here include a traditional allegiance to family and community, informal support networks among neighbors, limited social stratification, a stable population that extends over several generations, and widespread familiarity with the community (Bjorklund & Pippard, 1999; Kane & Ennis, 1996; Melton, 1983; St. Lawrence & Ndiaye, 1997). Taken together, the barriers and strengths in rural areas such as the Appalachian Mountains of East Tennessee, present dialectics that include self-reliance versus interdependency, isolation versus commitment to community, and closed social systems versus limited social stratification. For example, life in these poor, isolated areas requires self-sufficiency but isolation also increases the value of help from a neighbor during a crisis, because public infrastructures and resources are limited or nonexistent. And, although physical isolation between families characterizes many rural Appalachian areas, "everyone knows everyone" because most families have lived there for several generations. Finally, because the population is small and stable, familiarity extends across social strata and relative to urban areas there is less social distance between families as a function of social status.

To take advantage of these unique social characteristics, scholars in community and rural mental health recommend that proactive strategies to implement effective mental health services take into account the importance of (1) building grass roots support for mental health programs, (2) developing personal relationships with community stakeholders and opinion leaders, (3) forging informal networks within the broader community, and (4) linking mental health services to the socio-political context of the community (Beeson et al., 1998; Bjorklund & Pippard, 1999; Fox, Blank, Rovnyak, & Barnett, 2001; Hill & Fraser, 1995; Human & Wasem, 1991; Jones et al., 1985; Kane & Ennis, 1996; Molgaard, 1997; Spoth, 1997).

THE ARC ORGANIZATIONAL AND COMMUNITY INTERVENTION MODEL

Scant research has focused on organizational and community intervention strategies for implementing effective social and mental health services. As a result, little is known about how to use these

strategies to support the implementation of new mental health treatments. The ARC organizational and community intervention model responds to this need and builds on existing knowledge of organizational and community intervention strategies that have been used in business, industry, and agriculture. Organizational and community intervention components were selected from these existing development strategies, adapted for children's services, and combined in the ARC model to develop organizational and community support for effective children's services (Glisson, 2002; Glisson, Dukes, & Green, in press).

ARC Principles and Objectives

The ARC organizational and community intervention model is guided by three assumptions (Glisson, 2002, Glisson et al., in press). First, the implementation of any core technology (e.g., an evidence-based mental health treatment) is as much a *social* as technical process. Second, mental health services are embedded in successive layers of social context that include the service provider, service organization, and community (see Figure 1). Third, effectiveness is a function of how well the social context complements and supports the objectives of the core service technology. ARC is designed to address barriers to the "fit" between the social context and the service technology. ARC helps focus organizational and community efforts on a specific population (e.g., delinquents in rural Appalachia) and problem (e.g., high rates of state custody and recidivism in rural Appalachia), build community support for services that target the problem, create alliances among service providers and community stakeholders, encourage the desired service provider behaviors, and develop a social context that fosters effective services at organizational and community levels.

ARC uses intervention strategies at two levels, the *organizational* level and the *interorganizational domain* level, to cultivate social contexts that complement and support the implementation of effective mental health services. Strategies at the organizational level focus on specific organizations, while strategies at the interorganizational domain level focus on collections of organizations and stakeholders in a specific community.

Organizational intervention strategies address the needs of service providers (e.g., therapists, caseworkers, etc.) and involve them in organizational policy decisions and in the design of organizational processes that affect the provision of services. Although almost no organizational change research has been conducted in mental health service organizations, there is empirical evidence that organizational interventions in other types of organizations can build the types of social contexts (e.g., organizational culture and climate) that make organizations more effective (Burke, 1993). A meta-analysis of 126 studies by Neuman, Edwards, and Raju (1989) and a meta-analysis of 98 studies by Guzzo, Jette, and Katzell (1985) concluded that organizational development improved work attitudes and performance. And a meta-analysis of 52 studies by Robertson, Roberts, and Porras (1993) found that organizational intervention strategies that target multiple dimensions (i.e., social factors, technological factors, strategic factors) were most effective. Robertson et al. (1993) also found that among interventions that targeted a single dimension, those that targeted social factors (e.g., culture, climate) were the most effective.

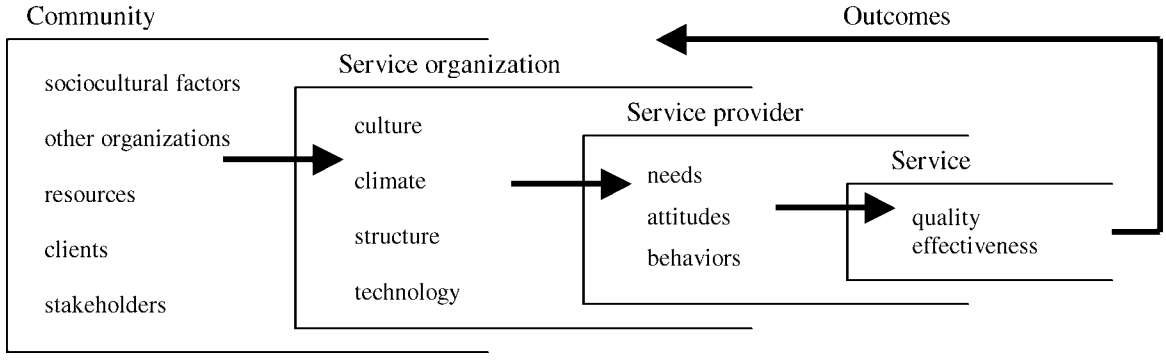

Fig. 1. The social context of mental health services.

