Published in final edited form as:
*Child Adolesc Psychiatr Clin N Am*. 2010 July ; 19(3): 563–576. doi:10.1016/j.chc.2010.03.008.

# Multidimensional Family Therapy: Addressing Co-Occurring Substance Abuse and Other Problems among Adolescents with Comprehensive Family-Based Treatment

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## Synopsis

Adolescent substance abuse rarely occurs without other psychiatric and developmental problems, yet it is often treated and researched as if it can be isolated from comorbid conditions. Few comprehensive interventions are available that effectively address the range of co-occurring problems associated with adolescent substance abuse. This article reviews the clinical interventions and research evidence supporting the use of Multidimensional Family Therapy (MDFT) for adolescents with substance abuse and co-occurring problems. MDFT is uniquely suited to address adolescent substance abuse and related disorders given its comprehensive interventions that systematically target the multiple interacting risk factors underlying many developmental disruptions of adolescence.

### Keywords

adolescent substance abuse; delinquency; families; Multidimensional Family Therapy; co-occurring disorders

Adolescent substance abuse rarely occurs in isolation from other developmental and psychiatric problems. Studies with community-based, clinical, and juvenile justice samples alike document that adolescent substance abuse is frequently comorbid with a host of other psychiatric disorders, most commonly conduct disorder (CD), attention deficit-hyperactivity disorder (ADHD), depression, and posttraumatic stress disorder (PTSD) [1,2,3,4,5]. Rates of co-occurring adolescent substance use and psychiatric disorders average 60% in community-based samples [6] and can range up to 80-90% in treatment and juvenile justice samples [7,8,9,10]. Several studies also show that treatment engagement and successful outcomes can be more difficult to achieve with adolescents who have co-occurring substance use and psychiatric disorders [9,11,12,13]. Many substance abusing youth with severe conduct disorder are at risk to progress to antisocial personality disorder and to experience chronic substance abuse, mental health, employment, health, and relationship difficulties into adulthood [14,15].



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"Common factor" or "general deviance" models are often invoked to explain the close association between substance use and psychiatric disorders, particularly externalizing problems such as CD [2]. In fact, as posited by Jessor and Jessor's [16] "problem behavior theory," adolescent substance abuse tends to co-occur with a range of other disruptive behaviors that can have long-term consequences, including unsafe sexual practices, school failure, and social isolation, alienation, and conflict. The consistent clustering of these behaviors and evidence that they can have reciprocal effects [17] has led to the examination of shared risk factors that may explain a range of adolescent problems, such as early temperament and environmental vulnerabilities [18,19]. Given that common risk factors are known to contribute to substance abuse and other disorders in adolescence, addressing these vulnerabilities and promoting protective processes through targeted intervention may have broad and lasting effects [20,21].

Family factors including parental rejection and family conflict, ineffective monitoring and parental discipline strategies, and compromised parental functioning due to substance abuse and mental health problems are among the strongest and most consistent predictors of adolescent problem behaviors such as substance abuse and conduct disorder [22,23]. Protective factors within the family can also buffer against the negative impact of risk factors such as deviant peer involvement [24]. In fact, involved and supportive parenting was even found to ameliorate genetic risk for adolescent drug abuse in a recent study [25]. The consistent associations among family factors and adolescent problem behaviors, as well as strong empirical support for family-based interventions tested in a number of rigorously controlled trials in the past two decades [26,27], has firmly established family involvement as a critical ingredient in the treatment of adolescent substance use disorders [28]. And, because family factors predict a range of problems in adolescence, including internalized distress and externalizing behaviors, intervening to change negative interactions and patterns within the family may also be critical in impacting co-occurring disorders as well as teen substance abuse.

Unfortunately, while several treatments have been shown to reduce adolescent substance use [26,27], many of these interventions focus on alleviating substance use alone rather than targeting multiple adolescent problem behaviors. Additionally, with community programs and funding generally fragmented into either substance abuse or mental health silos, progress in developing and implementing effective interventions for co-occurring disorders has been slow [29,30]. Clinical research that purposely excludes complex cases with multiple comorbidities has not helped matters. Thus there are few examples of broad-based interventions that simultaneously and effectively tackle substance abuse, related risky behaviors such as unsafe sexual practices, delinquency, psychiatric symptoms, and school problems among adolescents [2]. Given that substance abuse among teens tends to co-occur with and may exacerbate (and be exacerbated by) other emotional and behavioral problems, interventions for this population must address multiple comorbidities [28]. In fact, integrated interventions that simultaneously treat SUDs and co-occurring problems are frequently recommended [3,5,31], but are rare in practice.

In recent guideline and review papers of co-occurring disorders for both teens and adults, several experts call for interventions for substance abuse and mental health problems that are delivered in a truly integrated way rather than distinct treatments offered concurrently or consecutively [5,31]. For instance, AACAP practice parameters for the treatment of adolescent substance abuse include both thorough assessment of possible co-occurring disorders as well as systematic incorporation of pharmacological agents and other psychosocial interventions that address psychiatric symptoms [28]. Similarly, in addition to multidimensional assessment of potential comorbidities, Kaminer and colleagues [3] recommend "simultaneous and coordinated implementation of psychiatric and substance

abuse treatment services" in which psychotherapy targets the range of presenting symptoms and medications are utilized and closely monitored to reduce the debilitating symptoms of disorders such as depression. Although there appears to be consensus on the importance of such coordination and integration to reduce substance abuse and comorbid conditions among teens, there are few empirical studies of truly integrated approaches or detailed clinical protocols for how such a model can be delivered in practice.

