Predictors of Efficacy in Wraparound Care with Severely Psychiatrically Disturbed Adolescents. Eleni Carr, LICSW and Michael Semel, Ph.D., Children’s Community Support Collaborative, Home for Little Wanderers, Boston, MA

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**Background**

The fiscal crisis associated with skyrocketing health care costs has been on the national agenda for much of the last 15 years. Medicaid and Medicare, the national programs developed to provide health care funding for the poor and disabled, have not kept pace with the increasing costs of care leading hospital after hospital to seek bankruptcy protection (Dade, 2003). Managed care programs are one outcome of this health care crisis as efforts are made to cut “unnecessary” costs. Mental health care services for children and adolescents have not been immune from the new fiscal reality. States like Massachusetts, which have traditionally been quite generous in financing long-term residential treatment programs for severely emotionally disturbed children, have needed to look to new, more cost-effective strategies for servicing this difficult population (Romney, 2003).

Among the approaches taken to help manage costs is what has become commonly known as “wraparound” programs. Wraparound programs, sometimes also identified as family preservation programs, typically develop partnerships with existing community supports and other enduring services in order to maintain children in their natural environments and avoid unnecessary out of home placement. Maintaining children in their homes, when possible, has distinct clinical advantages beyond cost-savings. Out of home placement invariably leads to disrupted attachment relationships with caregivers and puts the child at heightened risk for abuse or neglect (Finkelhor, Moore, Hamby, & Straus, 1997). Even at it’s best, institutionalization represents a dramatic departure from the more normative developmental trajectory to which all children are entitled.

**Research on Effective Intervention**

In spite of the increasing focus on empirically-validated, cost-effective interventions, surprisingly little research has been conducted to examine what particular elements of comprehensive, home-based services are related to positive outcomes and whether outcomes vary with the population being served. In their recent review of family-strengthening approaches to youth problem behaviors, Kumpfer and Alvarado (2003), clearly identify behavioral parent training and family skills training as two approaches with strong empirical support for treatment efficacy. Behavioral parent training refers to the techniques developed by Patterson and associates (Patterson, Dishion, & Chamberlain, 1993; Patterson & Narrett, 1990; Webster-Stratton, 1990) which focus on identifying and dismantling coercive cycles of parent-child interaction. The family skills training approach utilizes behavioral parent training but adds the additional element of family practice sessions in which parents get to try out newly developed skills with professional support.

One critical element, in evaluating treatment efficacy, of course, is the family’s ability to access and remain connected to the treatment protocol over time. As Newton
and Springle (1990) point out, issues of access often limit the effectiveness of any parent training or skill building approach. The poor, non-English speaking, single parent, with several children is unlikely to make it to clinic-based training sessions. Among this population of families, it is often the case that the more distressed the family, the less likely it is that the family will be able to access treatment.

Bringing treatment to the home has several distinct advantages. First, a wide body of research suggests that the provision of home-based treatment to multi-stressed families is both more cost-effective and the preferred mode of service delivery for families (Pecora, 1991). Working with families in natural environments allows clinicians to develop a more realistic picture of the family’s unique living situation within a particular cultural and socio-economic climate. For example, clinicians who go out to the home may develop new understanding of what others might have labeled as a parent’s “resistance” to giving children greater autonomy in the community when they observe first hand the dangers of a particular neighborhood. Clinicians frustrated by a family’s apparent difficulty utilizing time-out procedures with their children may gain new insight when they realize that six people are sharing a tiny one-bedroom apartment where space is extremely limited, at best. Working with families in their homes over an extended period of time is also likely to provide clinicians with the greatest opportunity to observe both child and parent behavior as it naturally occurs in the home. Community-based interventions that are nonetheless able to make use of behavioral and skill building elements as a component of treatment, demonstrate enhanced efficacy (Borduin et al., 1994).

In their review of research literature, Kumpfer and Alvarado delineate a number of general principles for effective family-focused interventions. Strength-based approaches where families are empowered to develop their own solutions is a hallmark of successful intervention (Madsen, 1999). Kumpfer and Adler (2003) note that family change is most effective when both affective and behavioral changes are made in the underlying family dynamic. Multi-component programs are able to target a wider array of family problems and, therefore, enhance treatment efficacy (Taylor & Biglan, 1998). Alexander et al. (1976) identify that treatment efficacy is invariably related to the personal efficacy and confidence of the clinician, particularly the ability to structure and direct sessions in empathic, genuine, and warm ways. Interventions need to be tailored to the age and developmental needs of the child (Kumpfer & Adler, 2003) and administered within the context of the cultural traditions of the family (Turner, 2000). Finally, interventions which make use of highly interactive techniques such as videotape, role play, and other in-vivo approaches have distinct advantages over didactic approaches, particularly with low socioeconomic status families (Webster-Stratton, 1996).

