

Center for Treatment Research on Adolescent Drug Abuse Summary of Research Program

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Overview

The Center for Treatment Research on Adolescent Drug Abuse (CTRADA) began in 1991 as the first NIDA-funded clinical research center focusing on adolescent drug abuse treatment. The mission of CTRADA is to:

- Create a scientific climate of discovery and rigor that will facilitate the expansion of knowledge in adolescent drug abuse (ADA) treatment through basic and applied studies,
- improve family oriented treatments for drug abusing adolescents,
- test the efficacy and effectiveness of family oriented as well as existing treatments for drug abusing adolescents
- develop a greater understanding of treatment factors, and patient and family characteristics that increase or decrease the likelihood of treatment success,
- create the opportunity for synergism among treatment studies and researchers targeting a broad range of ADA populations: dually diagnosed, ethnically diverse, gender specific.
- disseminate information on successful treatment models to the local and national drug abuse community,
- serve as a national resource to the National Institute on Drug Abuse (NIDA) for matters related to the treatment of ADA, and
- promote translation of findings from basic to applied research to practice and policy.

CTRADA is funded by grants from the National Institute on Drug Abuse (NIDA) and the Center for Substance Abuse Treatment (CSAT). Although CTRADA's program of research is spearheaded by the development, testing, and refinement of family-based interventions for adolescent drug abuse, investigators at CTRADA also conduct basic research studies on adolescent drug abuse with implications for interventions with these youth.

MDFT Overview

The MDFT approach was developed as a stand alone, outpatient therapy to treat adolescent substance abuse and associated behavioral problems of clinically referred teenagers. MDFT has been evaluated in a number of federally funded research projects:

(a) four completed randomized clinical trials [three treatment trials (one of which was a multisite trial) and one prevention trial)] and (b) several treatment development and process studies which have illuminated core change mechanisms of the therapeutic process (Liddle & Hogue, 2001).

Three new controlled clinical studies are in process. One randomized trial compares the clinical effectiveness of MDFT vs. Residential Treatment for dually diagnosed adolescent substance abusers. In conjunction with this study, we are conducting an economic evaluation, comparing the relative benefit-cost of MDFT vs. residential treatment. A second in process controlled trial is a comparative study of the effectiveness of peer group therapy and MDFT for young adolescent substance abusers. The third ongoing study is a controlled technology transfer study examining the process and outcomes of transporting MDFT into a hospital-based day treatment adolescent drug abuse program.

Since 1991, this work has occurred within a NIDA-funded research center, the Center for Treatment Research on Adolescent Drug Abuse. This center was the first NIH/NIDA funded research center on adolescent substance abuse. The focal theme of this research center is the development and testing of family based treatments for adolescent alcohol and drug abuse and associated problems. MDFT studies have been conducted at different locations in the U.S., including Philadelphia, various cities in the San Francisco Bay area, central Illinois, and Miami. The study populations were ethnically diverse, and their problem severity varied as well (i.e., from high-risk early adolescents to multi-problem, juvenile justice-involved, dually diagnosed female and male adolescent substance abusers).

The MDFT treatment approach has been recognized as one of a new generation of comprehensive, multicomponent, theoretically-derived and empirically-supported adolescent drug abuse treatments (Center for Substance Abuse Treatment, 1999; Lebow & Gurman, 1995; National Institute on Drug Abuse, 1999; Nichols & Schwartz, 1998; Selekman & Todd, 1991; Stanton & Shadish, 1997; Waldron, 1997; Weinberg, Rahdert, Colliver, & Glantz, 1998; Williams & Chang, 2000; Winters, Latimer, & Stinchfield, 1999). MDFT is included in NIDA's Principles of Drug Addiction Treatment book as one of three empirically supported drug treatments for adolescent drug abuse (<http://www.nida.nih.gov>; <http://www.nida.nih.gov/BTDP/Effective/Liddle.html>); in APA's Division 50 The Addictions Newsletter issue on empirically supported drug therapies (Liddle & Rowe, Spring 2000); and in the OJJDP monograph series on evidence based treatments for delinquency (Liddle, in press). MDFT is also included in the CSAP (http://www.strengtheningfamilies.org/html/programs_1999/10_MDFT.html) and Office of Juvenile Justice and Delinquency Prevention Strengthening Families-- Exemplary Programs Initiative. MDFT is highlighted in the United States Department of Health and Human Services Best Practices Initiative (http://phs.os.dhhs.gov/ophs/BestPractice/mdft_miami.htm), and was recently profiled in the Drug Strategies Report on State of the Art Adolescent Drug Abuse Treatments (<http://www.drugstrategies.org/pubs.html#teen>). MDFT is also being tested within CSAT's initiative on Adolescent Treatment Models, formerly known as the funding initiative on Exemplary Adolescent Treatment Programs. The therapy approach and its research program have been recognized with national and other awards from the American Psychological Association (1991), American Family Therapy Academy

(1995), American Association for Marriage and Family Therapy (1996), and the Florida Association for Marriage and Family Therapy (2000).

I. Randomized Clinical Trials:

1. Liddle, H.A., Dakof, G.A., Parker, K., Diamond, G.S., Barrett, K., & Tejada, M (2001), Multidimensional family therapy for adolescent drug abuse: Results of a controlled clinical trial. American Journal of Drug and Alcohol Abuse, 27(4), 651-687.

One hundred and eighty-two clinically referred marijuana and alcohol abusing adolescents were randomized to one of three treatments: multidimensional family therapy, adolescent group therapy and multifamily educational intervention. Each treatment represented a different theory base and treatment format. All treatments were manualized and delivered on a once-a-week outpatient basis. The therapists were experienced community clinicians trained to model-specific competence prior to the study, and then supervised throughout the clinical trial. The amount of treatment of all three treatment conditions was controlled so that each treatment consisted of 14-16 weekly office-based therapy sessions. A theory-based multimodal assessment strategy measured symptom changes and prosocial functioning at intake, termination, and 6 and 12 months following termination.

Participants were drug using adolescents (M age = 16) who at the time of intake had, on average, a 2.5 year history of drug use. Eighty percent were male; 51% were white non-Hispanic, 18% African American, 15% Hispanic, and 16% other ethnicities. Forty-eight percent came from single parent households, 31% two-parent, and 21% step-parent; and median yearly family income was \$25,000. Youth were primarily polydrug users, coupling near daily use of marijuana and alcohol with weekly use of cocaine, hallucinogens, or amphetamines, and 61% were on juvenile probation. Results revealed strong time effects at termination for drug use ($F(1,92) = 53.15, p = .0001, \eta^2 = .36$) and acting-out behaviors ($F(1,92) = 12.55, p = .001, \eta^2 = .12$). Importantly, there was a significant time by treatment interaction for drug use, ($F(2,92) = 6.61, p = .002, \eta^2 = .12$). Youth who received MDFT had notably lower drug use than comparison youth. At the 12-month follow-up, improvements in drug taking and acting out behaviors were maintained. Changes from intake to termination through the 12 month follow-up period indicate that the time x treatment interaction was significant for adolescent drug use ($F(6, 276) = 2.68, p = .02, \eta^2 = .05$). For Grade Point Average, a significant time x treatment interaction was found from intake to 12 months after intake ($F(2,64) = 3.17, p = .05, \eta^2 = .09$).

The general pattern of results indicate an overall improvement among youth in all 3 treatments, with the greatest and most consistent improvement among those who received MDFT, suggesting that MDFT is an effective approach to ameliorating adolescent substance abuse and associated behavior problems. MDFT displayed greater reductions in the teen's drug use than the other two conditions. Forty-five percent of adolescents in MDFT (versus 32% in AGT and 26% in MFEI) demonstrated clinically significant change in drug use, such that their drug use profiles at follow-up fell below intake eligibility criteria. At 1 month post termination, drug use fell by 54% (comparison of pre-treatment to termination levels of use), and at 12 months post treatment, drug use

was approximately 48% less than the pre-treatment level. In addition, only MDFT participants reported significant improvement in family competence and GPA. The family functioning dimension was a behavioral rating of videotapes of family interactions before and after treatment. The percentage of adolescents in MDFT achieving a GPA above 2.0 (passing) rose from 25% at intake to 68% at follow-up; the parallel rates for AGT were 43% at intake and 60% at follow-up, and for MFEI, 33% at intake and 41% at follow-up. Finally, MDFT outperformed AGT but not MFEI in preventing treatment attrition: 33 of 45 MDFT participants completed treatment (73%), 34 of 52 in MFEI (65%), and 29 of 55 in AGT (52%).

2. Liddle, H. A., Dakof, G. A., Turner, C., & Tejeda, M. (in press). *Advances in adolescent drug abuse treatment: Findings from the multidimensional family therapy research program. (NIDA Research Monograph on the 2001 CPDD Conference, Paper at Adolescent Drug Abuse Treatment Symposium). Scottsdale, Arizona: NIDA.*

The efficacy of Multidimensional Family Therapy was examined in comparison to individual adolescent treatment - Cognitive Behavior Therapy (CBT). This study is particularly noteworthy because of the comparison it provides - it is the first adolescent drug abuse study comparing family therapy to a state-of-the-art psychotherapy. Additionally, this study has many design and analysis features expected in the highest quality contemporary intervention science (e.g., DSM diagnosis on all subjects, manualized interventions representing commonly applied treatments (family and individual treatment) extensive manual adherence analyses, state of the art measures, multiple measures of adolescent outcome, state of the science statistical methods, true intent-to-treat design). Two-hundred twenty-four adolescents referred to a community clinic for substance abuse treatment were randomly assigned to one of the two treatments. The final sample was primarily male (81%), African American (72%), and low income (38% report total yearly family incomes of less than \$10,000; 23% between 10,000-20,000) with 41% of families on public assistance. Seventy-five percent were referred from the juvenile justice system with 55% on juvenile probation at the time of intake. Self-reported adolescent drug use, and adolescent-reported and parent-reported externalizing and internalizing symptomatology, were assessed at intake and again at 6 and 12 months following treatment termination.

The analyses employed Hierarchical Linear Models (HLM: Bryk & Raudenbush, 1987) and progressed through two different stages. The first stage involved the comparison of treatment effectiveness *within* each of the treatment conditions to determine if within-treatment time effects were present as well as to determine the shape and slope of the change being observed. The second phase of analyses involves comparing changes across the two treatments. Specifically, we investigated whether the treatments differed in the effectiveness of improving the target symptoms of substance abuse, externalizing symptoms and internalizing symptoms, and if the treatments exhibited differential rates of change in accomplishing their improvement of substance abuse, externalizing and internalizing symptoms. We employed hierarchical linear modeling because of the well-known limitations of repeated measures analysis of variance in analyzing panel data (cf. Ware, 1985). Beyond these limitations, however, HLM has particular promise in psychotherapy research because it captures the nature of

the therapeutic change process and provides a statistical mechanism for determining the shape of therapeutic change not only through the therapeutic process but after the suspension of therapy (Newman and Tejada, 1996, 1999; Speer and Greenbaum, 1995). Our use of HLM in this study, then, is intended to enhance understanding not only about the effectiveness of each treatment, but to also capture in the analyses questions related to treatment durability and the nature of the improvement in the outcomes.