In this article, the authors review the evidence base for Multidimensional Family Therapy (MDFT) [32], a comprehensive treatment that targets change in the multiple domains of the teen's life that are known to influence the development and maintenance of substance abuse and other problems. Clinical effectiveness of MDFT has been demonstrated in 5 completed randomized controlled clinical trials (RCTs) and with promising interim findings from the same number of ongoing RCTs as well [33,34,35,36,37]. The model is recognized as exemplary in independent reviews and is regularly listed as a best practice model for teen drug abuse and delinquency [27,38,39,40,41,42,43,44].

MDFT was recently included in a review of "a handful of research-supported integrated interventions that simultaneously address both mental health and substance use disorders" ([2] p. 207). In this review, Hawkins emphasizes the negative clinical, systems, and policy implications of separating mental health and substance abuse arbitrarily into different categories for funding and treatment purposes. "Both mental health and substance abuse disorders must be conceptualized as psychiatric conditions, with common developmental etiologies and trajectories," Hawkins concludes ([2] p. 215); "In an adolescent with co-occurring disorders, both conditions must be considered primary and treated as such." Additional recommendations made in this review include reconceptualizing adolescent co-occurring disorders as chronic relapsing conditions potentially requiring multiple treatments, follow up, and after care; greater attention and resources devoted to prevention and early intervention; simultaneous and integrated care plans for behavioral, emotional, and substance abuse disorders; and closer collaboration among agencies so that adolescents and families may access comprehensive quality services through any possible route, whether it be schools, courts, child welfare systems, mental health clinics, substance abuse treatment programs, or other social service agencies. Finally, the review concludes that additional research is needed to determine mechanisms and effects of treatment models with adolescents suffering from different types of co-occurring disorders.

This article describes a comprehensive family-based approach to treating adolescent substance abuse and related comorbid conditions. Following a discussion of the clinical approach, the paper reviews findings supporting MDFT's ability to achieve reductions in adolescent substance abuse, as well as co-occurring problems including risky sexual behaviors, school problems, delinquency, and mental health symptoms. Finally, the conclusions briefly present certain challenges and the need for additional research on this and similar models.

## Multidimensional Family Therapy

MDFT is an integrative outpatient treatment that has blended family therapy, individual therapy, drug counseling, and multiple-systems oriented intervention approaches [45]. Interventions target the interconnected domains of adolescent development, and within these contexts, the circumstances and processes known to create and/or continue dysfunction [46,47]. MDFT interventions work in four domains: changes in the adolescent (intrapersonal and relational development issues), the parent(s) (individual functioning of the parent as well as parenting), the family environment (family transactional patterns), and extrafamilial systems of influence on the adolescent and family (e.g., working with schools, social service

agencies, or the juvenile justice system). Early stage interventions aim to develop multiple alliances with teens, parents, and influential members of extrafamilial systems, as well as motivating each to participate and change. Systematic and effective engagement strategies have paid off in high retention rates. For example, 87% of families completed 3 months of intensive outpatient MDFT as compared to 59% in residential treatment; and 96% of young teens and families completed 4 months of MDFT as compared to 78% in group therapy [48]. Further, MDFT retained 97% of youth in treatment during detention stays as compared to 65% of youth receiving services as usual (SAU) in detention; 87% percent of youth in MDFT were retained in outpatient treatment for 3 months following detention release, compared to only 23% of youth in SAU [49].

MDFT is a *treatment system* and not a singular, “one-size-fits-all- approach” [50]. It has been adapted and tested in various forms or versions according to target population and contextual characteristics in community-based clinical trials with samples of substance abusing teens with high rates of comorbid emotional and behavioral problems. Studies of MDFT have been conducted at sites across the United States and Europe, among diverse samples of adolescents (African American, Hispanic, and Caucasian youth ages 11 to 18) in urban, suburban, and rural settings, and youth of various socioeconomic backgrounds. These studies have primarily been conducted in community settings with masters-level non-research clinicians, increasing the transfer potential of the approach to standard clinical and juvenile justice settings. In fact, the model has been implemented successfully in substance abuse, mental health and juvenile justice settings across the U.S. and in Canada and several European countries.

Several features of the MDFT model are hypothesized to increase its success with teens experiencing multiple problems. First, as recommended in virtually every review or practice guideline for co-occurring disorders, MDFT stage 1 work involves comprehensive, multidimensional assessment. Assessment in MDFT provides a therapeutic “map,” directing therapists where to intervene in the multiple domains of the adolescent's life. A comprehensive, multidimensional assessment process involves not only the identification of different problem areas, symptoms, and co-occurring disorders, but also risk and protective factors in all relevant domains, so that these factors can be targeted for change. Through a series of individual and family interviews, meetings with school, court, and other mental health professionals, and observations of directed family interactions, the therapist seeks to answer critical questions about functioning in each area of the adolescent's life. Assessment is based on empirically derived knowledge of the deficits of adolescent substance abusers and their life contexts as well as areas of strength, so as to provide a complete clinical picture of the unique combination of assets and weaknesses that the adolescent, family, and other systems bring to therapy. Assessment is an ongoing process throughout therapy, continually integrated with interventions to calibrate treatment planning and execution and addressing what hasn't yet been sufficiently resolved.