These findings suggest that intervention strategies that address the social context of services are important to effectiveness, but that broader strategies that integrate social, strategic, and technological factors are even more effective. The findings prompted some writers to challenge the effectiveness of narrowly focused organizational development strategies and to advocate the use of change strategies that use a broader array of interventions. Worren, Ruddle, and Moore (1999) argued that traditional models of organizational development that merely facilitate positive human relations are less effective than broader systems-based models that introduce new strategies for guiding an organization's interactions with its external environment, implement innovative technologies to improve the quality of the product or service, and target specific work behaviors for improvement. Although interventions vary widely, many of the more recent development models take a broader systems perspective (Woodman, 1989). That is, they focus on the technology, strategies, and social context of organizational systems as well as target specific work behaviors in active change efforts that go beyond the facilitation of positive work relationships (Farias & Johnson, 2000). In the ARC model, multiple intervention components are integrated within this broader system perspective and adapted for use with organizations that provide services to children and families.

Interorganizational domain development strategies used in the ARC model create alliances among service providers, organizations, local opinion leaders, and community stakeholders for the purpose of addressing targeted problems like delinquency and supporting effective children's services that respond to those problems in a particular community. Although less research has been conducted on domain development than on organizational development strategies, success with these strategies has been documented in a variety of community contexts (Gray, 1990; Patton & Cissell, 1990; Trist, 1985). Indeed, Molgaard (1997) concluded that community-level development strategies are especially useful in rural communities to support the implementation of new mental health programs. Recent research indicates that informal community-level alliances are critical to mental health service delivery in rural areas, and that these alliances in rural areas are most likely to be formed at the county level, and not at lower (e.g., town) or higher (e.g., multi-county) levels (Fried, Johnsen, Starrett, Calloway, & Morrissey, 1998). ARC development strategies focus on county-level government, community groups, businesses, and key community opinion leaders such as judges, principals, and ministers.

Theoretical Background for ARC

The ARC model borrows from general systems theory (Katz & Kahn, 1978), diffusion of innovation theory (Rogers, 1995), socio-technical models of organization (Rousseau, 1977; Trist, 1985), classic models of organizational development (Burke, 1993; Nadler & Tushman, 1977; Porras & Robertson, 1992; Tichy, 1983), and interorganizational domain development (Gray, 1985, 1990; Trist, 1985). While presenting a rich and multifaceted view of organizations and communities, these theories and models include the conceptualization of organizations as open systems with an emphasis on the importance of external environments (e.g., other organizations, stakeholders, community resources), core technologies and social processes for organizational performance and effectiveness (see Figure 1).

General systems theories state that organizations strategically link inputs from their external environments using core technical processes to create outputs in the form of products or services (Katz & Kahn, 1978). Those outputs then affect the environment in a cycle of exchange between the organization and its external environment. Although *strategic* and core *technical* processes (e.g., evidence-based practices) are essential to creating outputs from inputs, socio-technical and diffusion of innovation models emphasize that the success of technical processes and, indeed, of the organization itself, depends on *social* processes in the organization and community (Rogers, 1995; Rousseau, 1977; Trist, 1985). This view is supported by social cognitive theory that describes the effect of social environment on cognitive processes that affect both attitudes and behavior (Bandura, 1986). Similarly, classic models of organizational development also describe organizations as open systems and view social factors such as culture and climate as central to their effectiveness (Burke, 1993; Michela & Burke, 2000; Porras & Robertson, 1992).

Interorganizational domain development strategies incorporated in the ARC model focus on the array of organizations, key opinion leaders, and stakeholders in a given community (Gray, 1985, 1990). A domain is defined as the referent organizations, opinion leaders and stakeholders concerned with local

responses to a specific, identified societal problem (e.g., adolescent delinquent behavior) (Trist, 1985). An important feature of an interorganizational domain is its *unregulated* and "*underorganized*" nature. The unregulated and underorganized relationships among these organizations, opinion leaders and stakeholders must be considered in any model of development used to help specific communities solve challenging social problems (Gray, 1990). Using negotiated order theory, Gray (1990) and Trist (1985) described strategies that change agents use to develop interorganizational domains *without* the need for a formal network or regulated system of coordination. In the ARC intervention model, the change agent works with an interorganizational domain (e.g., juvenile court, school system, law enforcement, business groups, churches) at several levels (e.g., community, organization, individual) around a shared concern (e.g., reducing adolescent delinquent behavior).