Multidimensional Family Therapy was successful in reducing marijuana use (linear slope effect $t = -3.94$, $p < .001$), drug involvement (linear slope effect $t = -5.82$, $p < .001$), as well as externalizing (parent report $t = -6.09$, $p < .001$; youth report $t = -4.05$, $p < .001$) and internalizing symptoms (parent report $t = -3.72$, $p < .001$; youth report $t = -2.46$, $p = .014$). Thus, the significant linear rate of change was present for each of the outcomes, indicating that the shape of the change is linear and negative in the direction of improvement. Cognitive Behavioral Therapy was likewise effective for drug involvement (linear slope effect $t = -3.19$, $p < .002$), and parent report of externalizing ($t = -2.81$, $p = .005$), and internalizing symptoms ($t = -3.27$, $p = .001$). However, the shape of the change was not linear over time for certain outcome variables. For example, the linear effect was not significant for marijuana use, adolescent report of externalizing symptoms and adolescent report of internalizing symptoms. For the Cognitive Behavioral Therapy treatment group, there is a general leveling off in marijuana use after the 6-month follow-up.

Examination of the Level 2 analysis, comparing treatment conditions, revealed that there were no significant differences between conditions in the rate of change over time with respect to marijuana use, parent report of the youth's externalizing symptoms, and youth report of internalizing symptoms. A significant difference between treatment conditions for the linear slope was observed for the Personal Involvement with Chemicals scale of the PEI ($t = 2.29$, $p = .022$). There is support, then, that adolescents receiving Multidimensional Family Therapy in comparison to youth who received cognitive behavioral therapy continue to improve after termination as measured by the PEI, Personal Involvement with Chemical subscale. For externalizing symptoms, there was a significant difference between treatment conditions on parent's report of their child's externalizing symptoms ($t = 2.07$, $p = .038$) with adolescents receiving Multidimensional Family Therapy continuing to improve after termination, and adolescents in the Cognitive Behavioral Therapy condition showing a leveling off of symptom reduction. Finally, with respect to internalizing symptoms, there was a significant between treatment difference with respect to adolescent report of their symptoms with youth in Multidimensional Family Therapy condition reporting continued improvement after treatment; while adolescents in the Cognitive Behavioral Therapy condition appearing relatively stable after suspension of treatment ($t = 2.29$, $p = .022$). Lastly, we examined whether any demographic variables (adolescent age at intake, gender, race, criminal justice involvement, family structure, family income, mother's education) added to Level 2 would act as an important covariate to treatment condition. None of these variables improved the explanatory power of the basic hierarchical models already discussed.

Considering the results as a whole leads us to conclude that in this comparison of two state-of-the-art treatments for adolescent substance abuse, as expected, both treatments emerged as at least somewhat efficacious. Both treatments reduced symptomatology from intake to termination across all three domains of functioning: drug

use, externalizing symptomatology, and internalizing symptomatology. However, while both are efficacious from intake to termination they show different long-term trajectories. The rate of improvement of symptoms between the two treatments is different such that only MDFT was able to maintain the symptomatic gain after termination of treatment. Multidimensional family therapy shows a significantly different slope from cognitive behavioral therapy suggesting that youth who received MDFT continued to evidence treatment improvement after termination. The advantage to MDFT, then, concerns its ability, in comparison to cognitive behavioral therapy, to retain the effects of treatment beyond the treatment phase.

It is important to recognize that these results were achieved with two theoretically different but standard psychotherapies. The two models tested here are traditional psychotherapeutic interventions provided in standard service delivery formats. The treatments were both clinic based therapies providing once a week face-to-face therapy with no booster sessions. The fact that improvement in symptomatology was found in such modest treatments delivered to such a challenging patient population, given its risk exposure and level of initial dysfunction, is an important indicator of the promise of CBT (in terms of immediate therapy effects) and especially MDFT (in terms of immediate and continued effects at one year post termination) in the treatment of adolescent drug abuse. Although the data show efficacy, we would be foolish to say they were stunning. Clearly, there is room for improvement. The success of comprehensive, multiple systems focused therapies, with their intensity of service delivery, case management components, and home-based service delivery contexts (Henggeler et al., 1995; Scannapieco, 1994; Santos et al, 1995), leads us to speculate that improved outcome would be achieved by integrating the psychotherapeutic models tested here into a more multisystemic service delivery context which includes case management, face-to-face therapy sessions of more than once per week, delivered in the home if necessary. One of our current controlled studies is testing our most intensive and extensive version of MDFT developed to date.

3. Dennis, M.L., Titus, J.C., Diamond, G., Donaldson, J., Godley, S.H., Tims, F., Webb, C., Kaminer, Y., Babor, T., Roebuck, M. C., Godley, M.D., Hamilton, N., Liddle, H., & Scott, C. K., & the CYT Steering Committee (2002). *The Cannabis Youth Treatment (CYT) experiment: Rationale, study design, and analysis plans. Addiction, 97 (Suppl. 1), S16-S34.*

Diamond, G., Godley, S.H., Liddle, H.A., Sampl, S., Webb, C., Tims, F., & Meyers, R. (2002). *Five outpatient treatment models for adolescent marijuana use: A description of the Cannabis Youth Treatment Interventions. Addiction, 97 (Suppl. 1), S70-S83.*

Dennis, M. L., Godley, S. H., Diamond, G., Tims, F. M., Babor, T., Donaldson, J., Liddle, H., Titus, J. C., Kaminer, Y., Webb, C., Hamilton, N., & Funk, R. (in press). *The Cannabis Youth Treatment (CYT) Study: Main findings from two randomized trials. Journal of Substance Abuse Treatment.*

A third completed randomized study tested MDFT in a multisite field effectiveness trial – the CSAT Cannabis Youth Treatment (CYT) study (Dennis et al., 2000). This study examined two inter-related randomized trials conducted at 4 sites to evaluate the effectiveness and cost-effectiveness of 5 short-term outpatient interventions

for adolescents with cannabis use disorders. Trial 1 compared Motivational Enhancement Therapy (MET) plus three Cognitive Behavioral Therapy (CBT) sessions with an intervention incorporating additional CBT sessions and another that also included family education and therapy components (Family Support Network). Trial II compared the five-session MET/CBT with the Adolescent Community Reinforcement Approach and Multidimensional Family Therapy. The 600 participants were predominately male, white, aged 15-16, referred by juvenile justice, used cannabis weekly and reported symptoms of co-occurring psychiatric disorders.

This study tested a 12-15 session version of MDFT delivered over a three month period. Seventy percent of youth receiving MDFT completed treatment, a considerably larger percentage than the comparable DATOS-A figure of 58%. Consistent with previous findings, MDFT had a positive impact on drug use and other problem behaviors, and it also showed the capacity to promote positive gains in individual and family protective factors at termination and at three, six, and twelve month follow up periods. MDFT reduced days of marijuana use by 32% during treatment (i.e., from baseline to three months). In addition, these initial gains persisted through the 12 month follow-up; in fact, MDFT clients continued to decrease their frequency of substance use through the follow-up period (an additional 11% decrease following treatment discharge). The same pattern was observed for substance related problems, with problems decreasing 40% while in treatment and decreasing an additional 24% following treatment discharge through the 12 month follow-up.

Cost effectiveness of MDFT. The CYT study was the first project in which cost issues of MDFT were addressed. Cost estimate analyses indicate that MDFT compares quite favorably to current cost parameters of standard outpatient adolescent treatment. The National Treatment Improvement Study (NTIES) (Center for Substance Abuse Treatment, 1998; Gerstein & Johnson, 1999) is one of the few studies to provide formal cost estimates of adolescent outpatient drug treatment. The NTIES study surveyed a nationally representative sample of adolescent treatment program directors who estimated the costs of outpatient adolescent drug treatment. The CYT study used NTIES data as a benchmark against which to compare the five adolescent marijuana treatments in the CYT study. The economic cost of each treatment in the CYT was determined using the Drug Abuse Treatment Cost Analysis Program (DATCAP) (French, 2001). The average weekly cost of MDFT was less than both the median estimate and the mean cost estimateⁱ from the program directors. The median weekly cost of outpatient adolescent drug treatment in the NTIES study was \$267, and the weekly mean (average) treatment cost was \$365. The average weekly cost of providing MDFT per adolescent was \$163. Given these treatment cost findings, French et al. (2002) conclude that MDFT - a stand alone comprehensive family based adolescent drug treatment - is affordable and programmatically sustainable at current funding levels.

In sum, three major controlled clinical trials with clinically referred treatment samples have all found MDFT to be efficacious for adolescent drug abuse and related problems. The approach also demonstrated the capacity to promote protective factors that are instrumental to the continuation of changes in drug problems. As Brown (1990) has noted in her discussion of recovery patterns of drug using teens, treatments must not only show that they can reduce drug taking per se, but their efficacy evidence should also include changes in the social ecology in which they live everyday. The evidence that

MDFT can change dysfunctional family interaction patterns (Diamond & Liddle, 1996), parenting practices (Schmidt et al., 1996), and impact school performance (Liddle et al., 2001) suggest that the MDFT approach addresses theory- and research-based, contextually-oriented effectiveness criteria. In addition, it should be emphasized that MDFT has also shown the capacity to sustain treatment gains through 12 month follow-up periods. However, it is yet to be determined if these gains can be sustained over periods of time longer than one year (see VIII., Long-Term Outcomes of Adolescents in Drug Treatment for a current study addressing this issue).

4. Hogue, A., Liddle, A. & Leckrone, J. (2002). *Family-based prevention counseling for high-risk young adolescents: Immediate outcomes. Journal of Community Psychology, 30, 1-22.*

A prevention intervention version of MDFT, MDFP (Multidimensional Family Prevention) has been tested in a controlled prevention trial that evaluated immediate post-intervention outcomes for a group of at-risk, inner-city young adolescents and their families (Hogue & Liddle, 1999; Liddle & Hogue, 2000; Hogue & Liddle, in press). Adolescents were recruited from a community youth program in which every member completed a risk factor screening measure that assessed individual risk in four areas: adolescent drug use history and attitudes, and history of delinquent behavior; peer drug use history and attitudes; family drug use history and attitudes, and history of police involvement; and adolescent school attendance, performance, and behavior. Youth were then randomly assigned to an MDFP ($n = 61$) or control ($n = 63$) condition. The study sample was comprised of early adolescents (mean age 12.5 years), predominantly girls (56%), almost entirely African American (97%), and mostly low income (57% of families reported annual income less than \$15,000, and 53% received public assistance).