Second, guided by this multidimensional assessment, the model addresses common root factors underlying a range of emotional and behavioral symptoms that co-occur with adolescent substance abuse, most importantly family relationship factors, parenting practices, family conflict and communication, and parental substance abuse. Because these shared factors have an influence on a range of negative developmental outcomes, the intensive work done in all domains of the therapy, but especially family sessions, alters the trajectories of these risk factors, promotes protective processes, and presumably improves adolescents' outcomes as well.

Third, the therapy mobilizes and actively coordinates the efforts of many different systems impacting the teen's life, including other mental health services and psychiatric consultation.

A previous review of the model's integrative treatment development framework described the systematic way in which MDFT therapists collaborate with psychiatrists in the treatment of adolescents with comorbid substance abuse and psychiatric problems [51]. As with other components of MDFT, the therapist strive to integrate psychopharmacological interventions into the adolescent's overall treatment plan in a way that is consistent with MDFT theory and principles, and that they are based on a comprehensive evaluation of the adolescent's functioning. MDFT therapists work in close collaboration with child/adolescent psychiatrists, encouraging the teen and family to participate actively in the close monitoring and integration of medication into the comprehensive treatment plan. The psychiatrist is integrated as an important member of the therapeutic team, and MDFT therapists may arrange conjoint phone calls and/or face-to-face visits with the family to monitor symptoms, compliance issues, and the effectiveness of medications. Medications are presented to teens and families as important in reducing the impact of symptoms, as well as improving the teen's functioning so that he or she is more effective in his or her efforts in MDFT, school, and home.

Fourth, this type of active collaboration and coordination of services is also critical in reducing school problems. School success and reconnection are among the most important areas of work in MDFT because they are critical in creating a prosocial trajectory for the teen. Work in this realm is one of the most direct ways to bolster protective factors for teens since it gives them a sense of accomplishment, a powerful success experience, a tangible product (either a GED or high school diploma), and new relationships with more positive peers and adult advocates and role models. MDFT therapists, with parents, work actively with school personnel to institute changes in this realm, including integration of special programs, tutoring, and vocational training. Tutoring and vocational training services have also been established within several MDFT teams so that these efforts can be truly integrated with the MDFT treatment.

Fifth, conduct problems and delinquency are addressed not only in ongoing individual and family sessions, but also through intensive collaborative work with representatives from the juvenile justice system. Using the same principles of alliance building, regularity and consistency of contacts, and careful assessment and follow through that characterize the therapist's work in all domains, these relationships are built on respect and mutual accountability for the adolescent's outcome. Therapists clarify with the probation officer (PO) the monitoring protocol (e.g., weekly drug screens, meetings, etc.) and takes steps with the adolescent and family to abide by the PO's requests. The therapist offers an analysis of the teen and family that provides hope for change, helping the PO understand that the focus on family relationship dynamics will pay off in practical terms - in better parental monitoring and compliance to the terms of probation. Judges also must have adequate information on treatment in order to make informed decisions on the disposition of adolescent cases; not only an understanding of the theory and the science supporting MDFT's efficacy, but also the basic structure and progress in therapy. In the end, POs and judges act on their experience with the teens and families, and therapists can help emphasize areas of progress and strengths that may elicit reasonableness from the system.

Finally, MDFT treatment incorporates specific protocols for addressing certain symptoms, such as depression and trauma, as well as high risk behaviors. For example, a new module created as part of the “Detention to Community” study described below [49] integrated multifamily groups within ongoing MDFT for the specific purpose of reducing high risk sexual behaviors. Marvel et al [52] described the process of developing and testing this new component of MDFT with juveniles recruited in detention and following release to the community. First, treatment developers designed the new HIV/STD prevention multi-family groups focusing specifically on reducing sexual risk taking behaviors; and second, the

groups were integrated into ongoing adolescent, parent, and family sessions in MDFT. Multiple revisions, pilot testing, and a rigorous evaluation attest to the impact of the family-based HIV prevention module.

## Effects of Multidimensional Family Therapy on adolescent substance use

Previous reviews have demonstrated MDFT's potential to reduce adolescent drug and alcohol use to a greater extent than a range of high quality, closely monitored, active comparison interventions [22,26,27,39,42]. For instance, in the first randomized trial of MDFT conducted in the San Francisco Bay area in the mid-1980s, the model was compared to two manualized active treatments, Adolescent Group Therapy (AGT) and Multifamily Educational Intervention (MFEI) with 182 clinically referred drug and alcohol abusing adolescents [34]. The results revealed significant decreases in substance use and problem behaviors at termination for all treatments, with youth receiving MDFT showing significantly less substance use than the two comparison treatments. At the one-year follow-up, MDFT youth again decreased their substance use to a greater extent than either of the other treatments. The second randomized trial compared MDFT to an empirically supported, individual-based adolescent treatment - Cognitive Behavior Therapy (CBT) [36] with 224 primary male and African American adolescents referred to a drug treatment clinic in North Philadelphia. Youth who received MDFT showed more rapid decreases in psychological involvement with drugs through the 12-month follow-up. Additionally, youth receiving MDFT continued to improve following treatment discharge, so that at the 6- and 12-month follow-up assessments, their psychological involvement with substances was lower than youth in CBT. A greater proportion of youth receiving MDFT (64% vs. 44%) reported no or one occasion of drug use at the 12-month follow-up. A third randomized trial tested MDFT as an early intervention for 83 young minority adolescents (ages 11-15) referred for drug treatment in Miami [35]. MDFT youth showed greater decreases in marijuana and alcohol abuse than youth receiving a manualized CBT-based peer group treatment. Youth in MDFT were more likely to abstain from drug use, report no problems associated with drug use, and decrease their delinquent behavior more rapidly than youth in group treatment over 12 month follow-up [37].