Role of the ARC Change Agent

In the ARC model, change agents work (1) at the *community level* to develop a stakeholder group to support effective services for a target population (e.g., delinquent youth), (2) at the *organizational level* to facilitate the delivery of specific services (e.g., mental health treatment), and (3) at the *individual level* to develop one-to-one relationships with the relevant community opinion leaders (e.g., judges, mayors, ministers, etc.). ARC change agents trained by the University of Tennessee Children's Mental Health Services Research Center and participating in studies of the ARC model to date include doctoral- and masters-level practitioners in clinical psychology, social work, industrial organizational psychology and counseling.

The organizational and community development literatures emphasize the importance of change agents who work directly with individuals, groups and organizations and function as boundary spanners between those individuals, groups, and organizations in the community (Aldrich & Herker, 1977; Bartel, 2001; Beer, 1980; Bennis, 1966; Callister & Wall, 2001; French & Bell, 1984; Porras & Robertson, 1992; Robey & Altman, 1982; Rogers, 1995). Change agents influence perceptions, attitudes, and decisions at individual, group, organizational, and community levels by providing technical information, data that describe characteristics of the targeted problem, feedback on outcomes, and conflict resolution, and by facilitating communication concerning the nature, progress, and success of technological innovations and new programs that target specific populations. Much of the change agent's work is aimed at bridging the social and technical gaps between those seeking to implement an innovation or program and opinion leaders and stakeholders within the community in which the innovation or program is introduced.

The change agent's role in an organizational and community intervention includes problem analysis, skill building, education, team building, and systems analysis (Burke, 1993; French & Bell, 1984; Pasmore, Francis, Haldeman, & Shani, 1982; Porras, 1986; Steel & Shane, 1986; Walton, 1987). The change agent's role as a "boundary spanner" includes sharing information between individuals, groups, organizations, and communities, providing updates about innovation efforts, diagnosing problems in the process of improving services, motivating community interest in innovation, creating interpersonal networks that include community opinion leaders, reinforcing efforts to improve services, and preventing discontinuance of improvement strategies that are working (Blake, Shepard, & Mouton, 1964; Burke, 1974; Gray, 1985, 1990; Rogers, 1995; Trist, 1985). Change agent activities are guided by the 10 intervention components that are described later.

Evidence Supporting the ARC Model

Results of a randomized trial designed to test the impact of ARC on a child welfare and juvenile justice system indicated that the ARC intervention improved organizational climate and lowered case manager turnover rates (Glisson, 2002; Glisson et al., in press). Evidence of the impact of the social context factors targeted by ARC on service quality and outcomes also support the ARC model. That is, previous studies demonstrated that social context factors such as organizational culture and climate are related to the quality and outcomes of children's services in urban and rural settings (Glisson & Hemmelgarn, 1998); the emphasis that children's health care providers place on family centered care (Hemmelgarn, Glisson, & Dukes, 2001); and service quality, service provider work attitudes, and case manager turnover rates in child welfare and juvenile justice systems (Glisson & Durick, 1988; Glisson & James, 2002). These findings are important because a recent study by the U.S. General Accounting Office (2003) identified caseworker turnover and

poor organizational climate as key factors that explain the inadequate care provided by child welfare systems nationwide.

In addition, previous studies demonstrated that community social context affects children's services through its impact on the way service providers approach their work (Glisson, Bailey, & Post, 2000; Glisson & Hemmelgarn, 1998; Martin & Glisson, 1989). There is evidence that the norms and values of the communities affect the cultures of service organizations that function within them (Martin & Glisson, 1989). This is because service providers "import" norms and values from their community into the organizations in which they work. As a result, the interface of organizational and community social context is particularly germane to efforts to improve the access and effectiveness of mental health services provided to delinquent youth in rural communities. For example, studies conducted with child welfare and juvenile justice systems showed that children in rural Appalachia received more restrictive residential placements and fewer mental health services, and spent more time in state custody than similar children in urban areas (Glisson, 1994; Glisson et al., 2000).

TESTING THE EFFECTS OF ORGANIZATIONAL AND COMMUNITY DEVELOPMENT AND EVIDENCE-BASED TREATMENT IN RURAL APPALACHIA

Although children from families in more isolated and impoverished rural areas have significant rates of mental health problems, there is limited access to mental health services in many of these areas (Beeson et al., 1998; Burns et al., 1995; Costello, Angold, Burns, Erkanli, et al., 1996; Costello, Angold, Burns, Stangl, et al., 1996). Higher service costs and reduced accessibility to mental health services in these types of rural settings are linked to the physical isolation, the geographical distances between residents and service providers, and the associated travel times required to obtain services (Beeson et al., 1998; Fox et al., 1995, 2001). The insularity and isolation of rural communities in the Appalachian Mountains in East Tennessee distinguish these areas from more urban settings (Bierman, 1997; Sherman, 1992). But as in urban populations, the children in rural areas who face some of the most serious mental health risks are the poor and those who are referred to juvenile courts for delinquency (Burns et al., 1995; Conger, Ge, Elder, Lorenz, & Simons, 1994; Costello et al., 1997; Lynch, Kaplan, & Salonen, 1997; Lynch, Kaplan, & Shema, 1997).