Intervention effects were examined for nine targeted outcomes within four domains of functioning: self-competence, family functioning, school involvement, and peer associations. These domains are considered to be proximal mediators--that is, indices of risk and protection--of the ultimate behavioral symptoms to be prevented: substance use and antisocial behavior. The immediate efficacy of MDFP was investigated by testing the within-subjects interaction (Group X Time) term of repeated measures ANOVA. Testing the interaction term indicates whether there is a significant difference between groups in aggregated change over time on the target variable. Intervention cases showed greater gains than controls on four of the nine outcomes, one outcome apiece within each of the four domains: increased self-concept ($F(1,112) = 6.44$, $p < .05$), a trend toward increased family cohesion ($F(1,122) = 3.21$, $p < .10$), increased bonding to school ($F(1,122) = 5.60$, $p < .05$), and decreased antisocial behavior by peers ($F(1,122) = 7.29$, $p < .01$). Effect size estimates for these improvements were in the small-to-moderate range ($\eta^2 = .03-.06$).

These results offer preliminary evidence for the short-term efficacy of family-based prevention counseling for at-risk young adolescents. In comparison to controls, adolescents and their families who received MDFP showed gains in four key indicators of adolescent well-being. Results also suggest that MDFP enjoyed some success in reversing negative developmental trends. While controls experienced decreases in family cohesion and school bonding and an increase in peer delinquency, MDFP subjects

reported strengthened family and school bonds and reduced peer delinquency. Overall, these gains were small to moderate in magnitude, and they were evident regardless of the adolescent's sex, age, or initial severity of behavioral symptoms. This initial study demonstrates that an individually tailored, family-based prevention model can be successfully implemented with at-risk minority youth. Furthermore, family prevention counseling can foster change in multiple behavioral domains that represent developmentally important mediational influences on the ultimate formation of problem behaviors.

ONGOING CLINICAL TRIALS

1. Alternative to Residential Treatment Study: A Comparative Controlled Trial of Multidimensional Family Therapy vs. Residential Drug Treatment for Co-Morbid Adolescent Substance Abusers

The fundamental objective of this on-going study currently in its fifth year of funding is to compare the therapeutic effectiveness of an intensive in-home family-based treatment, Multidimensional Family Therapy, with a multifaceted Residential Treatment, Adolescent Residential Treatment, and to delineate the mechanisms of change for each treatment. The study targets juvenile justice involved, dually-diagnosed adolescent drug abusers referred for residential treatment. The primary aims are to: (1) experimentally compare the effectiveness of family-based treatment with adolescent residential treatment in ameliorating drug use and symptoms of co-morbidity among dually diagnosed adolescents, and (2) identify the mechanisms by which each treatment achieves its effects. The study is a 2 treatment conditions (Multidimensional Family Therapy, Adolescent Residential Treatment) by 6 time periods (intake; 2, 4, 12, and 18 months post-intake, and termination/discharge) randomized design. Six hypotheses are specified: (1) The progression of adolescent symptomatology over time (drug use and co-morbidity) in the two treatments will reflect differences in the rate of change between the two treatments at 2 months post-intake with youth participating in residential treatment evidencing more improvement than youth receiving family-based treatment. A reversal will begin to occur between 12 and 18 months post-intake with youth participating in family-based treatment evidencing more improvement than those who received residential treatment. (2) For the MDFT condition, therapeutic alliance between therapist-adolescent and therapist-parent, measured during the first 2 months of treatment, will predict increased parent commitment to and involvement with their adolescent at month 2. (3) Parent commitment to and involvement with their adolescent measured at 2 months post-intake will predict improvement in (a) parenting behaviors and (b) adolescent social skills/life skills at 4 months post-intake. (4) Improvement in parenting behaviors and adolescent social skills at 4 months post-intake will predict reduction in adolescent symptomatology at termination, and 12-18 months post-intake. (5) For the residential treatment condition, therapeutic alliances between adolescent-primary therapist and adolescent-peer counselor measured during the first 2 months of treatment will predict increased (a) social skills/life skills and (b) adoption of philosophy and behaviors of 12-step model at month 4. (6) Improvement in (a) social skills and (b) adoption of philosophy and behaviors of 12-step model at 4 months post-intake will

predict reduction of adolescent symptomatology and improvement in adolescent functioning at termination, and 12-18 months post-intake.

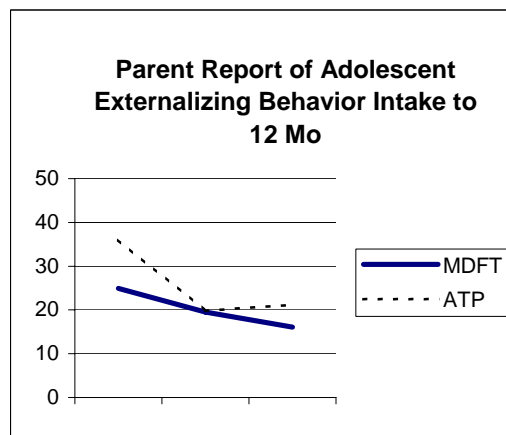
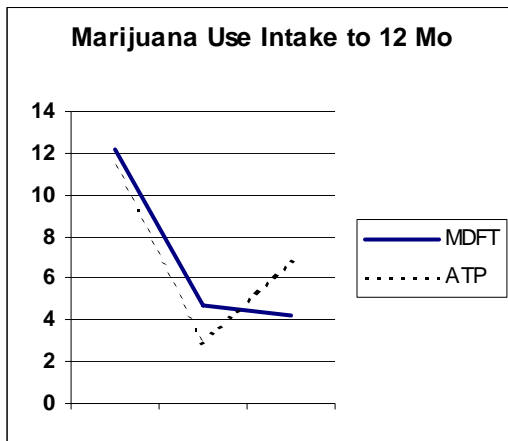
Preliminary analyses of approximately 95 youth treated to date indicate that the sample is quite severe in all areas of functioning. The average age of the sample is 15. 74% are male and 26% female. The ethnic breakdown of the total sample is 14% African American, 74% Hispanic, and 8% Caucasian. Only 19% of youth reside in a 2-parent household. 44% of parents/guardians were unemployed at intake, with only 6% of parents having graduated college. The average yearly income of the sample is \$22,000 and 36% of families in the study were on public assistance at intake. Adolescents in the study have a long history of school failure, legal problems, and previous treatment. All youth are diagnosed with a comorbid psychiatric disorder (as a criteria for inclusion in the study), with approximately 75% having conduct disorder and 25% diagnosed with depression. Almost three-fourths of the youth (74%) have failed in previous substance abuse treatment before participating in this study. Sixty-five percent of adolescents report having to repeat at least one grade in school. Forty-nine percent of adolescents reported having legal charges pending and 53% reported being on probation at the time of intake to treatment. The family background of the adolescents in our study also indicates serious difficulties. Three-fourths of the sample (75%) currently have or have had a family member other than the adolescent with alcohol problems, 52% have had a family member with a drug problem, and 54% have had a family member with legal problems. Twenty percent report having a family member who has had mental health problems.

Despite the extensive problems of these teens and families, MDFT can successfully engage and retain these difficult youth and their families in treatment. Adolescents spend an average of 243 days in MDFT, compared to only 112 days in Residential Treatment. These preliminary results are promising in terms of the ability of MDFT, an outpatient alternative to RT, to engage and retain serious drug abusing youth and their families in therapy.

Preliminary Outcome Analyses. Data from our current study were analyzed using repeated measures analysis of variance (RMANOVA) to determine not only if differences exist between the two conditions of MDFT and RT on marijuana use and externalizing symptoms. Our original hypotheses were that, from intake to discharge, participants assigned to the RT condition would show greater improvement on marijuana use and externalizing symptoms than those participants assigned to the MDFT condition because of the residential components of the treatment. We further hypothesized that while participants assigned to the MDFT condition would show continued reduction of marijuana use and externalizing symptoms after discharge from treatment, the RT participants would show deterioration on marijuana use and externalizing symptoms after discharge from their in-patient treatment environment. From intake to discharge, participants in the RT condition experienced a 77% reduction in marijuana use while the MDFT participants reported a 66% reduction of marijuana use resulting in a significant time effect over both conditions ($F(1,68)=28.49, p<.001$). No time by condition effect was observed. Additionally, from intake to discharge, RT participants reported a 45% reduction in externalizing symptoms and MDFT participants reported a 22% reduction in externalizing symptoms resulting in a significant time effect over both conditions ($F(1,60)=25.29, p<.001$). Further, the time by condition effect was statistically significant, with parents of adolescents in the residential condition reporting less

externalizing symptoms at the end of treatment ($F(1,60)=4.81, p=.032$). However, it should be mentioned that these adolescents had been in a controlled environment until the end of their treatment. Thus, contrary to the hypothesis that RT would be superior to MDFT in reducing marijuana use from intake to discharge, the preliminary findings suggest that MDFT, an outpatient alternative to residential care, and Residential Treatment, were equivocal in effect on marijuana at termination.

Although sample sizes decrease because the current study has not yet concluded, we did conduct analyses using data from a subsequent assessment point. Looking further out to 12 months after intake, we continue to find equivocal findings between MDFT and RT on marijuana use [i.e., time effects ($F(2,50)=11.72, p<.001$) are statistically significant but the time by condition interaction effect is nonsignificant]. However, RT participants report increasing their marijuana use after their discharge from Residential Treatment; whereas MDFT participants continue to show a slight reduction in their marijuana use, after treatment ends. These effects persist to our 12 month follow up. For externalizing symptoms, we begin to find preliminary support for our long-term hypotheses. Parents of adolescents receiving MDFT report a gradual decrease in externalizing symptoms up to 12 months following intake. Parents of adolescents receiving residential treatment report a gradual increase in adolescent externalizing behavior from discharge to 12 months following intake [both time ($F(2,43)=20.19, p<.001$) and the time by condition interaction ($F(2,43)=3.30, p=.047$) are statistically significant].