The Cannabis Youth Treatment study, a rigorous 4-site clinical trial of 5 adolescent substance abuse treatment models [33], demonstrated the long-term sustainability of MDFT's effects on teens' substance use frequency and problems up to 30 months post-treatment [53]. This study also involved the first evaluation of adolescent drug treatment costs and benefits using standard economic methods, and found average weekly cost estimates of MDFT to compare favorably to cost parameters of standard outpatient adolescent treatment ($164 vs. $365) [54]. Benefit-cost analyses revealed that MDFT had a statistically significant baseline to 12 month reduction in drug use consequences and greater net benefits associated with reduced drug use consequences than a brief, inexpensive intervention (MET/CBT5) at 30 month follow-up [53].

To summarize, MDFT reduces drug and alcohol between 41% and 66% from intake to completion, and treatment gains are consistently maintained up to 1-year follow-up [34,35,36,37]. Between 64% and 93% of adolescents receiving MDFT report abstinence from substance use at 1-year [36,37]. MDFT also reduces the severity of substance-related impairment at 1-year post-intake; 93% of young adolescents in MDFT reported no substance-related problems at 12 month follow-up [37]. The rigorous multi-site CYT study also supports the sustainability of MDFT's effects and its positive benefit-cost ratio up to 30 month follow-up [53].

The research evidence supporting MDFT's effects is strong in several respects. First, the studies have shown favorable outcomes for youth in MDFT in comparison to other state-of-the-art, well articulated and carefully monitored treatments. Second, the studies have recruited clinically referred samples with a range of problems and we have achieved effects within community clinics, demonstrating MDFT's effectiveness in real-world settings as well as its efficacy. Third, youths' and families' functioning in a range of domains have been shown to improve during treatment and to maintain gains following treatment. In the following sections, we highlight findings from completed and ongoing studies that demonstrate MDFT's potential to address problem behaviors that frequently co-occur with substance abuse.

## Impact on delinquent behaviors and affiliation with delinquent peers

Four trials demonstrate that MDFT decreases delinquent behavior and affiliation with delinquent peers more than comparison treatments [34,37,49,55]. Hogue et al [55] tested Multidimensional Family Therapy as a prevention approach with a sample of at-risk, inner-city young adolescents and their families in North Philadelphia. Study participants were early adolescents (mean age 12.5 years), predominantly girls (56%), African American (97%), and from low income homes. Youth in MDFT showed greater gains than controls in decreasing involvement with antisocial peers over the3 course of the intervention. While controls reported *increased* peer delinquency, MDFT subjects *reduced* peer delinquency.

In the randomized trial of MDFT with clinically referred young teens described above, official court records showed that MDFT clients were less likely to be arrested or placed on probation than youth in group-based CBT over the 12 month follow-up period [35,37]. Similar to results in the prevention trial, while youth in the peer group treatment *increased* their affiliation with delinquent peers over the 12 month follow-up period, MDFT teens showed marked *reductions* in peer delinquency over this period [37].

In a third randomized trial, MDFT was tested as a therapeutic and cost effective outpatient alternative to residential treatment [56]. All teens had at least one comborbid psychiatric disorder in addition to an SUD and were referred for residential treatment. The average age was 15 (SD = 1.07); and the sample was predominantly male (74%), Hispanic (67%), and almost all were juvenile justice involved. Outcomes were assessed at intake, 2, 4, 12, 18, 24, 36, and 48 month follow-up. Consistent with hypotheses, from 2-18 months, youths in MDFT more rapidly decreased their self- and parent-reported aggressive behavior and self- and parent-reported delinquent activity than youths who received residential treatment. Further, residential treatment youths spent an average of 60 more days in controlled environments during the 18 month follow-up period than youths in MDFT, leading to an average of over $35,000 greater economic costs per client for residential treatment. Preliminary analyses also reveal that the gains favoring MDFT achieved through the 18 month are maintained through 48 months for self- and parent-reported aggressive behavior and parent-reported delinquency.