Against the backdrop of challenge and opportunity for improving children's mental health services presented by impoverished and isolated rural areas, the organizational and community development strategies encompassed in the ARC model are being tested in a study of services for delinquent youth referred to juvenile courts in some of the most remote and poorest areas of the Appalachian Mountains. Although delinquency is often considered an urban problem, there is evidence that serious delinquent behavior in some states is as characteristic of rural as urban children. In Tennessee, for example, the number of children referred to juvenile court in rural counties equals the number referred in urban counties (Tennessee Commission on Children and Youth, 2001). Moreover, the rural juvenile courts in Tennessee place children in state custody at a higher rate (and as a result actually place more children in state custody annually) than the state's urban juvenile courts (Tennessee Commission on Children and Youth, 2001). It is important to note that the rates are not uniform across all rural areas, but are highest in the poorest counties. Moreover, children who are placed in state custody from rural Appalachian counties stay in custody longer than urban children and have less access to mental health services (Glisson, 1996; Glisson et al., 2000).

The ongoing study mentioned earlier is examining the main and interaction effects of the ARC intervention strategy and MST (Henggeler, Schoenwald, Borduin, Rowland, & Cunningham, 1998) in eight, rural Appalachian counties in East Tennessee that have disproportionately high rates of poverty and delinquent youth. Within each of the eight counties, youth referred to juvenile court for delinquency who have been diagnosed with a mental health problem are randomly assigned to receive MST or the usual array of intensive services. In addition, four of the eight counties are randomly assigned to receive the ARC development strategy. The clinical and cost effectiveness of implementing a specific empirically supported treatment for delinquent youth (MST) will be tested in very rural Appalachian communities, along with the outcomes and costs of the ARC organizational and community development strategy. Tests of the interaction effects of these two levels (i.e., clinical and organizational-community) of intervention are expected to show

that the implementation and outcomes of MST will be superior in the four counties that receive ARC.

It is important to note that this two-level strategy to improve outcomes for delinquent youth in very rural communities is not designed to examine factors that influence the selection or adoption of either the treatment technology (MST) or the organizational-community development strategy (ARC). The decision to adopt MST was made by the referral agency (juvenile courts), payer (managed care organization and state agency contracting with that organization for provision and payment of youth services), and service provider prior to the study. Thus, the significant policy and fiscal issues that can affect the adoption of a specific treatment preceded the implementation phase (Schoenwald & Henggeler, 2004; Schoenwald & Hoagwood, 2001). However, the effects of specific organizational- and community-level variables on the implementation and outcomes of the adopted treatment (MST) in rural communities are unknown, as are the outcomes and costs of the ARC intervention, all of which are being examined in the ongoing study. Before describing the implementation of ARC and MST in this study, an overview of MST and discussion of issues related to the viability of its implementation in rural areas is provided.

OVERVIEW OF MULTISYSTEMIC THERAPY (MST)

Clinical Specification

MST (Henggeler et al., 1998) is a family- and community-based treatment model designed to address the determinants of serious antisocial behavior in adolescents (for a review of research on determinants, see Loeber & Farrington, 1998). These risk factors include individual youth characteristics, family functioning, peer relations, school performance, indigenous family support, and neighborhood characteristics. A central feature of MST is the integration of evidence-based treatment approaches into a broad-based social-ecological framework that addresses risk and protective factors across individual, family, peer, school, and community contexts (Bronfenbrenner, 1979). MST uses pragmatic, problem-focused treatments that have empirical support, including strategic family therapy (Haley, 1976), structural family therapy (Minuchin, 1974), behavioral parent training (Munger, 1993), and cognitive-behavioral therapies (Kendall & Braswell, 1993). Assessment and intervention activities focus on interactions within and between the systems in the youth's social ecology—family, peer, school, and other social systems involved with the identified problems. Measures of therapist adherence, supervision (Henggeler, Schoenwald, Liao, Letourneau, & Edwards, 2002) and expert consultation (Schoenwald et al., 2004) have been validated. In addition, manuals for supervisors (Henggeler & Schoenwald, 1998), and expert consultants (Schoenwald, 1998) specify the clinical supervision and consultation processes used to support therapist implementation of MST.

Service Delivery Model

MST uses a home-based model of service delivery to provide intensive, clinical interventions when and where they are needed. Advantages of the home-based model of service delivery include alleviation of common barriers to service access such as transportation, appointment convenience, and need for child-care. In addition, low caseloads (i.e., therapists have caseloads of four to six families each) and flexible hours allow therapists to expend intensive and sustained effort when needed (e.g., clinicians are available 24 h/day, 7 days/week). MST therapists are organized into teams of three to four therapists and an MST clinical supervisor, and a single service provider organization may host several MST teams. Although caseloads are carried at the individual therapist level, the MST training, supervision, and consultation process are provided to the team as a whole, thereby enabling all team members to participate in the MST clinical conceptualization and problem-solving processes and to provide continuity in the details of clinical care when a therapist is ill, on vacation, or in need of a weekend off.