2. Family Therapy for Early Adolescent Substance Abuse: Multidimensional Family Therapy Compared to Adolescent Group Therapy

*Liddle, H. A., Rowe, C. L., Henderson, C. E., Dakof, G. A., & Ungaro, R. A. (in press). Early Intervention for adolescent substance abuse: Pretreatment to Posttreatment Outcomes of a Randomized Controlled Trial Comparing Multidimensional Family Therapy and Peer Group Treatment. *Journal of Psychoactive Drugs.**

Early adolescence (ages 12 to 15) is a particularly vulnerable developmental period for the initiation of drug use and other problem behaviors. We know that early onset of drug use is one of the strongest predictors of serious adolescent drug abuse and problems in adulthood. However, few intervention studies have addressed questions about this unique adolescent age group. With these questions in mind, we are conducting a collaborative research project with a community treatment facility, The Village, Inc., funded by the Center for Substance Abuse Treatment (CSAT) as part of their Adolescent Treatment Models' initiative. The study is a clinical trial comparing Multidimensional Family Therapy (MDFT) with a manualized peer group treatment. Adolescents who are referred for outpatient drug treatment and eligible for the study are randomized to one of these two treatments, both of which are provided by clinicians at The Village. This represents the first test of MDFT with: 1) an exclusively early adolescent drug-using population, and 2) in a rigorous "real world" clinical setting. This study has several aims: 1) To compare the effectiveness of MDFT vs. a manualized peer- and psychoeducationally-focused group treatment, with a sample of drug using early adolescents; 2) To investigate the therapeutic mechanisms in each treatment; and 3) To explore gender-related issues in adolescent treatment for substance abuse.

Eighty youth participated in the study. The average age of the sample is 13.73, 73% are male and 27% female. The ethnic breakdown of the total sample is 48% African American, 44% Hispanic, and 8% Caucasian and other ethnicities. And just over half (53%) resided in single parent homes. Approximately 70% of these youth reported using drugs within the 90 days prior to intake, with the majority reporting use within the last month. Forty-seven percent of the participants met ASAM criteria for substance abuse at intake, and 16% met criteria for substance dependence. In addition, 39% of them met criteria for conduct disorder, 29% met criteria for ADHD, and 9% met criteria for a depressive disorder.

Both interventions were successful in engaging and retaining teens in the program. No clients refused treatment in MDFT and only three adolescents refused treatment in the group therapy condition (7% failing to attend at least one session). MDFT clients completed treatment at a higher rate than group clients (97% versus 72%; Dakof et al. 2003). Outcome data were analyzed using latent growth curve modeling techniques with the software Mplus (Muthen & Muthen, 1998-2002) and assessments at intake, 6 weeks following intake and discharge.

Treatment effects favoring MDFT were found in four major risk domains for early adolescents: externalizing symptoms ($t=2.28, p<.05$), family cohesion ($t=2.70, p<.01$), peer delinquency ($t=2.57, p<.01$), and school behavior ($t=3.06, p<.01$). In addition, youth receiving MDFT showed more rapid improvements in marijuana use ($t=2.66, p<.01$), and a nonsignificant trend for self-reported delinquency ($t=1.87, p<.10$).

The results of this randomized controlled trial are the first to demonstrate MDFT's potential as an early intervention approach for young adolescents who were referred for problems related to substance use. In this study, MDFT was adapted to target risk factors across these domains and to address the unique developmental issues associated with substance abuse during the early adolescent transition (Rowe et al. 2003). As the results indicate, this version of MDFT for young adolescents outperformed a theory-driven, manual-guided peer group therapy model in reducing specific substance abuse-related problem behaviors and risk factors, and in promoting protective factors for

substance abuse. Finally and most importantly, in addition to altering the risk trajectories of youth in this study, MDFT was more effective in reducing teens' substance use over the course of the relatively short term therapy. Thus the success of MDFT in reducing substance use and delinquency as well as the range of risk factors described above evidences its significant promise as an early intervention model for indicated samples.

We are also encouraged by the results presented here because in previous controlled trials the benefits of MDFT actually *increased* following the completion of treatment. For instance, in a randomized controlled trial of MDFT vs. individual Cognitive Behavioral Therapy (CBT), both treatments produced significant and comparable decreases in drug use, externalizing problems, and internalizing problems from intake to termination. However, adolescents receiving MDFT *continued* to improve up to 12 months following termination, while CBT youth did not (Liddle 2002b). In addition, longer-term treatment outcomes in the Cannabis Youth Treatment study indicated that youth in MDFT retained their improvements at 30-months posttreatment, whereas at least one of the treatments that proved superior to MDFT at posttreatment, the 5 session Motivational Enhancement Therapy/Cognitive Behavioral Therapy (MET/CBT5), a non-family based individual (MET) and group (CBT) combination treatment, did not retain its posttreatment outcomes at the same 30 month follow up period. (Dennis et al. in press; Dennis 2003).

II. Drug Court Evaluation

“Engaging Moms:” An Intervention for Family Drug Court

During the last 15 years, there has been a dramatic increase in the incidence of both child abuse/neglect and drug abuse among women of childbearing age (Kandel, Warner, & Kessler, 1998; Reid, et al, 1999). Thus, the problem of child maltreatment and maternal substance abuse is a public health problem of the utmost significance (Magura & Laudet, 1996). Judicial and child welfare systems throughout the nation have turned to family drug courts as a possible solution to this problem. However, few scientifically rigorous investigations of drug courts have been done, and many questions remain regarding their effectiveness, essential features, and influence on drug and non-drug outcomes. In response to the growing need for effective family drug court interventions and empirical investigation of their outcomes, we propose a treatment development project exploring the use of a promising family-based intervention, the Engaging Moms Program, within the family drug court context. This application proposes a 4-year Stage 1a/1b Behavioral Therapies Development project with the overarching goal of further developing and pilot testing an innovative family drug court intervention designed to help drug abusing mothers succeed in family drug court. Initial studies of the Engaging Moms Program suggest that it holds sufficient promise to warrant further development and systematic testing (Dakof et al, in press; Dakof, Cohen & Quille, in preparation). This application has 4 primary aims: (1) develop a manualized, court-based family intervention, the Engaging Moms Program (EMP), as an alternative to standard family drug court case management services, (2) develop training manuals and materials, (3) develop adherence/competence measures, and (4) experimentally compare, in a randomized pilot study (N=60), acceptability and efficacy of the Engaging Moms Program (EMP) versus standard family drug court case management services (CMS). The pilot test of EMP will be carried out in the real-world setting of family drug court, using existing drug court staff to deliver the court-based interventions. Drug use outcomes and changes in psychosocial functioning (co-morbidity, parenting skills, family

environment) will be assessed at 5 assessment points, beginning with intake, that coincide with the phases of drug court (3, 6, 9, and 12 months post-intake). Drug court outcomes of graduation status and reunification status will also be assessed. If funded, this project would be one of the first scientific investigations of family drug court. It has the potential to make a major contribution to the enhancement of family drug court programs, and can provide the foundation for a full-scale Stage II clinical trial in this understudied area focusing on an underserved population.

Funding Agency	NIDA
Amount of Grant	\$1,485,310
Time period	2003-2007
Principal Investigator	G. Dakof
Co-Principal Investigator	A. Frank

Family-Based Juvenile Drug Court Services

Over a decade of innovative collaborations among judicial authorities, drug treatment providers, social service agencies, researchers, and policy makers combine to present a first wave of support and enthusiasm for the drug court model with both adults and juveniles. Juvenile drug courts, like drug courts generally, have received encouraging evaluations of treatment retention, drug use, and recidivism during program participation, yet methodological limitations leave this early stage of work suspect. The current proposal, submitted in response to RFA DA-03-003, represents one of the first attempts to scientifically investigate the process and outcomes of juvenile drug court. The study addresses several gaps in the knowledge base on juvenile drug courts by examining the extent to which an empirically-supported treatment for adolescent drug abuse and delinquency, multidimensional family therapy (Liddle, 2002; MDFT), can enhance the effectiveness of existing juvenile drug court services in terms of increasing drug court graduation rates, decreasing drug use, delinquent behavior, and arrests, and improving school and vocational outcomes. The study design is a fully randomized controlled trial that compares the acceptability, efficacy, and benefit-cost of two different juvenile drug court models: MDFT integrated with existing core juvenile drug court services (MJDC-MDFT), and an individual and peer focused drug treatment intervention (Treatment as Usual; MJDC-TAU) integrated with existing core juvenile drug court services. In addition, we propose to investigate mechanisms of change by which both drug court models achieve their effects. The proposed study is responsive to the RFA in that it “builds on recent studies of drug abuse treatment for adolescents to improve and expand the delivery of efficacious treatments to drug abusing youth.” Moreover, the proposed research will be conducted in collaboration with a project being considered by SAMHSA under its “Strengthening Communities-Youth” initiative (GFA TI 03-002). The proposed study has three aims: 1) To experimentally compare the acceptability and effectiveness of the Miami Juvenile Drug Court-Multidimensional Family Therapy (MJDC-MDFT) Program versus MJDC-TAU; 2) To identify the mechanisms through which the drug court programs achieve their effects; and 3) To compare the total and net monetary benefits to the juvenile justice system of serving juvenile drug court participants with MJDC-MDFT vs. MJDC-TAU. A total of 150 juveniles eligible for the Miami Juvenile

Drug Court and their parents will comprise the study sample (75 per condition). Eligible youth will be randomly assigned to either MJDC-MDFT or MJDC-TAU and will be assessed at baseline, 6 months, 12 months, 18 months, and 24 months following baseline to the drug court program. State-of-the-art statistical techniques, including latent growth curve modeling (LGM), will be used to examine change in multiple processes and outcomes over time.

Funding Agency	NIDA
Amount of Grant	\$2,847,799
Time period	2003-2008
Principal Investigator	G. Dakof
Co-Principal Investigator	H. Liddle
Investigators	C. Rowe, C. Henderson

III. The Criminal Justice Drug Abuse Treatment Studies (CJ-DATS)

CJ-DATS (Center Grant U mechanism)

This is a proposal to establish the University of Miami Criminal Justice Drug Treatment Services Research Center (UM JDTSRC). Four major research centers at the University of Miami School of Medicine have joined to provide the proposed UM CJDSRC and national CJ-DATS with their considerable clinical trials, multi-site, epidemiology, criminal justice, HIV/AIDS, and drug abuse treatment research expertise (Center for Treatment Research on Adolescent Drug Abuse, Comprehensive Drug Research Center/Health Services Research Center, Drug Abuse and AIDS Research Center, and the AIDS Prevention Center). The three Treatment Providers Partners (TPPs) selected are among the largest, most respected in the state (The Village, Spectrum Programs, Jackson Memorial Hospital, and Miami-Dade County Corrections Office of Rehabilitative Services, TASC Program). These providers offer an exceptional diversity of treatment modalities and ethnic profiles in their work with substance abusing and addicted criminal justice involved adults and juveniles. Importantly, the TPPs and Center investigators have uniformly excellent working relationships with the criminal justice professionals in Miami-Dade and Broward Counties. The Criminal Justice Partners (CJPs), the Florida Department of Corrections and the Florida Department of Juvenile Justice, also provide rich settings for collaborative UM CJDSRC research studies. The UM CJDSRC infrastructure includes an Investigative Team of diverse, internationally recognized drug abuse researchers who have developed and published efficacious family-based treatment models with criminal justice involved drug abusing populations (adolescents, adults, HIV+ drug abusers). All activities of the UM CJDSRC will be monitored by the Oversight Committee, including the PI, both Co-PI's, and 8 representatives of the TPP and CJP agencies. Research concepts proposed include a randomized trial of a multi-systems integrative family-based intervention for adolescent drug abusers in detention and as they transition into community outpatient treatment. A second concept builds on an engagement intervention developed with women drug abusers in dependency court, and proposes to test this empirically supported family-based treatment with services as usual for female drug abusers in detention. The Protocol Development Team, which develops, revises, and finalizes UM CJDSRC research concepts for submission to the

national CJ-DATS Steering Committee, also provides an important context for active collaboration among Center investigators and TPP and CJP representatives. Clinical research teams with considerable experience in all aspects of multi-site trials will coordinate and implement research and clinical training and monitoring protocols and data management procedures. The proposed research concepts and activities of the UM CJDTRSC are based on six fundamental themes: 1) a social ecological perspective on drug abuse and criminal behavior; 2) a focus on family involvement in treatment; 3) facilitating adaptive transitions; 4) research diversity; 5) integrative interventions; and 6) juvenile justice focus.