In the “Detention-to-Community” (DTC) study, MDFT was tested in a 2-site NIDA CJDATS randomized trial as a cross-systems integrative model with youths while they were in detention and providing continuous services in MDFT after they were released [49]. Starting in detention, eligible youths were randomized to MDFT or Enhanced Services as Usual (ESAU). Adolescents and their caregivers were assessed at intake to detention, discharge from detention, and at 3, 6, and 9 months following release from detention. Participants (average age of 15) were primarily male (82%) and African-American (60%); 17% were White, Non-Hispanic, and 22% were Hispanic. At intake, participants averaged 3.9 lifetime arrests (SD = 3.3), with 2.3 (SD = 2.1) in the last year. Youth receiving MDFT

were detained fewer days (following their original discharge from detention) than youth in services as usual. At one site that was characterized by greater juvenile justice systems collaboration, MDFT youth received less punitive dispositions (e.g., diversion, dropping charges, judicial warnings as opposed to being placed on probation or committed to Department of Juvenile Justice Custody) than youth in services as usual. The study is currently following participants at 18, 24, 36, and 42 months follow-up to determine long-term effects of the integrative MDFT-DTC model.

## Impact on school functioning

MDFT clients show significantly greater improvement in school behaviors and grades than youth in comparison treatments. For instance, in the first trial of MDFT, MDFT clients improved their grades drastically from mainly failing grades at intake to the majority receiving passing grades at 12 month follow-up. Specifically, in MDFT, only 25% had a GPA of C or higher at intake, whereas 76% were passing at 12 month follow-up; in family educational group, 36% were passing at intake compared to 40% at 12 month follow-up; and in peer group therapy, 43% were passing at intake compared to 60% at 12 month follow-up [34]. In the randomized trial of MDFT with clinically referred young teens described above, MDFT clients not only showed more significant improvements in academic grades, but also improved their “conduct grades” (or school behavior) to a greater extent than in peer group therapy [37]. Finally, in the prevention study described above with at-risk, inner-city young adolescents, MDFT more significantly increased school bonding than the control condition [55].

## Impact on HIV/STD risk behaviors

In the 2-site Detention-to-Community (DTC) randomized trial described above [49], we developed, and then experimentally tested, an integrated substance abuse treatment and HIV prevention intervention (MDFT-HIV) specifically for juvenile detainees. All youths received a high quality, but standard HIV prevention in detention, and MDFT youths received family-based HIV/STD prevention [52] during the outpatient phase. Youth receiving MDFT engaged in fewer unprotected sex acts between intake and 9 month follow-up at both sites.

## Impact on internalizing symptoms and outcome trajectories of youth with greater comorbidity

Two studies described above also demonstrate greater impact of MDFT on internalized distress, including both depression and anxiety symptoms. In our early adolescent trial, MDFT showed more significant effects on internalized distress between intake and 12 month follow-up than CBT peer group treatment [35,37]. In addition, in the DTC study, MDFT was more effective in reducing self-reported internalizing symptoms among youth recruited in detention facilities than services as usual [49].

Another important line of investigation has examined trajectories of youth with greater severity of comorbid problems in two randomized controlled trials [57]. In the trial comparing MDFT with individually-focused cognitive behavior therapy (CBT), and in the DTC study, analyses supported the distinctiveness of two classes of substance use severity, characterized primarily by adolescents with higher and lower initial severity (higher severity class having greater psychiatric comorbidity). As hypothesized, in both studies, the two treatments (MDFT and CBT in Study 1, and MDFT and ESAU in Study 2) were similarly effective in the classes with fewer comorbid diagnoses, but MDFT was more effective for the class with greater overall severity and comorbidity. Results suggest that general therapy

factors might be sufficient to understand outcomes for youth with less severe drug use and less comorbidity. However, for more severe drug users with greater psychiatric comorbidity, the results suggest specific treatment factors such as family-based, multiple systems interventions may produce comparatively superior treatment outcomes.

Finally, an ongoing randomized trial set in Greater New Orleans tests MDFT as an integrative family-based approach to treating comorbid substance abuse and trauma symptoms among teens and families in the wake of Hurricane Katrina. This study has a treatment development component in which MDFT developers have systematically incorporated trauma-focused interventions within the model [58]. The approach is unique in that few trauma-focused interventions have been integrated within an empirically supported substance abuse program. Additionally, few empirically-based trauma interventions concurrently address the stress and coping of teens and their parents, or leverage the healing potential of the family as a larger unit. Participants were adolescents aged 13 to 17 who had lived in a Greater New Orleans parish when Hurricane Katrina struck and were referred for drug treatment. Adolescents were randomized into standard group drug treatment or MDFT, both delivered within the same community-based treatment agency. Outcomes are assessed at intake, 2, 4, 6, and 12 months follow-up.

A total of 80 adolescents and their parents participated in the trial. The average age of participants was 15.6 (SD = 1.0) and the sample was predominantly male (87%) and juvenile justice involved (65% had 1 or more arrests at intake). The sample was 29% African American; 49% White, non-Hispanic, 4% Hispanic, and 3% other. Participants were primarily marijuana users with 21% meeting DSM-IV diagnostic criteria for cannabis dependence and 43% meeting criteria for cannabis abuse (another 18% had either alcohol abuse or dependence). A total of 68% met criteria for any substance use disorder. Comorbid psychiatric diagnoses were also common among youth (78%): 30% had conduct disorder, 21% generalized anxiety disorder, 34% ADHD, and 18% major depressive disorder. Trauma symptoms were of particular interest given high rates of PTSD among youth in previous disaster studies. In addition to the disruptive experience and aftermath of Hurricane Katrina, 73% had experienced the death of a loved one, and 71% reported one or more significant traumatic life events (average life events = 2). According to youth reports on the DISC, 29% had PTSD symptoms, and parents also reported high rates of youths' symptoms meeting criteria for PTSD (13%). Parents' own psychological symptoms were also high: 22% of parents scored in the clinical range on the BSI Global Severity Index; 41% were in the clinical range for depression; 45% for anxiety; 58% for somatization; 54% for obsessive-compulsive symptoms. According to youth and parent reports, 34% had a family member with an alcohol problem; 35% had a family member with a drug problem; and 45% had a family member with police/court involvement. While outcome analyses are ongoing, the study has demonstrated that an integrated substance abuse and trauma intervention could be delivered with youth and parents following a major disaster. Additionally, community-based providers delivered the approach with fidelity and good retention rates.