As much as the research literature on treatment efficacy places emphasis on the importance of a highly individualized approach, Kumpfer and Alvarado seem to operate under the assumption that factors which predict success in a drug abuse prevention program, for example, are applicable to a wide range of target populations. It is not entirely clear why a program that targets an aggressive juvenile delinquent referred for intensive home-based services as part of a diversion program will be equally effective with a young child, or with an adolescent diagnosed with paranoid schizophrenia. Factors that may be critical for success in working with a severely psychiatrically disturbed sample may be somewhat different than those factors which operate in other
populations. For example, in a comprehensive review of family preservation and reunification programs targeting children at risk for out of home placement because of abuse or neglect, Westat et al. (2002), concluded that there was very little evidence for successful outcomes across a number of “model” programs in several different states. Similarly, in their review of 6 well-established and researched home visiting programs, Gomby, Culross, and Behrman (1999) conclude that “improvements [are] exceptions rather than the rule” (p. 15). The authors note that programs need to focus on enhancing both implementation and quality of services. They also advocate for more modest expectations being set for home visiting programs so that other equally valuable services can be utilized to supplement therapeutic gains. Given the mixed results associated with home-based interventions, the task of delineating exactly what types of intervention work best with different populations of clients and families is a crucial question that has been rarely studied (Kohlert & Pecora, 1991).

Hypotheses

The current investigation will examine the treatment factors that may be associated with successful outcomes in a sample of teenagers who have been referred for services through the Massachusetts Department of Mental Health. Consistent with Pecora (1991) and Taylor and Biglan (1998), families receiving more intensive home-based services are expected to show greater improvement on measures of child functioning than those families receiving less comprehensive or no home-based service. Next, families receiving behavioral parent training are expected to experience greater improvement in child functioning between admission and discharge than those families who do not receive this training (Borduin et al., 1994). Longer treatment duration is also expected improved child functioning. This hypothesis follows from McCurdy (1995) who indicates that programs that provide visits for 1 to 3 years seem to have the most effect while programs of 6 months or less rarely have an impact. Similarly, utilization of residential services is hypothesized to predict improved child functioning. McCurdy has offered that intensity of service has the most consistent relationship with positive outcomes. Children receiving residential treatment benefit from the most intensive service available. The presence of a psychotic disorder is expected to be related to less dramatic improvement in child functioning at the time of discharge. The rationale for this hypothesis is that the nature of psychotic illness suggests organicity and, therefore, less susceptibility to change. The intensity of individual, family, and group therapy is also anticipated to predict better outcomes. Finally, the greater the extent to which clients are provided with vocational support services, facilitating a more normal adolescent developmental experience in the process, the greater the improvement anticipated in the child’s functioning.

METHODS

Subjects
Subjects of the current investigation are 81 children and adolescents who received services through the Children’s Community Support Collaborative -- a program of the Home for Little Wanderers, the largest non-profit, social service agency in New England. The Collaborative is funded exclusively by the Massachusetts Department of Mental
Health (DMH) and is the sole provider of comprehensive children’s mental health services for DMH eligible clients in Boston. Massachusetts DMH eligibility criteria for children and adolescents require a diagnosis of major mental illness and the absence of any protective issues in the family for at least one year prior to referral. While a substantial majority of referred clients have histories of abuse or neglect, he Massachusetts Department of Social Services typically services mentally ill children and adolescents for whom there are ongoing protective concerns. The Collaborative employs 15 full-time clinicians, including psychiatrists, psychologists, and social workers, and numerous other paraprofessionals, all highly skilled in the utilization and teaching of behavior management techniques. Designed as a “wraparound” program, the Collaborative seeks to provide a wide array of services to referred children and families including:

- Provision of in-home respite service
- Access to emergency, short-term respite homes staffed by trained house parents
- Psychiatric treatment and consultation
- Community-based mentoring services
- In-home academic support and/or tutoring
- In-home child care/babysitting service
- Parenting support groups
- Individual, family, and group therapy
- Intensive and transitional residential treatment
- Out-of-home, short-term, planned and emergency respite
- Psycho-educational parent groups
- Transportation assistance
- Identification of and assistance with referral to appropriate after-school programs, summer camp programs, athletic programs, art and music programs, etc.
- Collaborative work with religious organizations
- Vocational training and community employment program
- Identification and referral to specialized vocational training resources where appropriate
- Support/housing resources for 18 year-old clients who are ready to transition to independent living situations.
- Educational consultation and advocacy
- 24-hour access to crisis support and management
- Assistance to families in need of new or immediate housing
- Referral to appropriate legal, medical, and dental services
- Intensive home-based parent guidance/coaching program to assist families to implement more effective behavior management strategies and to develop more healthy attachments.

The Children’s Collaborative is unique among existing wraparound programs in that it also has access to approximately 20 on-site residential beds for short to longer-term use. While the availability of in-house residential beds is a luxury not available to other national wraparound programs, every effort is made to maintain children and families in their homes when possible.
Procedure
Clients participating in the study were all referred to the Collaborative by their DMH case managers. One hundred percent of those admitted to the program were initially included in the outcome evaluation study. Seven children were later dropped from the analyses because they left the program prior to completing prescribed treatment, four of whom were discharged against medical advice and three of whom moved out of the state prior to treatment being completed. Shortly after admission to the program, clinicians, trained to insure reliability, completed the Child and Adolescent Functional Assessment Scale (CAFAS) regarding their client. The CAFAS was completed again by the primary clinician for each child, in 3-month intervals, until discharge.

Measures
In addition to the basic demographic information obtained at intake, the following instrument was used in coordination with detailed service delivery data to assess outcomes:

*Child and Adolescent Functional Assessment Scale* (Hodges, 2000) is a widely utilized measure of functional impairment in children and adolescents. Clinician’s rate the highest level of impairment (severe, moderate, mild, or none) on each of eight dimensions: school/work, home, community, behavior towards others, moods/emotions, self-harmful behavior, substance use, and thinking. Total scale scores were used in the current investigation. The CAFAS also demonstrates high internal with alpha coefficients ranging from .82 to .96 on each of the scales. The CAFAS has also demonstrated proven validity as total scores are often utilized to inform level of care eligibility determinations in agencies across the country. The CAFAS also demonstrates excellent validity when compared to scores on well-established instruments such as the Child Behavior Checklist.

ANALYSES
Prior to testing the hypotheses, a series of regression analyses were conducted to examine any possible relationship the demographic variables (child’s age, child’s sex, and child’s race) might have with the CAFAS. This was done in order to explore the possibility that these exogenous variables might account for any significant relationships that may be found. Age was entered into the regression as a continuous variable, while sex and race were first dummy coded prior to entry. In the case of child’s sex, “male” was coded as 1 and “female” coded as 2. In the case of child’s race, “Caucasian” was coded as 1 and “non-Caucasian” coded as 2. No meaningful relationships were identified between any of these demographic indicators and CAFAS improvement.

Mean change scores were computed for both the CAFAS from admission to discharge and, for those children still receiving services, for the CAFAS from admission to the current point in treatment. The results indicate significant positive change at both outcome points. Scores between CAFAS total scores at admission and at discharge were compared using a paired t-test. Results indicated a statistically significant improvement over time (t(80) = 12.86, p<.001). Mean improvement was 47 points (s.d. = 37).

Prior to conducting the main series of analyses, several different predictor variables were computed. Time enrolled in the program was calculated for each child
(measured in months). The intensity of home-based service received was dummy coded as 0 for those families not receiving any in-home service, as 1 for those families receiving only therapy as a home-based service, and as 2 for those families receiving in-home therapy plus other in-home support services. The presence of a psychotic disorder was dummy coded as either absent or present. Similarly, behavioral parent training and whether the child was ever a resident in the program were dummy coded to indicate whether the child or family had ever made use of these interventions. The number of hours of individual and family therapy as well as the number of hours of vocational support services were also computed. Finally, a service intensity score was computed by first assigning a level of care rating (1 = homebased, 2 = specialized foster care, 3 = transitional residential care, 4 = intensive residential care) to each 3 month interval and then by using these ratings to calculate a mean level of care rating over the course of the child’s treatment. A summary of these predictor variables may be found in Table 1.