Funding Agency	NIDA
Amount of Grant	\$3,604,040
Time period	2003-2008
Principal Investigator	H. Liddle
Co-Principal Investigators	G. Dakof, C. Rowe, C. Henderson

IV. Adherence / fidelity studies and related work

Hogue, A., Liddle, H. A., Rowe, C. L., Turner, R. M., Dakof, G. D., & LaPann, K. (1998). Treatment adherence and differentiation in individual versus family therapy. Journal of Counseling Psychology, 45(1), 104-114; and Hogue A., Liddle, H.A., & Rowe, C. (1996). Treatment adherence process research in family therapy: A rationale and some practical guidelines. Psychotherapy: Theory, Research, Practice, & Training, 33(2), 332-345.

Developing procedures for establishing and monitoring therapist adherence to and competence in family-based treatment models has been important component of all of our efficacy studies and our training and dissemination work. Early on, CTRADA investigators developed an observational rating system for evaluating fidelity to manualized treatment protocols, with an obvious emphasis on MDFT. The Therapist Behavior Rating Scale (TBRS; (Hogue, Rowe, Liddle, & Turner, 1994) is an observational, macroanalytic evaluation tool that serves the dual purpose of establishing treatment integrity thresholds and providing process-level data on therapist interventions (Hogue, Liddle, & Rowe, 1996). To date, four treatment adherence process studies have been conducted with various versions of the TBRS (Hogue et al, 1998; Hogue, Johnson-Leckrone, & Liddle, 1999; Diamond et al, submitted; Hogue, Samuolis, Dauber, & Liddle, 2000). Those studies have demonstrated that the TBRS has adequate reliability and validity, that MDFT can be successfully taught to Master's level therapists as prescribed by the manual, and that the TBRS can be used to identify the therapeutic interventions that predict treatment gains for teens in MDFT.

The first study (Hogue et al, 1998) examined treatment fidelity to MDFT and CBT in the randomized clinical trial described previously. Principal components analysis conducted on the 26 TBRS-1 items across 90 therapy sessions yielded five factors, two modality-specific and three shared intervention scales. Each factor scale was examined

for its reliability and utility in differentiating between treatment conditions. Interrater reliability and internal consistency were very good for the MDFT scale ($ICC_{(2,6)} = .86$, Cronbach's $\alpha = .77$), CBT scale (.91, .74), and Affect/Systems-Focused scale (.76, .78). Reliability coefficients were lower but still acceptable for the Behavior/Skills-Focused scale ($ICC_{(2,6)} = .58$, Cronbach's $\alpha = .68$) and Cognition-Focused scale (.60, .68). Three analytic procedures were used to evaluate treatment adherence. First, variance composition analysis was conducted. It was hypothesized that Modality would be a strong determinant of variance in the modality-specific scales and a weak determinant in scales that represent common interventions. Results showed that modality predicted the predominance of variance in both the CBT scale (.39) and the MDFT scale (.48). For the three shared intervention scales, scale variance was distributed across multiple effects, with modality accounting for less variance in these scales than in the modality scales. Second, multigroup profile analysis was used to examine whether the two treatment conditions exhibited parallel profiles of scale scores across all five scales combined. Using Wilks' λ criterion as the test of significance, the hypothesis of parallel profiles was rejected, $F(4, 85) = 30.56$, $p < .001$. Thus, the two treatments displayed significantly different patterns of peaks and valleys in mean scores across the five scales (see Figure 2). Also as predicted, the modality effect explained a significant amount of unique variance ($\eta^2 = .59$) in the weighted combination of the five scales. Third, mean comparisons between the MDFT and CBT conditions were carried out on each scale, using a Bonferroni-adjusted criterion value of .01 (.05/5). As expected, MDFT therapists scored significantly higher on the MDFT scale ($t(56) = 10.22$, $p < .001$), whereas CBT therapists were higher on the CBT scale ($t(49) = 6.77$, $p < .001$). Differences between conditions were also found for two other scales. The MDFT condition used more Affect/Systems-Focused interventions ($t(88) = 6.77$, $p < .001$), whereas the CBT condition showed more Behavior/Skills-Focused interventions ($t(88) = 2.51$, $p < .01$).

These results confirmed that a high degree of treatment fidelity was achieved in the study using standard MDFT training protocols. Therapists in each condition used model-unique (prescribed) techniques and avoided (proscribed) techniques characteristic of the other condition. Analyses also indicated that in accordance with MDFT manualized guidelines, MDFT therapists worked to a larger extent in the affective domain, used systemically- and developmentally-focused interventions involving multiple family members, and concentrated on establishing a collaborative therapy relationship. In contrast, but as prescribed, CBT therapists operated at a predominantly behavioral level, worked on generating and promoting alternative behaviors and perspectives in their clients, and focused attention on drug use sequelae in the target adolescent.

In sum, procedures and measures for establishing and evaluating MDFT integrity have been developed and shown useful and psychometrically adequate. Through a series of studies, we have developed and refined a set of adherence and competence scales, and shown that they can differentiate MDFT from other treatments. We also have obtained evidence that therapists without extensive knowledge or experience in family-based treatments can be trained to deliver MDFT in accord with manual-specified guidelines. Thus, the experience, framework and instrumentation exist for evaluating this important aspect of training in the proposed study.

Supervision and training models. Building and testing a treatment requires considerable attention to clinician training and supervision. Over the years we have attended to this area of work and we have developed ideas about the content and process of training, the construction of a training program including training materials and edited training videotapes, effective supervision methods, and a conceptual framework about how therapists acquire new skills and perform manualized treatments competently (Liddle, 1985; Liddle, Becker, & Diamond, 1997). MDFT therapists have at least a master's degree and two years of post-masters experience. Training in MDFT includes approximately 100 hours of model-related literature review, didactic seminars, review of videotapes with an MDFT supervisor and previously trained therapists, and completion of 2-3 pilot cases. These sessions are supervised live or by videotape. Following training, MDFT therapists routinely receive 1-2 hours of face-to-face supervision per week that includes a review of developments and case conceptualization for every case, videotape review of sessions, and live supervision of current cases. Case logs are used to track which family members and which ecological systems (e.g., school, recreational, religious, legal) are being included in treatment planning and implementation, the time spent in each area of work week by week, and the therapist's and supervisor's written evaluation of week by week outcomes.

V. Treatment Development and Therapy Process Studies

We have conducted a program of process research on the MDFT approach. This work has attempted to illuminate some key but murky or difficult aspects of therapy with drug using teenagers. We have addressed core challenges such as how to engage adolescents and parents in treatment, and how to address some fundamental aspects of dysfunction that present with significant regularity across many cases. The process studies have focused both on the description and clarification of the core client processes of dysfunction and healing or improvement as well as on the therapist behaviors that intersect with these client processes. These studies provide a first wave of insights, systematically derived, about mechanisms of change within the model. The process studies have employed both hypothesis-driven (focus on confirming clinical theory) and discovery-oriented (focus on refining or extending existing theory and exploring unspecified phenomena) methodological approaches (Shoham-Salomon, 1990). The studies to date have addressed four questions that are fundamental to understanding how MDFT pursues clinical change: 1. Does MDFT materialize change in family interactions as the model specifies? 2. Does MDFT improve those parenting behaviors that are linked to adolescent drug use and behavior problems, and are these changes in parenting related to reductions in drug and behavior problems? 3. Can MDFT therapists establish productive working alliances with multiproblem, ethnic minority, inner-city youths? 4. Can MDFT therapists engender culturally meaningful interventions that enhance treatment engagement of African American adolescents?

Resolving parent-adolescent impasses.

Diamond, G.S. & Liddle, H.A. (1996). Resolving a therapeutic impasse between parents and adolescents in multidimensional family therapy. Journal of Consulting and Clinical Psychology, 64, 481 – 488.

G. S. Diamond and Liddle (1996) used task analysis to identify the combination of clinical interventions and family interactions necessary to resolve in-session impasses. These are clinical situations characterized by negative exchanges, emotional disengagement, and poor problem-solving between parents and adolescents. The sample in this process study was substance abusing, juvenile justice referred teenagers and their families. Therapist behaviors that contributed to defusing these negative interactions included: (a) actively blocking, diverting, or addressing and working through negative affect; (b) implanting, evoking, and amplifying thoughts and feelings that promote constructive dialogue; and (c) creating emotional treaties among family members by alternately working in session with parents alone and adolescents alone--a kind of shuttle diplomacy. In cases with successful resolution of the impasse, the therapist transformed the nature and tone of the conversation in the session. The therapist shifted the parent's blaming and hopelessness to attention to their feelings of regret and loss and perhaps sadness about what was occurring with their child. At the same time, the therapist elicited the adolescent's thoughts and feelings about relationship roadblocks with the parent and others. These in-session shifts of attention and emotion made possible new conversations between parent and adolescent. In so doing, the parents developed empathy for the difficult experiences of their teenager and offered support, even admiration, for their teen's coping. These interventions and processes facilitated personal disclosure by the adolescent and created give and take exchanges. Severity of family conflict and pessimism predicted successful resolution of the impasse, with the most conflicted and pessimistic families less likely to move to a new conversational level.

This study yielded clinical insights in four areas. First, we found a theory-based way to reliably define and identify family transactional processes that are known determinants of poor developmental outcomes in children and teenagers. Second, we broke down in behavioral terms the components of the impasse, defining the unfolding sequential contributions of both parent and adolescent. Third, we specified the relation of different therapist actions to the impasse. Fourth, we demonstrated that therapists can change an in-session therapeutic impasse and thus impact one of the putative mechanisms of developmental dysfunction related to drug abuse.

Changing parenting practices.