## Conclusions

Given the difficulties inherent in treating substance abusing youth with multiple impairments, including school failure, family dysfunction, relationships with antisocial, drug using peers, co-existing psychiatric disorders, high risk sexual behavior, and other problems, there is general agreement that interventions for these youth must be comprehensive and integrated [59]. Family-based approaches, such as MDFT, which target change in the multiple systems associated with development and maintenance of these problems, are among the most effective treatments for adolescent substance abuse and comorbid psychiatric symptoms [26,22].

Challenges remain, however, in maximizing the impact of these treatments on the range of problems that co-occur with adolescent substance abuse. Despite strong outcomes across many functional domains demonstrated here, it is certainly difficult to address all of the related problems that some adolescents and families present with given 4 to 6 months of even the most intensive treatment. Some have advocated for a chronic care model in which one treatment episode would set a foundation for ongoing services and booster sessions, but would not be considered a cure-all for the rest of the teen's development [2]. MDFT has not yet been tested as a continuing care model, however the model lends itself well to such an approach in practice.

Additionally, while certain features of the model are thought to explain MDFT's effects on multiple problems as outlined above, empirical research on mediators of such effects are only in beginning stages. Henderson et al [60] recently demonstrated that changes in parental monitoring mediated reductions in adolescent substance use in MDFT. However there is virtually no research examining mediators of co-occurring adolescent problems.

Finally, a new and extremely important area of research has to do with the modeling of different emotional and behavioral symptoms and how these trajectories interact over time, which would also apply in critical ways to treatment outcomes as well. For instance, Hussong et al [61] recently demonstrated using different growth curve models that substance use in late adolescence plays a “launching” role on trajectories of antisocial behavior in young adulthood, as well as predicting elevations at specific periods of time. This type of analyses, combined with parallel growth mixture modeling, has the potential to assist treatment researchers in understanding whether reductions in substance use drive decreases in other problem behaviors during and following treatment, or whether there are reciprocal effects. These and other studies represent great opportunities for further development of effective intervention for co-occurring adolescent problems.

## References


1. Couwenbergh C, van den Brink W, Zwart K, et al. Comorbid psychopathology in adolescents and young adults treated for substance use disorders. Eur Child Adolesc Psychiatry 2006;15:319–328. [PubMed: 16648966]
2. Hawkins EH. A tale of two systems: Co-Occurring mental health and substance abuse disorders treatment for adolescents. Annu Rev Psychol 2009;60:197–227. [PubMed: 19035824]
3. Kaminer Y, Connor DF, Curry JF. Treatment of comorbid adolescent cannabis use and major depressive disorder. Psychiatry 2008:9. [PubMed: 18284670]
4. Kandel DB, Huang FY, Davies M. Comorbidity between patterns of substance use dependence and psychiatric syndromes. Drug Alcohol Depend 2001;64(2):233–41. [PubMed: 11543993]
5. Riggs P. Clinical approach to treatment of ADHD in adolescents with substance use disorders and conduct disorder. J Am Acad Child Adolesc Psychiatry 1998;37:331–32. [PubMed: 9519639]
6. Armstrong TD, Costello EJ. Community studies on adolescent substance use, abuse, or dependence and psychiatric comorbidity. J Consult Clin Psychology 2002;70(6):1224–39.
7. Chan YF, Dennis ML, Funk RR. Prevalence and comorbidity of major internalizing and externalizing problems among adolescents and adults presenting to substance abuse treatment. J Subst Abuse Treat 2008;34:14–24. [PubMed: 17574804]
8. Robbins MS, Kumar S, Walker-Barnes C, et al. Ethnic differences in comorbidity among substance-abusing adolescents referred to outpatient therapy. J Am Acad Child Adolesc Psychiatry 2002;41(4):394–401. [PubMed: 11931595]
9. Rowe CL, Liddle HA, Greenbaum PE, et al. Impact of psychiatric comorbidity on treatment of adolescent drug abusers. Journal Subst Abuse Treat 2004;26(2):129–40.
10. Vreugdenhil C, Van Den Brink W, Wouters LF, et al. Substance use, substance used disorders, and comorbidity patterns in a representative sample of incarcerated male Dutch adolescents. J Nerv Ment Dis 2003;191:372–8. [PubMed: 12826918]