Each of the predictor variables was entered into separate regression equations predicting the change in the CAFAS. By far the most powerful predictor of improvement on the CAFAS was the number of hours of vocational support services provided ($R^2 = .31$, $F = 14.44$). Hours of individual therapy provided by program clinicians also significantly predicted improvement on the CAFAS ($R^2 = .12$, $F = 5.71$). The mean level of care utilized by the child over the course of their treatment was found to predict greater improvement on the CAFAS, with higher mean levels of care predicting greater positive change ($R^2 = .06$, $F = 4.07$). Finally, the intensity of home-based services that had been put in place also significantly predicted improvement on the CAFAS ($R^2 = .09$, $F = 3.93$). Contrary to what had been hypothesized, no significant relationships were found between time enrolled in the program, whether the family received behavioral parent training, hours of family therapy, the presence of a psychotic disorder, and whether the child had ever been a resident and improvement on the CAFAS.

DISCUSSION

Results of the study yielded several important findings. First, CAFAS scores showed statistically significant positive changes from time of admission to discharge, suggesting that the Collaborative may be doing something right. Subsequent analyses set out to determine exactly which factors were contributing to the positive outcomes.

Interestingly, the number of hours of vocational support emerged as the most powerful predictor of positive change. This finding may confirm the hypothesis that providing adolescents with either a community-based job or other supported employment is a normalizing experience that may contribute to a “flight towards health” for many referred clients.

Somewhat surprising was the positive impact individual therapy provided seemed to have on CAFAS scores. The majority of clients receiving limited or no individual therapy from the program instead receive service from community based providers. As these outpatient therapy hours were not included in the analyses, the predictive power of program specific individual therapy is a bit of a mystery. One flattering, if unlikely, explanation is that the quality of individual therapy provided by the program is higher than service that is typically received in the community. Perhaps much more likely is the possibility that program clinicians are able to provide individual treatment with greater
frequency and consistency as well as better integrating the individual therapy with other relevant service delivery components.

The intensity of home-based services that the family had received emerged as a significant predictor of positive outcomes on the CAFAS. This finding is consistent with McCurdy (1995) demonstrating a link between effective change and the intensity of service delivery, including the provision of practical assistance with things such as transportation, housing, and employment. The results suggest that, assuming equal need, more is better when it comes to the provision of in home services for families and children.

Finally, the mean level of service provided over the course of treatment significantly predicted greater improvement. Clients who spent more of their total treatment at higher levels of care tended to show greater improvement in their functioning. While consistent with the intensity of service hypothesis described above, it is also possible that less improvement at lower levels of care within the treatment continuum may be a measurement problem related to limitations on the magnitude of improvement possible at the lower end of the CAFAS total scale.

The study presents with several other significant limitations. First, using the Chambless and Hollon (1998) criteria to which Kumpfer and Alvarado allude, the current study qualifies only as a “Grade 6” non-experimental study, the second lowest rating if one is setting out to demonstrate treatment efficacy. The study uses neither a control group nor random assignment of subjects. No efforts have been made to replicate these findings by another research group. In this regard, extrapolation of the results must be limited.

Second, the study relies upon clinician ratings to determine outcome. The outcome instrument is therefore vulnerable to positive response bias as clinicians want to feel as though they have helped children in their care. Introduction of measures less vulnerable to positive response bias would contribute to the validity of these findings.

Third, a number of the analyses conducted in the study were hindered by a relatively small sample size. As the research program continues, it seems likely that findings that were approached statistical significance may indeed emerge as potentially positive sources of change.

While this study was able to make use of longitudinal data, as the database of interventions continues to be developed, there will be increasing opportunities for more detailed analysis of particular interventions. For example, it will be possible to look only at those families receiving intensive home-based parent coaching (perhaps comparing them to a sub-sample not receiving the service) in order to examine proximal changes on a variety of different outcome dimensions.
References


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<th>Table 1. Summary of Variables Used to Predict Change in CAFAS</th>
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<td>Was behavioral parent training utilized?</td>
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<td>Length of Treatment (months)</td>
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<td>Vocational support (hours/month)</td>
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<td>Were residential services utilized as a component of treatment?</td>
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<td>Level of Care (per child mean over time)</td>
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