Schmidt, S. E., Liddle, H.A. & Dakof, G. A. (1996). Changes in parenting practices and adolescent drug abuse during multidimensional family therapy. Journal of Family Psychology, 10, 12-27.

Schmidt, Liddle, and Dakof (1996) investigated the nature and extent of change in parenting behaviors, as well as the link between parental subsystem change and reduction in adolescent symptomatology. In a sample of parents whose teenagers were juvenile justice referred and showed significant drug and mental health problems, parents showed significant decreases in negative parenting behaviors (e.g., negative affect, verbal

aggression) and increases in positive parenting (e.g., monitoring and limit-setting, positive affect and commitment) over the course of therapy. Moreover, these changes in parenting behaviors were associated with reductions in adolescent drug use and problem behaviors. Four different patterns of parent-adolescent tandem change were identified: 59% of families showed improvement in both parenting practices and adolescent symptomatology, 21% evidenced improved parenting but no change in adolescent problems, 10% showed improved adolescent symptoms in the absence of improved parenting, and 10% showed no improvement in either parenting or adolescent functioning. These results support an elemental tenet of family-based treatments: change in a fundamental aspect of the family system (parenting practices) is related to change at the critical level of interest – reduction of adolescent symptoms, including drug abuse. Furthermore, these data suggest that parenting risk and protective factors for drug use are accessible to intervention within a therapeutic environment. Subsequent work has clarified the theory and empirical basis of interventions in the parenting realm (Liddle et al., 1998).

Building therapist-adolescent alliances.

Diamond, G. M., Diamond, G. S., & Liddle, H. A. (2000). The therapist-parent alliance in family-based therapy for adolescents. Journal of Clinical Psychology, 56(8), 1037-1050.

Diamond, G. M., Liddle, H. A., Hogue, A., & Dakof, G. A. (2000). Alliance building interventions with adolescents in family therapy: A process study. Psychotherapy, 36, 355-368.

We examined the impact of adolescent engagement interventions on improving initially poor therapist-adolescent alliances (G. M. Diamond, Liddle, Hogue, & Dakof, 2000). The sample was juvenile justice involved, substance abusing inner city teens, most of whom had a dual diagnosis of substance abuse and a mental health disorder (Rowe, Liddle, & Dakof, in press). Cases with weak therapist-adolescent alliances in the first treatment session were observed over the course of the first three sessions. Significant gains in working alliance were evident when therapists emphasized the following alliance-building interventions: attending to the adolescent's experience, formulating personally meaningful goals, and presenting one's self as the adolescent's ally. Lack of improvement or deterioration in alliance was associated with the therapist continually socializing the adolescent to the nature of therapy. Moreover, in improved alliance cases therapists increased their use of alliance-building interventions from session two to session three (therapist perseverance), whereas therapists in unimproved cases decreased their use (therapist resignation). These results indicate that although it is an important early-stage therapist method, when therapists over-focus on orienting adolescents to therapy, and thus wait too long to discuss how the therapy can be personally meaningful for the teenager, a productive working relationship is not formed. Details about how to engage teenagers in family-based therapy are described elsewhere (Liddle & Diamond, 1991; Liddle, et al., 1992).

Crafting culturally specific interventions.

Jackson-Gilfort, A., Liddle, H. A., Tejada, M.J., & Dakof, G. A. (2001). *Facilitating engagement of African-American male adolescents in family therapy: A cultural theme process study.* *Journal of Black Psychology, 27(3), 321-340.*

Jackson-Gilfort, Liddle, Tejada and Dakof (2001) investigated whether therapeutic discussion of culturally specific themes enhanced treatment engagement of African American male youths with an inner city Philadelphia sample of juvenile justice involved, substance abusing teenagers. Exploration of particular themes - anger and rage, alienation, and the journey from boyhood to manhood (i.e., what it means to become an African American man) - were associated with both increased participation and decreased negativity by adolescents in the very next treatment session. These results suggest that use of certain culturally meaningful themes are directly linked to adolescent investment in the treatment process. Jackson-Gilfort et al., 2001 describe how these themes pertaining to African American development were derived and give illustrations of their clinical use.

The Role of Culture in Substance Abuse Treatment for Hispanics

Drug and alcohol use by adolescents represents one of the nation's most serious public health problems. This is particularly the case for Hispanic youth. Hispanic youth face disproportionate burdens associated with substance abuse including health and social consequences and gaps in treatment service delivery. Further, empirically supported theories highlighting the unique treatment aspects of Hispanic youth and families are sorely lacking. This proposed supplement expands the scope of the parent grant (Family-Based and Adolescent Residential Drug Treatment, NIDA Grant #P50 DA 11328, Howard Liddle PI) by addressing the problem of health disparities among Hispanic youth. The aims of the parent grant are (1) to experimentally compare the effectiveness of an intensive family-based alternative to residential treatment, Multidimensional Family Therapy (MDFT), with residential adolescent treatment (Adolescent Residential Treatment) in ameliorating drug use and symptoms of comorbidity among dual diagnosed adolescents and (2) to identify the mechanisms by which each treatment achieves its effects. Subjects for the study will consist of 110 male and female Hispanic adolescents (ages 13-17) and their families. These adolescents meet local criteria for placement in residential treatment. Expanding the parent grant will be accomplished by secondary data analysis of culturally-relevant research questions examining the relationship between adolescent acculturation and parent-adolescent acculturation differences in relation to adolescent symptomatology, family functioning, and treatment response. Observational coding methods will also be utilized to identify Hispanic cultural family themes to be employed in future treatment development.

Funding Agency	NIDA
Amount of Grant	\$94,407
Time period	2003-2004

Principal Investigator	G. Dakof
Investigators	C. Henderson H. Liddle C. Rowe

Examining core processes of change in family therapy.

Alexander, J. F., Robbins, M., Turner, C., Liddle, H. A., & Szapocznik, J. Change processes in family therapy with drug using youth. (NIDA Grant No. P50 DA011328; H. Liddle, PI)

The major goals of this study are to develop and extend the empirical base for understanding the common ingredients (or core processes) of family therapy that predict dropout in family therapy with drug abusing youth. In doing so, this study pursues three specific aims: AIM 1 examines the extent to which there exist core factors across three established family-based treatments for adolescent drug abuse; AIM 2 examines the extent to which these core factors explain different trajectories that characterize families that drop out early (Early Dropout), those that drop out later (Late Dropout), and those that complete the intervention (Completer); AIM 3 examines mechanisms of action by analyzing microsequential relationships between specific indicators of core therapist and core family constructs.

VI. Economic Evaluation of Adolescent Drug Treatments

Liddle, H. A. (P.I.). & French, M. T. (Co-P.I.). Economic Evaluation of Adolescent Drug Services. NIDA Grant no. 1R01 DA13298.

Zavala, S. K., French, M. T., Henderson, C. E., Alberga, L., Rowe, C., & Liddle, H. A. (2003). Guidelines and challenges for estimating the economic costs and benefits of adolescent substance abuse treatments. Manuscript in preparation.

Economic evaluation of adolescent drug abuse treatment is a critical and largely unexplored area of research. This study addresses a largely unexplored issue in the adolescent drug abuse field today - the relative costs and benefits of intensive outpatient family therapy vs. Residential Treatment. Although research with adult substance abusers suggests that intensive outpatient approaches may be more cost-beneficial than Residential Treatment, no controlled study of this nature with adolescent drug abusers has been conducted. This study involves an extension of the alternative to residential treatment study (see ongoing studies above). In addition to the outcome measures discussed above, adolescents and their parents provide service utilization data at each assessment point over the course of 18 months to determine the extent of services utilized by the youth and their family members during and following treatment. Dr. Gayle Dakof of CTRADA and Dr. Michael Miller of The Village completed a standardized assessment to estimate the costs of treatment service delivery (the Drug Abuse Treatment Cost Analysis Program [DATCAP]). Clinical records from health, MH/SA, and juvenile

justice agencies will be reviewed to confirm the use of these services and to estimate the costs of service utilization. The benefit-cost analysis will examine the costs of each intervention and the societal benefits in relation to health, mental health/substance abuse (MH/SA), criminal activity, juvenile justice (JJ), and school outcomes. Preliminary results from the DATCAP indicate that there is nearly a 3:1 difference (favoring MDFT) in the costs of delivering the two treatments in this trial. The residential treatment condition has a weekly cost per client of \$1,138 while weekly cost per client of MDFT is \$384 (French et al, submitted).

VII. Dissemination Studies Adapting and Transporting MDFT into Practice Settings

1. Liddle, H./Rowe, C. (P.I.). Transporting Family Therapy to Adolescent Day Treatment. NIDA Grant No. 1R01 DA 13089

Liddle H. A., Rowe, C. L., Quille, T. J., Dakof, G. A., Mills, D. S., Sakran, E., & Biaggi, H. (2002). Transporting a research-based adolescent drug treatment into practice. Journal of Substance Abuse Treatment, 22(4), 231-243.

We have long believed that the utility of MDFT and any associated training program would ultimately hinge on its transportability to non-research settings and its adoption by diverse groups of community providers. Thus, another of our major research foci has been on adapting and streamlining the MDFT model and training methods for use with front line staff in community agencies and clinics.

This study represents our latest and most systematic attempt to refine, adapt, and train agency providers to implement the MDFT model in an existing community-based drug treatment program for adolescent drug abusers (“Transporting Family Therapy to a Day Treatment Program for Adolescent Drug Abusers,” H. Liddle, PI, NIDA Grant # RO1 DA13089-04), and to evaluate the feasibility and durability of the training. Subjects for the study will consist of 150 male and female adolescents (ages 13-17) and their families. The sample will be primarily minority (approximately 60% Hispanic, 30% African American, and 10% Caucasian), and virtually all will have current or past juvenile justice involvement. Like the proposed study, this ongoing study has 3 main phases. During a 12-month Baseline/ Pre-Exposure phase (Phase I), we observed and assessed multiple aspects of the day treatment program, including patient outcomes and potential challenges to training the providers and implementing the approach. Phase IIa (Training/ Exposure) involved 6 months of intensive training of day treatment program staff and administrators by MDFT clinicians. We are currently completing the 12-month Continued Implementation phase (Phase IIb), which involves less intensive but still regular supervision, ongoing coordination with program administrators, and evaluation of the delivery of the treatment and patient outcomes. In the final 12-month Durability/ Practice phase (Phase III), the technology transfer intervention will be complete. Regular supervision by the MDFT team will be withdrawn, but we will continue to assess the impact of our training intervention on provider practices and adherence to MDFT parameters and techniques, as well as on program and environmental factors, and client outcomes.