Evidence Supporting the Effectiveness of MST

MST was validated in several randomized trials that could be considered hybrids of "efficacy" and "effectiveness" research (for a review, see Halliday-Boykins & Henggler, 2001). Few exclusionary criteria existed, the youth were referred by juvenile justice agencies, courts, and related agencies, and youth in the "control" conditions received an array of mental health, substance abuse, and juvenile justice services. Evidence from clinical trials linked

caregiver reports of therapist adherence to MST with intermediary (i.e., family functioning, parental monitoring, youth peer relations) and ultimate outcomes (i.e., youth arrest, incarceration, placement) (Henggeler, Melton, Brondino, Scherer, & Hanley, 1997; Henggeler, Pickrel, & Brondino, 1999; Huey, Henggeler, Brondino, & Pickrel, 2000; Schoenwald, Henggeler, Brondino, & Rowland, 2000).

Viability of MST in Rural Communities

As noted previously, rural communities are often isolated and characterized by closed social systems, stigmatized views about mental health treatment, traditional allegiance to family and community, and informal support networks among neighbors in rural, isolated communities (Bierman, 1997; Fox et al., 2001). Barriers to mental health services that are particularly pronounced in rural communities include a lack of transportation and childcare, the distance to a community or school-based clinic, and the potential stigma associated with going to such a clinic (Beeson et al., 1998; Bierman, 1997). Several attributes of the MST treatment and service delivery model suggest its compatibility with the needs of youth and families in rural communities. Specifically, to overcome barriers to service access, treatments such as MST that can be delivered in the home, do not require a clinic or formal treatment setting, and draw upon indigenous sources of support may have considerable potential for serving populations in these areas (Burns, Hoagwood, & Mrazek, 1999; Henggeler et al., 1998; Kazdin & Weisz, 1998; Weisz & Jensen, 1999).

In addition, because the frequency, timing, and duration of MST sessions is dictated by the functions to be accomplished and availability of family members, the therapist and family can adjust the intervention efforts to the changing capacities of the family and its social context. The strength-focused nature of MST and the emphasis on indigenous support systems may also be well suited to families in insular communities that are particularly wary of outside interference (Bierman, 1997; Fox et al., 2001). And the multi-level quality assurance system for MST training, consultation, implementation and adherence monitoring is sufficiently well developed and location neutral to be implemented with MST teams located in rural settings (Edwards, Schoenwald, Henggeler, & Strother, 2001; Henggeler & Schoenwald, 1999).

On the other hand, rural communities present significant challenges to the implementation of MST at practical, administrative, and clinical intervention levels. The distances between the homes of clients and time required to traverse these distances constitute the primary practical challenge (Beeson et al., 1998; Fox et al., 1995, 2001). Several aspects of the clinical support strategies for therapists required to implement MST may also be challenged by the geographic dispersion of clients in rural areas. Specifically, the primary vehicle for clinical supervision in MST is group supervision, and convening the group when therapists must travel hours from a family's home to a supervision location may be difficult. Similarly, field supervision (the supervisor attends a session with the therapist), collegial coverage of cases, and opportunities to receive both affective and instrumental support from colleagues may be diminished for rural teams because team members are dispersed across large geographic areas.

At the level of clinical interventions, MST crisis intervention procedures may be compromised in rural communities because of the distance therapists must travel to reach the family, school, or other site at the time of the crisis. Ensuring continuity of treatment progress during therapist vacations or illnesses could also be compromised in rural settings, as therapists' preparatory conjoint sessions with families and collegial briefing sessions may be more difficult to accomplish due to geographic distance. In addition, collegial interactions may be less frequent for therapists working in very rural sites, and the limited contact may influence the MST treatment team's culture and climate, adherence to treatment protocols, and/or child outcomes. Finally, MST therapists typically work with families, teachers, and indigenous neighborhood, faith-based, and community organizations to identify sources of pro-social peer interaction for referred youths. Insofar as organized recreational and extra-curricular activities are more limited in rural as compared with urban communities (Bierman, 1997), interventions targeting pro-social contact are more time consuming and difficult to execute in rural areas than in other community settings.

For all of these reasons, proactive transport of MST to the types of very rural areas examined here has been discouraged pending evidence that adherence to MST at the therapist-, supervisor-, and program level can be achieved under such circumstances, and that the attendant clinical and cost effectiveness can be achieved. It is also possible that the additional barriers to service delivery and

clinical support faced by MST therapists in very rural locations may exacerbate the significant retention problems that characterize the nation's mental health workforce (Peterson et al., 2001). Given the preliminary evidence that ARC reduced turnover and improved work environments for child welfare and juvenile justice casework teams in both urban and rural areas, it is hypothesized that the ARC intervention may bolster the work environments of the MST teams working in rural areas and help build positive relationships between the teams and the courts, churches, schools, and informal organizations in the rural communities they serve. The design of the current study (therapists randomized to ARC or no-ARC counties) will enable us to examine such issues empirically.