11. Cornelius JR, Maisto SA, Pollock NK, et al. Rapid relapse generally follows treatment for substance use disorders among adolescents. Addict Behav 2003;28(2):381–6. [PubMed: 12573689]
12. Grella CE, Hser YI, Joshi V, et al. Drug treatment outcomes for adolescents with comorbid mental health and substance abuse disorders. J Nerv Ment Dis 2001;189(6):384–92. [PubMed: 11434639]
13. Riggs, PDG.; Whitmore, EJ. Disruptive behavior disorders in children and adolescent. American Psychiatric Press; Washington DC: 1999. Substance use disorders and disruptive behavior disorders; p. 133-150.
14. Clingempeel WG, Britt SC, Henggeler SW. Beyond treatment effects: Comorbid psychopathologies and long term outcomes among substance-abusing delinquents. Am J Orthopsychiatry 2008;78(1):29–36. [PubMed: 18444724]
15. Myers MG, Stewart DG, Brown SA. Progression from conduct disorder to antisocial personality disorder following treatment for adolescent substance abuse. Am J Psychiatry 1998;155:479–485. [PubMed: 9545992]
16. Jessor, R.; Jessor, SL. Problem behavior and psychosocial development: a longitudinal study of youth. Academic Press; New York: 1977.
17. D'Amico EJ, Edelen MO, Miles JNV, et al. The longitudinal association between substance use and delinquency among high-risk youth. Drug Alcohol Depend 2008;93:85–92. [PubMed: 17977669]
18. Reinherz HG, Giaconia RM, Hauf AM, et al. General and specific childhood risk factors for depression and drug disorders by early adulthood. J Am Acad Child Adolesc Psychiatry 2000;39(2):223–31. [PubMed: 10673834]
19. Zucker RA, Donovan JE, Masten AS, et al. Early developmental processes and the continuity of risk for underage drinking and problem drinking. Pediatrics 2008;121:S252–72. [PubMed: 18381493]
20. Glantz MD. Introduction to the special issue on the impact of child psychopathology interventions on subsequent substance abuse: Pieces of the puzzle. J Consult Clin Psychology 2002;70(6):1203–06.
21. Spooner C, Hall W. Public policy and the prevention of substance abuse disorders. Current Opinion in Psychiatry 2002;15:235–239.
22. Rowe CL, Liddle HA. Substance abuse. J Marital Fam Therapy 2003;29(1):97–120.
23. Skeer M, McCormick MC, Normand ST, et al. A prospective study of familial conflict, psychological stress and the development of substance use disorders in adolescence. Drug Alcohol Depend 2009;104(1-2):65–72. [PubMed: 19446409]
24. Capaldi DM, Stoolmiller M, Kim HK, et al. Growth in alcohol use in at-risk adolescent boys: Two-part random effects prediction models. Drug Alcohol Depend 2009;105:109–117. [PubMed: 19625141]
25. Brody GH, Beach SRH, Philibert RA, et al. Parenting moderates a genetic vulnerability factor in longitudinal increases in youths' substance use. J Consult Clin Psychology 2009;77(1):1–11.
26. Hogue A, Liddle HA. Family-based treatment for adolescent substance abuse: controlled trials and new horizons in services research. Journal of Family Therapy 2009;31:126–54.
27. Williams RJ, Chang SY. A comprehensive and comparative review of adolescent substance abuse and treatment outcome. Clinical Psychology: Science and Practice 2000:138–66.
28. AACAP. Practice parameters for the assessment and treatment of children and adolescents with substance use disorders. J Am Acad Child Adolesc Psychiatry 2005:44.
29. Cleary M, Hunt G, Matheson S, et al. Psychosocial interventions for people with both severe mental illness and substance misuse. Cochrane Database of Systematic Reviews 2008;1:CD001088.
30. Hall W, Degenhardt L, Teesson M. Understanding comorbidity between substance use, anxiety, and affective disorders: Broadening the research base. Addict Behav 2009;34:526–530. [PubMed: 19386422]
31. Craig TK, Johnson S, McCrone P, et al. Integrated care for co-occurring disorders: Psychiatric symptoms, social functioning, and service costs at 18 months. Psychiatr Serv 2008;59(3):276–282. [PubMed: 18308908]