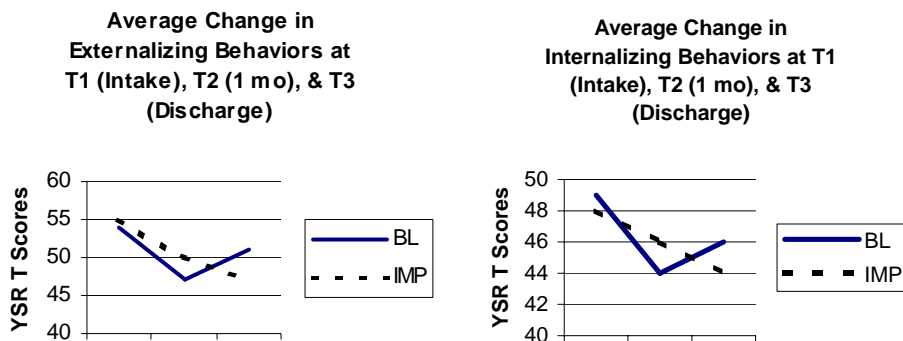
Although the MDFT team has had extensive experience in developing and evaluating methods for training and supervising family therapists (e.g., Liddle et al, 1988, 1997), this study is noteworthy in that we are attempting to train a multidisciplinary clinical team with a broader range of training needs and experience, more of a drug counseling orientation, and less of a family therapy background than has been the norm in our other studies. This required us to adapt many of the techniques used successfully and refined over the years in our previous clinical trials. For example, training had to begin with group didactic sessions in which basic information about adolescent development, families, drug addiction, the recovery process, and other core MDFT topics were presented. Providers from different disciplines, e.g. social workers, mental health technicians (MHT's), and teachers had to be trained separately to address their specific roles on the unit, and MDFT materials had to be re-formatted to better fit their diverse training and experience levels. Training time thus varied accordingly.

Preliminary data from this technology transfer effort are very encouraging. We first examined whether the intervention effectively changed therapist practices in accordance with MDFT guidelines. Paired sample t-tests of therapeutic contact log data indicated that therapists did indeed have more treatment sessions and more contacts with families and other important contacts in the adolescent's life (as prescribed by the MDFT model) during Implementation (following MDFT training) than in the Baseline (pre-training) phase. Therapists demonstrated (on a per case basis) a 140% increase in the number of individual sessions held (from 1.0 at Baseline to 2.4 at Implementation per week), a 267% increase in family therapy sessions (from .3 at Baseline to 1.1 at Implementation per week), a 63% increase in out-of-session phone contacts with parents (from 7.6 at Baseline to 12.4 at Implementation per week), and a 750% increase in contacts with juvenile justice personnel (from .8 at Baseline to 6.8 at Implementation per week) (all significant at $p < .001$). Additionally, the ADTP therapists demonstrated a 1,600% increase in contacts with school personnel (from .04 to .68 per week) from Baseline to Implementation ($p = .01$). These changes in practice patterns not only reflect our success in motivating community based therapists to adhere more closely to the parameters prescribed by the MDFT model but also are promising given research findings that suggest that greater dosage during drug treatment is associated with better outcomes for both teens (Latimer et al, 2000) and adults (Simpson, 1997; Condelli & Hubbard, 1994).

A related goal of the study was to assess the impact of our MDFT technology transfer intervention on the organizational climate of the ADTP, as measured by adolescent reports about a range of program factors using the COPEs (Moos, 1996). This instrument was administered at discharge from therapy to 20 adolescents during the Baseline phase of the study and to another 13 during Implementation, and the results compared using independent sample t-tests. These preliminary analyses indicated that the ADTP was judged by adolescent clients to be more organized and orderly ($p = .04$) and the program expectations to be clearer ($p = .01$) during the Implementation than the Baseline phase.

Finally, we were interested in determining if such changes in practice patterns and

organizational climate translated into improved client outcomes. Preliminary results suggest that they do. Repeated measures analyses of variance (RMANOVA) indicated that in the Baseline phase sample, adolescents reported a 25% reduction in marijuana use from intake to their 1-month assessment, whereas adolescents in the Implementation phase reported a 50% reduction in marijuana use over that 1-month period ($p=.13$, $\eta^2=.04$). In terms of other problem behavior outcomes, we found that adolescents entering the ADTP during the Baseline phase reported a 13% decrease in externalizing symptoms from intake to the 1-month assessment but an 8% increase (worsening) from the 1-month to the discharge assessment. By contrast, adolescents entering the ADTP during the Implementation phase reported an 11% decrease in externalizing symptoms from intake to the 1-month assessment and an additional 6% decrease from the 1-month to the discharge assessment. Although this preliminary sample is not yet large enough to show statistical significance, there appeared to be a clinically meaningful underlying quadratic trend in these data ($\eta^2=.06$). Parent reports of their adolescent's externalizing behaviors produced an identical effect size for the same underlying quadratic trend. There also was a quadratic trend underlying the adolescent reports of internalizing symptoms approaching statistical significance ($p=.08$, $\eta^2=.11$). Again, greater reductions in internalizing symptoms were evident in the Implementation than the Baseline phase. These findings are represented graphically in the figures below.



We also have initial evidence to suggest that the positive changes in therapists' practice patterns that were demonstrated during the Implementation phase were linked to the more dramatic improvement in client outcomes during this same phase as compared to Baseline. For instance, the correlation between the change in number of individual and family sessions from Baseline to Implementation and the change in adolescent-reported internalizing and externalizing symptoms from intake to discharge was clinically meaningful ($r > .30$). Additionally, the correlation between the change in number of out of session phone contacts with parents and the change in parent-reported adolescent externalizing symptoms was also clinically meaningful ($r = .50$). Finally, an association was also found between changes in therapists' practice patterns and reductions in adolescents' self-reported marijuana use ($r > .25$). Thus, there appears to be an association between therapists' utilization of the MDFT model and the demonstrated improvements in adolescent outcomes over the course of this dissemination study.

In sum, although preliminary, we are very encouraged by these results of our first systematic technology transfer attempt. These findings indicate that MDFT can be successfully adapted and transported into community drug treatment settings, and that this dissemination effort had a positive impact on therapist practice patterns, the organizational climate of the treatment program, and client outcomes. Further, there may be links between therapists' use of MDFT in day-to-day practice and the better client outcomes that were achieved following training in this model. The next logical steps in this program of research are (1) to modify the model further to create a brief, more community-friendly and hence more transportable version of MDFT ("Brief Family-Based Therapy for Adolescent Drug Abusers," R01 DA015995, H. Liddle, PI), and (2) to modify the training intervention itself to more effectively and efficiently improve the practices of community-based drug counselors working with adolescents, as is proposed in the current study. In these new endeavors, we will be developing more rigorous methods to evaluate community therapist adherence and competence in delivering MDFT following training in the model, and we propose to apply more sophisticated analytic techniques to link our training system with client outcomes.

2. Liddle, H. A. (P.I.), Dakof, G., Rowe, C., & Henderson, C. Brief Family-Based Therapy for Adolescent Drug Abuse. NIDA Grant No. 1 R01 DA015995.

This newly funded study responded to a NIDA initiative inviting applications for studies of how researchers could modify and test "community-friendly" versions of empirically supported treatments for use in practice settings. The study is a 3-year treatment development study in which we will develop and evaluate through an iterative process a brief, prescriptive, 8-session, family-based therapy for adolescent drug abusers that is specifically intended to be community-friendly. This treatment will be a brief therapy adaptation of MDFT. As part of the proposed project, a therapy manual for this brief version of the treatment (MDFT-B) and associated training materials, suitable for use with community-based drug counselors will be produced. Therapist adherence and competence measures also will be developed. This will be followed by a randomized, controlled pilot study of 70 adolescent drug abusers and their families, in which we will test the acceptability and efficacy of MDFT-B versus Community Treatment As Usual (CTAU), and examine predictors of outcome in both. The study will be carried out in a local community treatment agency, using existing clinic staff to deliver the treatments. Drug use outcomes and changes in prosocial functioning will be assessed during treatment, at termination, and at 3 and 6 months post-intake. The study could produce one of the first brief, family-based therapies for adolescent drug abusers and yield findings that would have significant implications for technology transfer efforts.

Funding Agency	NIDA
Amount of Grant	\$891,749
Time period	2002-2005
Principal Investigator	H. Liddle
Investigators	G. Dakof, C. Rowe, C. Henderson
Consultants	S. Abrams

	D. Becker G. Diamond G. Diamond A. Hogue
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3. Training Community Drug Treatment Clinicians in An Empirically-Supported Family-Based Therapy

Emerging technology transfer research in drug abuse treatment and related fields suggests that the adoption of empirically supported treatments in community programs may be greatly facilitated with the creation of more innovative, multidimensional training systems that address the many barriers to learning that have been noted in practice settings. This proposed 4-year study, submitted in response to NIDA RFA DA-03-005, aims to develop a theory-based, multicomponent community therapist training system (CTTS) that will teach and foster competence among community drug treatment providers in the application of MDFT, a manualized, empirically-supported therapy designed for drug abusing adolescents. The proposed study will pilot test the feasibility, acceptability and impact of the CTTS in changing provider practices and client outcomes. An innovative aspect of the project is the plan to use new technologies (CD-ROM and PDA) to supplement existing training methods in order to facilitate the learning, mastery, and continued use of the manualized treatment following training. A total of 40 community therapists and 10 program directors from 10 drug abuse treatment sites, as well as 140 adolescent clients and their parents, will constitute the study sample. Using an interrupted time series design, with multiple measures pre- and post-training, we will examine changes in therapist practice patterns and client outcomes over time, in relation to training by means of the CTTS. The study has 4 aims: 1) Develop a theory-based, manual-guided training system (CTTS) with 4 basic components (workshop, treatment manual, case consultation reviews, and multimedia technology tools) for teaching community clinicians an empirically-supported family-based adolescent drug abuse therapy (MDFT); 2) Experimentally investigate therapists' satisfaction with the CTTS and its effectiveness in changing providers' practices in line with MDFT protocols; 3) Examine predictors of training outcome; and 4) Examine the impact of MDFT training on adolescent drug use and associated behavioral outcomes. In Phase I (Start-up: 6 months and Baseline: 12 months), we propose to develop the training system, conduct a pre-pilot test of the training modules and collect baseline data on clinicians' practice patterns and case outcomes. The experimental training intervention (CTTS) will be implemented with community providers in Phase 2 (Training: 6 months). We will evaluate the feasibility and acceptability of the CTTS with therapists and program directors during the Training phase and into Phase 3 (Implementation: 12 months). In the Implementation phase, training will end and providers' practices and their case outcomes will continue to be tracked to evaluate the impact of training effects after MDFT experts withdraw. During the final phase of the study (Phase 4: 12 months), investigators will analyze study results and revise the CTTS accordingly. The study has potential to reduce the research-practice gap by creating a transferable and effective training system that can be used in

community agencies with existing resources to train front line providers in an effective family-based treatment for drug abusing adolescents.