ARC Intervention Phases and Activities

Consistent with the multi-component and phased nature of organizational and community intervention strategies shown to be effective in meta-analyses and reviews (Burke, 1993; Gray, 1990; Guzzo et al., 1985; Neuman et al., 1989; Porras & Robertson, 1992; Robertson et al., 1993; Trist, 1985), the ARC model guides change agents in applying 10 intervention components through 4 phases at 3 levels (community, organization, individual). As shown in Figure 2, the four phases of development include (I) problem identification, (II) direction setting, (III) implementation, and (IV) stabilization. The four phases are described next followed by a description of the ARC development components, using the current study as an example.

Problem Identification Phase

In the first phase, change agents identify community opinion leaders, organizations and stakeholders in the county who are concerned about the targeted problem (e.g., adolescent antisocial behavior) or whose support is important to the implementation and sustainability of new services and programs. For example, the change agents facilitate face-to-face meetings to discuss adolescent antisocial behavior and the contribution that can be made by community programs and the implementation of an evidence-based treatment. As an initial objective,

Component	Phase			
	I Problem identification	II Direction setting	III Implementation	IV Stabilization
1. Personal relationships	xxxxxxxx			
2. Network development	xxxxxxxx	xxxxxxxx		
3. Team building	xxxxxxxx	xxxxxxxx		
4. Information and assessment	xxxxxxxx	xxxxxxxx	xxxxxxxx	
5. Feedback	xxxxxxxx	xxxxxxxx	xxxxxxxx	
6. Participatory decision-making	xxxxxxxx	xxxxxxxx	xxxxxxxx	xxxxxxxx
7. Conflict resolution		xxxxxxxx	xxxxxxxx	xxxxxxxx
8. Continuous improvement		xxxxxxxx	xxxxxxxx	xxxxxxxx
9. Job redesign			xxxxxxxx	xxxxxxxx
10. Self-regulation				xxxxxxxx

Fig. 2. Components and phases of the ARC development model.

the change agent identifies an existing community group or forms a new group of stakeholders at the county level to help guide activities in subsequent phases. Important goals in the first phase are (1) the development of personal relationships between the change agent and community members and (2) gathering data about the impact of the problem on the community.

Direction Setting Phase

In the second phase, the change agent works with community groups, service providers, opinion leaders and other stakeholders to examine interests, articulate values, and develop initial agreements on addressing the targeted problem (e.g., delinquency). The goal is to establish a shared understanding of how individuals and institutions in the county can address the targeted problem (Gray, 1990). The change agent works with the community members and service providers to promote network development and the use of information and assessment strategies to understand and monitor changes in the targeted problem (e.g., juvenile delinquency).

Implementation Phase

A primary objective of the change agent is to ensure that agreed upon activities and patterns of interaction among the service providers, community members, opinion leaders and other stakeholders occur. The possibility of informal power redistribution may meet resistance and barriers that are based on fundamental differences in the way a targeted problem is understood can also emerge. For example, school superintendents in some rural counties operate under formal "zero-tolerance" policies (i.e., behavioral infractions result in expulsion regardless of extenuating circumstances) that can conflict with the treatment of delinquency. Early in this phase, the change agent discusses strategies for avoiding debilitating barriers with key stakeholders to minimize the effect of those barriers on agreements and trust.

Stabilization Phase

In this phase, the change agent uses the self-regulation and stabilization component described later to promote the continued effectiveness of the community groups and treatment teams after the change agent has terminated the intervention. Described as achieving a terminal relationship in the organizational and community change literature, the goal of this phase is that the community groups, key stakeholders, and service providers develop the tools to monitor and continually improve their capacity to address the targeted problem.

ARC Intervention Components

There is agreement in the organizational and community change literature that multiple intervention components must be used to develop organizational and community support for effective responses to identified problems (Burke, 1993; Gray, 1990; Guzzo et al., 1985; Neuman et al., 1989; Porras & Robertson, 1992; Rogers, 1995; Robertson et al., 1993; Trist, 1985; Worren et al., 1999). Multiple intervention components are more effective than single component interventions because multiple factors, including social factors (e.g., culture, climate, work attitudes), strategic factors (e.g., marketing approaches, referral agreements, alliances), and technological factors (e.g., assessment tools, treatment models, skills training) can affect the success of a change effort and the relative importance of each factor in a specific effort is difficult to predict *a priori* (Robertson et al., 1993; Worren et al., 1999).