32. Liddle, HA. Volume 5 of the Cannabis Youth Treatment (CYT) manual series. Center for Substance Abuse Treatment, Substance Abuse and Mental Health Services; Rockville, MD: Multidimensional Family Therapy for adolescent cannabis users.
33. Dennis M, Godley SH, Diamond G, et al. Main findings of the cannabis youth treatment (CYT) randomized field experiment. J Subst Abuse Treat 2004;27:197–213. [PubMed: 15501373]
34. Liddle HA, Dakof GA, Parker K, et al. Multidimensional family therapy for adolescent drug abuse: Results of a randomized clinical trial. Am J Drug Alcohol Abuse 2001;27(4):651–88. [PubMed: 11727882]
35. Liddle HA, Rowe CL, Dakof GA, et al. Early intervention for adolescent substance abuse: Pretreatment to posttreatment outcomes of a randomized control trial comparing multidimensional family therapy and peer group treatment. J Psychoactive Drugs 2004;36:2–37.
36. Liddle HA, Dakof GA, Turner RM, et al. Treating adolescent drug abuse: A randomized trial comparing multidimensional family therapy and cognitive behavior therapy. Addiction 2008;103:1660–70. [PubMed: 18705691]
37. Liddle HA, Rowe CL, Dakof GA, et al. Multidimensional family therapy for young adolescent substance abuse: Twelve month outcomes of a randomized control trial. Journal Consult Clin Psychology 2009;77(1):12–25.
38. Austin AM, Macgowan MJ, Wagner EF. Effective family-based interventions for adolescents with substance use problems: A systematic review. Research on Social Work Practice 2005;15:67–83.
39. Becker SJ, Curry JF. Outpatient interventions for adolescent substance abuse: A quality of evidence review. J Consult Clin Psychology 2008;76(4):531–43.
40. Brannigan R, Schackman BR, Falco M, et al. The quality of highly regarded adolescent substance abuse treatment programs. Arch Pediatr Adolesc Med 2004;158(9):904–09. [PubMed: 15351757]
41. Vaughn MG, Howard MO. Adolescent substance abuse treatment: a synthesis of controlled evaluations. Research on Social Work Practice 2004;14:325–35.
42. Waldron HB, Turner CW. Evidence-based psychosocial treatments for adolescent substance abuse. J Clin Child Adolesc Psychology 2008;37(1):238–61.
43. Drug Strategies. Treating teens: a guide to adolescent drug problems. Drug Strategies; Washington DC: 2003.
44. Rigter, H.; Van Gageldonk, A.; Ketelaars, T. Treatment and other interventions targeting drug use and addiction: state of the art 2004. National Drug Monitor; Utrecht: 2005.
45. Liddle HA. Theory development in a family-based therapy for adolescent drug abuse. J Clin Child Psychol 1999;28:521–37. [PubMed: 10587903]
46. Bronfenbrenner U. Contexts of child rearing: problems and prospects. Am Psychol 1979;34(10): 844–50.
47. Hawkins DJ, Catalano RF, Miller JY. Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: implications for substance abuse prevention. Psychol Bull 1992;112(1):64–105. [PubMed: 1529040]
48. Dakof GA, Quille TJ, Tejeda MJ, et al. Enrolling and maintaining mothers of substance-exposed infants in drug abuse treatment. J Consult Clin Psychology 2003;71(4):764–72.
49. Liddle, HA.; Rowe, CL.; Dakof, GA., et al. Effectiveness of cross-systems Multidimensional Family Therapy for justice-involved youth. Presented at the APA 116th Annual Convention; Boston, Mass. 2008;
50. Rowe, CL.; Liddle, HA.; Dakof, GA., et al. Development and evolution of an evidence-based practice: Multidimensional Family Therapy as treatment system. Collins, F.; Cohen, L., editors. Pharmacology and treatment of substance abuse; Erlbaum: 2009. p. 441-463.
51. Rowe, CL.; Liddle, HA.; McClintic, K., et al. Integrative treatment development: Multidimensional family therapy for adolescent substance abuse. In: Kaslow, F.; Lebow, J., editors. Comprehensive handbook of psychotherapy (vol. 4: Integrative/Eclectic Therapies). John Wiley and Sons; New York: 2002. p. 133-161.
52. Marvel F, Rowe CL, Colon L, et al. Multidimensional Family Therapy HIV/STD risk reduction intervention: An integrative family-based model for drug-involved offenders. Fam Process 2009;48:69–83. [PubMed: 19378646]

53. Dennis, M. Short (3 – 12 month) and long (30 month) term outcomes of the Cannabis Youth Treatment experiment. Adolescent substance abuse treatment Symposium; College on Problems of Drug Dependence Annual Conference; Bal Harbor, FL. 2003;

54. French MT, Roebuck MC, Dennis M, et al. The economic cost of outpatient marijuana treatment for adolescents: Findings from a multisite experiment. Addiction 2002;97(Supp 1):S84–S97.

55. Hogue AT, Liddle HA, Becker D, et al. Family-based prevention counseling for high-risk young adolescents: Immediate outcomes. Am J Community Psychol 2002;30(1):1–22. [PubMed: 11928771]

56. Liddle, HA.; Dakof, GA. Controlled trial of a family-based alternative to residential drug treatment for co-morbid adolescent substance abusers: Preliminary findings. College on Drug Dependence Annual Conference; Quebec City, Canada. 2002;

57. Henderson CE, Dakof GA, Greenbaum P, et al. Effectiveness of Multidimensional Family Therapy with higher-severity substance abusing adolescents: Report from two randomized controlled trials. J Consult Clin Psychology under review.

58. Rowe CL, Liddle HA. When the levee breaks: Treating adolescents and families in the aftermath of Hurricane Katrina. J Marital Fam Therapy 2008;34(2):132–148.

59. Rounds-Bryant JL, Kristiansen PL, Hubbard RL. Drug abuse treatment outcome study of adolescents: A comparison of client characteristics and pretreatment behaviors in three treatment modalities. Am J Drug Alcohol Abuse 1999;25:573–591. [PubMed: 10548436]

60. Henderson CE, Rowe CL, Dakof GA, et al. Parenting practices as mediators of treatment effects in an early-intervention trial of Multidimensional Family Therapy. Amer J Drug Alcohol Abuse 2009;35:220–226. [PubMed: 20180674]

61. Hussong, AM.; Curran, PJ.; Moffitt, TE., et al. Testing turning points using latest growth curve models: Competing models of substance abuse and desistance in young adulthood. In: Cohen, P., editor. Applied data analytic techniques for turning points research. Routledge/Taylor & Francis Group; New York: 2008. p. 81-104.