Funding Agency	NIDA
Amount of Grant	\$1,511,395
Time period	2003-2007
Principal Investigator	H. Liddle
Co-Principal Investigator	A. Frank
Investigators	C. Henderson, C. Rowe

VIII. Long-Term Outcomes of Adolescents in Drug Treatment

Dakof, G. (P.I.), Liddle, H. A., Rowe, C., & French, M.. Long-Term Outcomes of Adolescents in Drug Treatment. NIDA Grant No. 1 R01 DA15412.

This project expands the scope of an ongoing randomized study in which MDFT is being tested against residential treatment for severe, dually diagnosed adolescent drug abusers by extending the follow-up period of the study into young adulthood. The study entails the first controlled long-term study of two state-of-the-science, commonly-practiced treatment modalities for adolescent drug abuse--intensive family-based treatment and residential treatment. Youth and their parents/guardians will be assessed at 2, 3, and 4-year follow-up periods on a range of drug use, family and psychosocial functioning, as well as economic evaluation measures. The study has three aims: (a) to compare the long term effectiveness of residential treatment with outpatient, family-based treatment; (b) to examine the relationships among predictors and outcome variables during the four-year post intake period; and (c) to contrast the total and net long-term monetary benefits of the residential treatment and the outpatient family based treatment.

IX. Psychiatric Comorbidity and Adolescent Drug Treatment

Rowe, C. (P.I.). Comorbidity and Adolescent Drug Abuse Treatment. NIDA Grant No. 1 R03 DA13657-01

Rowe, C. L., Liddle, H. A., Caruso, J., & Dakof, G. A. (in press). Clinical variations of adolescent substance abuse: An empirically based typology. Journal of Child and Adolescent Substance Abuse.

Rowe, C., Liddle, H. Greenbaum, P., & Henderson, C. (in press). Impact of psychiatric comorbidity on treatment outcomes of adolescent drug abusers. Journal of Substance Abuse Treatment.

Another area of work within the CTRADA program of research has been the investigation of psychiatric comorbidity and its impact on drug treatment outcomes. An initial study explored differences at intake to treatment between adolescent substance abusers in different comorbid groups (Rowe, Liddle, & Dakof, 2001). Three clinically distinct groups emerged when teens were classified based on established cut-off scores on adolescent and parent reports of youth externalizing and internalizing symptoms:

Externalizers (high externalizing symptoms; normal range internalizing symptoms), Exclusive Substance Abusers (normal range internalizing and externalizing symptoms), and Mixed Substance Abusers (high externalizing and internalizing symptoms). Exclusive Substance Abusers showed a general pattern of more positive family relationships, less family conflict, less parental psychopathology, and less substance use than either of the other groups. Adolescents in the Mixed group had parents with significantly greater psychopathology than either of the other groups. This study revealed that clinically referred adolescent substance abusers with comorbid externalizing problems and those with high levels of both externalizing and internalizing problems are likely to be challenging to treat and may be at high risk for treatment failure. A follow up study explored the differential predictors of drug use among these comorbid groups upon intake to treatment and found that contrary to the “self medication” hypothesis, internalizing symptoms did not predict drug use for any of the group (in fact, internalizing symptoms were *negatively* correlated with drug use). Rather, across groups, externalizing symptoms were the strongest predictor of drug use. Further, peer drug use was a stronger predictor of teen drug use for Externalizers than Mixed youth, and family dysfunction was a more salient factor in the drug use of Mixed teens than Externalizers (Rowe, Henderson, Dakof, & Liddle, 2002).

These investigators have also explored the impact of comorbidity on treatment outcomes in two studies. A study examining the long-term trajectories of different comorbid groups revealed that Exclusive Substance Abusers, who had a diagnosable substance use disorder but no comorbid psychiatric disorders based on the DISC, had the most positive treatment outcomes in both MDFT and CBT in terms of their drug use from intake to 12 months post-treatment (Rowe, Liddle, Dakof, & Tejada, 2001). A second study investigated the predictive validity of a typology designed to provide a more multidimensional and clinically meaningful classification scheme than simply grouping adolescent substance abusers on psychiatric comorbidity. The cluster analysis, which was based on 10 variables including risk and protective factors, associated psychopathology and other problems, and substance use severity, revealed three groups similar to the groups described above: Exclusive Substance Abusers had the lowest level of overall risk, substance use, and comorbid symptoms; Mixed Substance had the greatest family risk and comorbid psychopathology; and Deviant Substance Abusers were distinguished by serious substance abuse and peer substance use. When examined over the course of treatment in MDFT and CBT and up to 12 months post-discharge, Deviant Substance Abusers had the poorest behavioral outcomes (Rowe, Liddle, & Caruso, under review). These studies are aimed at identifying future treatment development directions in MDFT to more effectively intervene with teens with a range of presenting problems.

X. Engaging Substance Abusing Adults and Adolescents in Treatment

Dakof, G.A. Tejada, M., & Liddle, H.A. (2001). Predictors of engagement in adolescent drug abuse treatment. Journal of the American Academy of Child and Adolescent Psychiatry, 40, 274 –281.

The objective of this study was to identify key demographic, parent, and adolescent pre-treatment factors that influence engagement into outpatient drug abuse treatment. Youths

aged 12 – 17 years (N= 224, 81% male, 72% African American) referred for drug treatment and their parents participated in this study. Marijuana was the primary substance of abuse. Data were gathered prior to treatment on demographic variables as well as on both parent and youth perspectives on youth, parent, and family functioning. A discriminant function analysis revealed that engagement in treatment is related to, in order of weighting, more positive parental expectations for their adolescent's educational achievement (SDF = 0.68), higher parental reports of youth externalizing symptoms (SDF = 0.59), and higher levels of family conflict perceived by the youth (SDF = 0.36). Family income, gender, minority group status, juvenile justice status, family structure, mother's age and psychopathology, and treatment characteristics did not distinguish treatment engaged from unengaged adolescents. The results suggest that both parent and youth perceptions are pivotal to whether or not adolescents are engaged into psychotherapy. These findings support the MDFT emphasis on working with both the youth and his or her parents, and directly influence MDFT treatment development issues concerning engagement and retention.

Dakof, G. A., Quille, T. J., Tejada, M. J., Alberga, L. R., Bandstra, E., & Szapocznik, J. (2003). Enrolling and retaining mothers of substance-exposed infants in drug abuse treatment. Journal of Consulting and Clinical Psychology, 71, 764-772.

The Engaging Moms Program (EMP) was designed to address the need for interventions to increase drug abuse treatment enrollment and retention. This first study compared in a controlled, randomized trial, EMP to typical community services as usual (CSAU). The latter included (a) an in-home psychosocial evaluation, (b) a referral to a drug treatment program, (c) a follow-up phone call within a day of the scheduled initial treatment appointment, and (d) whatever enrollment and retention interventions were provided by the drug treatment program to which they were referred. The sample consisted of 103 black mothers of substance-exposed infants who had been reported to the state child welfare department for investigation of child abuse or neglect. These women were predominantly low income, uneducated, single mothers with primary addiction to cocaine. The intent of this brief (8 – 12) week, home-based, family-oriented engagement approach was to induce drug-abusing mothers of substance exposed infants to enter and remain in community drug treatment programs.

Chi-square and logistic regression analyses were employed to investigate whether more mothers randomly assigned to the EMP would enroll in and receive the first critical four weeks of substance abuse treatment than women assigned to the CSAU condition. This hypothesis was confirmed. Significantly more mothers in the EMP enrolled into drug abuse treatment than did women in CSAU (88% versus 46%; $\chi^2(1, N = 103) = 20.62, p < .001, OR=8.75$). Put in practical terms, mothers assigned to EMP were almost 9 times more likely to enroll in treatment than those randomly assigned to the CSAU condition. A logistic regression analysis indicated that this effect was due to the intervention and not other factors (e.g., motivation, severity of symptoms, and treatment experiences). Further, 67% in EMP received at least four weeks of drug abuse treatment compared to 38% of the control women ($\chi^2(1, N = 103) = 8.12, p = .004, OR=3.2$). However, a relatively small number of women in each group remained in treatment for 90 days or longer (EMP=39%, CSAU=35%). Logistic regressions revealed that only readiness for treatment, a measure of intrinsic motivation, predicted 90-day treatment retention. In sum, we learned from this study that the EMP has considerable promise in facilitating drug treatment entry and initial engagement. However, the results suggested that further improvements and modifications would be necessary in order for the EMP to positively impact long-term treatment retention. Moreover, in this initial study, other psychosocial outcomes were not evaluated, leaving open the question of whether EMP could have effects beyond treatment enrollment and retention (Please see Engaging

Mom's: An Intervention for Family Drug Court under the previous section of this document, Drug Court Evaluations to see how these modifications were built into an ongoing study).

XI. Gender Differences in Adolescent Drug Abuse

Dakof, G. A. (2000). Understanding gender differences in adolescent drug abuse: Issues of comorbidity and family functioning. Journal of Psychoactive Drugs, 32, 25-32.

This study investigated gender differences in patterns of comorbidity and family functioning in 95 adolescents (mean age 15.2 yrs) referred for substance abuse treatment. Data were obtained from parents and adolescents during treatment evaluations. The findings indicate that male and female adolescent substance users differed in several clinically meaningful ways. Drug-using females used drugs and engaged in externalizing behaviors as extensively as males, but were distinguished by their higher levels of internalizing symptoms and family dysfunction. Families of substance-abusing girls had more conflict and less cohesion than families of substance-using males. Undoubtedly, these findings indicate that adolescent girls who abuse drugs render a particular portrait of psychological disturbance.

XII. Summary

This document summarizes the MDFT effectiveness and mechanisms studies completed and in process. As a developmentally- and ecologically oriented treatment, MDFT takes into account the interlocking environmental and individual systems in which clinically referred teenagers reside. The clinical outcomes achieved in the four completed controlled trials (one of which was a multi-site study not conducted by the developer of MDFT, and another was a prevention trial, which also was not conducted by the developer) include success in functional areas that have been found to be causative in creating dysfunction, including family factors, drug use, peer deviance factors, and externalizing and internalizing variables in core areas that create and perpetuate dysfunction. We also have data to suggest that this treatment can facilitate positive, prosocial development and increase in protective factors as well. This includes positive changes in parenting practices, school functioning, and overall family functioning. We have tracked outcomes to one year post treatment and have found that the effectiveness of the treatment on decreasing negative symptoms and increasing positive factors can be retained without any post treatment booster sessions. The cost of this treatment relative to contemporary estimates of similar outpatient treatment is favorable toward MDFT. The clinical trials have not included any treatment as usual or weak control conditions, they have all tested MDFT against other manualized, commonly used interventions. The approach is manualized (Liddle, 2001), training materials have been developed, and we have demonstrated that the treatment can be taught to clinic therapists.

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