While multi-component intervention strategies have documented effectiveness and generalize to a variety of settings, the core technology and "product" of children's services differ from the technologies and products found in the settings in which most of the intervention components were developed. Thus, the content of the multiple organizational and domain development components were composed for ARC to include specific examples from children's services and target issues for the specific population and problem being addressed. The intervention strategies are guided by *The ARC Initiative* (Children's Mental Health Services Research Center, 1998), a manual developed by the CMHSRC that includes 10 intervention components as listed in Figure 2. The 10 components were operationalized for the study described here as follows.

1. Personal relationships with community opinion leaders, stakeholders, and individual

members of key community groups are cultivated by change agents in the first phase to provide the foundation for communication, sharing information, and removing barriers that emerge in the community's attempts to address the targeted problem (e.g., delinquency). Change agents develop personal relationships with judges, school officials, law enforcement officials, ministers, service providers, parents, advocates, members of school groups (e.g., PTA) and others to provide the basis for implementing the following components (Gray, 1990; Rogers, 1995).

2. Network development is used in phases 1 and 2 to build relationships among service providers, community groups and key opinion leaders such as judges, mayors, county sheriffs, principals, and religious leaders. The change agent develops this network by arranging meetings, sharing information about the targeted problem and services, and helping stakeholders identify barriers related to the community's efforts to address the problem. The change agent facilitates the development of interpersonal networks among the community opinion leaders and service providers to address community concerns and support services for the targeted population (Gray, 1990; Rogers, 1995).
3. Team building is used in the first two phases to help community groups and service teams address service and community support issues that affect the target population and targeted problem. The emphasis of this component is on developing or identifying existing groups of community opinion leaders, service providers and stakeholders to facilitate cooperation in solving problems that impede service efforts. The change agent functions as a facilitator to help these service providers and community leaders work collaboratively and productively to address organizational and community-based barriers to care (Dyer, 1977; Patten, 1981).
4. Information and data management strategies are provided in the first three phases to the community groups, stakeholders, and service providers to evaluate the extent of the targeted problem and the impact of existing treatment or service programs on criteria of interest to the respective groups. This is done by identifying criteria and modeling the use of data in establishing baselines and monitoring progress. For example, the change agent demonstrates how existing data can be used to track behavioral incidents at school, referrals to juvenile court, or juvenile arrests. This is important in helping the community groups and service teams develop "improvement-directed" behavior (Pasmore et al., 1982; Rogers, 1995).
5. Feedback about service effectiveness and barriers to care is provided in the first three phases by the change agent to service providers and community groups. Feedback about successes and problems was identified by Rogers (1995) as contributing to change agent success in the diffusion of innovative technologies. The nature of the feedback will depend on the concerns that the change agent identifies among stakeholders and community opinion leaders in implementing new programs and removing barriers to service (Burke, 1993; Porras, 1986).
6. Participatory decision-making is used in all four phases by the change agent who provides the opportunity for input from service providers and community opinion leaders into decisions about service implementation and community support. Participatory decision-making is essential to the development of teamwork, continuous quality improvement (CQI), and other ARC intervention components. Participatory decision-making has been recognized for many years as a critical step in organizational and community development efforts that provide the foundation for constructive, problem-solving environments (Bennis, 1966; Gray, 1990; Guzzo et al., 1985; McGregor, 1960; Neuman et al., 1989; Porras & Robertson, 1992; Rogers, 1995; Trist, 1985).
7. Conflict resolution at the interpersonal-, intergroup-, and interorganizational levels is used in phases 2 through 4 to mediate differences in opinion or competing interests that threaten efforts to address the targeted problem. Work with community groups and personal relationships with service providers, judges, school officials, and other community opinion leaders are essential to effective conflict resolution (Walton, 1987). Boundary spanning activities are used to facilitate intergroup and interorganizational

transactions and agreements (Bartel, 2001; Caldwell & O'Reilly, 1982; Callister & Wall 2001).

8. CQI is used in phases two through four to provide the means for changing institutional rules and policies (e.g., judicial decisions, school protocols for identifying children at risk, referral procedures, assignment of cases) to facilitate efforts to address the targeted problem (e.g., delinquency). Recommendations for improvements originate from community advisory groups and service providers who use the data-based problem-analysis procedures that are taught by the change agent. The implementation of CQI requires that community advisory groups and service providers be trained to collect and interpret data, recommend changes and monitor progress in solving identified problems (Shortell et al., 1995; Steel & Shane, 1986, Yager, 1981).
9. Job redesign efforts are implemented in phases 3 and 4 to involve service providers in eliminating barriers to service by changing job design characteristics that impede success. While a core service technology requires adherence to specific treatment strategies (e.g., assessment and intervention protocols), the organizational context in which the technology is embedded includes job design characteristics (e.g., paperwork requirements, procedures for case assignments, delineation of service regions) that can either impede or enhance treatment protocols and goals (Dazal & Thomas, 1968; French & Bell, 1984; Hackman & Oldham, 1980).
10. Self-regulation and stabilization of the new program is achieved in the fourth phase by providing the information, training, and tools described earlier and incrementally facilitating the independent use of those tools over time so that they are sustained after the ARC development effort is discontinued (Porras, 1986; Rogers, 1995). The objective of the change agent is to achieve a terminal relationship by helping community advisory groups adopt the roles initiated by the change agent.

ARC Intervention Fidelity

Following protocols used previously in studying the effects of ARC (Glisson, 2002; Glisson et al., in press), the activities of ARC change agents are monitored with information collected by change agent logs and a three-part questionnaire, subsections of which are administered to community opinion leaders and stakeholders.

Change Agent Logs

Change agents use activity logs to document contacts with key opinion leaders, service providers, and community groups. The number of different opinion leaders contacted and the frequency of contact with each opinion leader are assessed monthly by county. Change agents also document their work by recording meetings, the duration of the phases, and the use of components described earlier. Monthly summaries of the frequency, duration, and components used in contacts for each category (key opinion leaders, service team, community group) are computed for each county.

Community Groups

Members of existing community groups or new groups formed for the intervention can include juvenile judges, school superintendents, and other stakeholders in each county. Each community group member is asked to respond to a brief questionnaire (15 min) administered by phone. The members describe the frequency and content of their contacts with the change agent and provide information about the change agent's activities described in the four phases of the ARC intervention and contribution to the community group.

Other Community Opinion Leaders

Other community opinion leaders listed in the change agent's log who are not members of existing groups or new community groups are asked to describe the frequency and content of their meetings with the change agent and to describe the change agent's activities in the community. The data manager contacts these community opinion leaders by phone every 6 months to administer the questionnaire.

SUMMARY

Recent public and fiscal policies related to mental health care for youth reflect a growing

appreciation for the value of evidence-based practices. Current efforts to implement effective mental health interventions for youth in community-based settings have evolved on the basis of treatment developers responding to community demand. Although designed to address service system factors considered relevant to the successful implementation of a particular evidence-based treatment (i.e., legal mandates, fiscal policies, referral and reimbursement mechanisms, administrative variables, clinician and consumer variables, and features of the technology itself; Schoenwald & Hoagwood, 2001), few of these strategies have been informed by the organizational and community intervention literature. That literature has examined innovation and technology transfer in business, industrial and agricultural areas, and to a less extent, development efforts focused on social problems. But there has been almost no use of organizational and community change models to implement and sustain evidence-based mental health treatments in either rural or urban communities.

The pertinent organizational and community research suggests that service provider organizations and the communities in which they operate are important determinants of service availability, responsiveness and continuity of services to youth. The extension of this line of research to examine its implications for the implementation of evidence-based mental health treatments represents a unique approach to understanding and attenuating the gap between research and practice in children's mental health.

An ongoing two-factor randomized trial involving eight counties in rural Appalachia is testing in very rural, deeply impoverished communities a two-level strategy for implementing a scientifically tested treatment for delinquent youth. Building on models of organizational development, the socio-technical model of organizational effectiveness, the adopter-based theory of innovation diffusion, and the interorganizational domain literature, the two-level strategy includes the implementation of (1) an evidence-based treatment, MST, and (2) the ARC organizational-community intervention model to address technical, social and strategic factors that present barriers to serving delinquent youth.

This paper described the theoretical and empirical foundations of the ARC organizational and community change model, the ARC intervention components, the MST treatment model, the challenges and opportunities related to the provision of mental health services for youth in isolated and impoverished rural communities, and a rationale for coupling an organizational and community intervention strategy such as ARC with an evidence-based strategy such as MST to address these challenges. The paper and the newly funded study that is testing this strategy reflect a synthesis of organizational, community, treatment effectiveness, and treatment transportability research. It is hoped that both the paper and the study will serve as an example of the value of such interdisciplinary efforts in bridging the gap between research and practice in children's mental health.

The current interdisciplinary effort focuses on the interface of a treatment technology and the organizational and community context in very isolated and impoverished rural communities. The study extends its examination of service outcomes to include the cost effectiveness of the implementation of evidence-based treatments in these types of rural communities. This will enable an evaluation of the costs of implementing MST in isolated settings, the costs of implementing ARC, and their combined costs.

Related questions concerning the cross-level effects of broader service system variables (e.g., service system structure, policies, regulations, and payment levels and mechanisms), organizational context, and therapist characteristics on the implementation of specific evidence-based treatments for youth are being examined in another, larger interdisciplinary initiative, the Research Network for Youth Mental Health funded by the John D. and Catherine T. MacArthur Foundation (John Weisz, PI). The authors are participating in the Research Network's efforts to conduct randomized trials of empirically tested treatments in mental health clinics for the most commonly referred mental health problems in children and to study the effects of organizational and service system characteristics in mental health clinics nationally. The Network intends to design and test multi-level strategies at the interfaces between systems, organizations, clinicians, and consumers to facilitate effective adoption and implementation of effective treatments for youth. The results of the ongoing study described in this paper are expected to inform those efforts and complement information regarding the policy and fiscal constraints and opportunities affecting treatment implementation that will be derived from the Research Network on Youth Mental Health.

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