



Effectiveness of Multidimensional Family Therapy for Reducing Substance Use among Youth

Key Messages

- Multidimensional family therapy (MDFT) is a promising family-based intervention for reducing substance use among youth.
- Compared to those involved in group and cognitive behavioural therapies, those who participated in MDFT:
 - Were less likely to be dependent and used substances less frequently at a 12-month follow-up period; and
 - Experienced better outcomes related to substance use severity, particularly among high-risk youth.
- MDFT resulted in significantly greater reductions in both alcohol and cannabis use compared to group therapy.
- Research specific to Canada is needed to substantiate this evidence and fill knowledge gaps related to the application of MDFT for reducing substance use for different age, gender and ethnic groups, and for those with concurrent disorders.
- *Strengthening Our Skills: Canadian Guidelines for Youth Substance Abuse Prevention Family Skills Programs* is an evidence-based resource available to help guide the adaptation of family-based programs to a local context.

The findings in this rapid review are limited by the restrictive parameters of the methodology used to perform the review. As a result, the findings might not represent a comprehensive assessment of the state of knowledge about this topic and should be considered in light of their limitations. Further, the diversity of language used in the field of addiction is such that different sources often use different terms. This rapid review attempts to maintain consistency and accuracy with the source reporting the evidence by using the terms presented in the original publication. The audience for this document includes addiction treatment providers and specialists, policy makers, healthcare practitioners, the research community and youth support workers.

Context

Youth is a time of significant growth and change, including significant brain development. It is also the period when risk-taking and substance use most commonly begins. Parts of the brain associated with reward, motivation and impulsivity typically mature early, while areas of the brain that moderate risk mature later (Spear, 2013). This lag means that young people can be more prone to risk-taking behaviour than the general population. Youths' smaller body size and higher sensitivity to the effects



of psychoactive substances also places them at higher risk than adults (Tanner-Smith, Wilson, & Lipsey, 2013). Youth are disproportionately more likely to use alcohol and other drugs, engage in risky patterns of use and experience harms from that use. According to the 2013 Canadian Tobacco, Alcohol and Drugs Survey, 60% of Canadian youth aged 15–19 reported past-year alcohol use; 22% reported past-year cannabis use; 10% used psychoactive pharmaceutical drugs for non-medical purposes and 3.0% used hallucinogens (Statistics Canada, 2015). Further, data from the 2012–2013 Youth Smoking Survey indicate that approximately three in every 10 students in grades 7 to 12 reported binge drinking (i.e., consuming five or more drinks) in the past year (Health Canada, 2014).

Youth are also more likely than adults to experience harms (e.g., dependence, overdose, comorbid mental illness, injuries, motor vehicle collisions) from use of alcohol and other drugs. For example, between 2000 and 2010, fatally injured young drivers aged 16–24 years in Canada were more than twice as likely to test positive for cannabis compared to adults aged 35 and older (25.8% vs. 9.7%) (Beirness, Beasley, & Boase, 2013). Also, data from the Canadian Institute of Health Information indicate that in 2011, youth aged 15–24 years spent the greatest number of days in hospital for a cannabinoid-related disorder compared to all other age groups (Young & Jesseman, 2014). Such statistics demonstrate the need for effective, age-specific treatment options.

There are a wide variety of treatment modalities¹ tailored to young people that have been investigated for their efficacy in the scientific literature. In general, [family therapy](#) for youth substance use is one collective type of approach for which strong evidence for its effectiveness has been demonstrated, compared to other treatment modes such as [cognitive behavioural therapy \(CBT\)](#), [group therapy](#) and [motivational enhancement therapy \(MET\)](#) (Tanner-Smith et al., 2013). However, when and for whom family-based treatment might be most effective is more difficult to discern and may largely depend on the specific intervention used. Further, the variety of age-based definitions of youth is also problematic and limits the capacity of the field to draw clear conclusion on intervention efficacy supported by relevant research.

This review focused on one specific family treatment approach and sought to answer the following question: What is the effectiveness of [multidimensional family therapy \(MDFT\)](#) compared to non-family-based approaches for reducing substance use among youth?

The Issue

A wide range of approaches to family-based treatment for youth substance use have been explored in the scientific literature (e.g., functional family therapy, multisystemic therapy, brief strategic family therapy). However, indications of the magnitude of and context for their individual effectiveness in reducing substance use relative to other treatments that are not family based are unclear.

MDFT is a particularly promising intervention that has been implemented and studied in a variety of settings over more than 25 years (Austin, Macgowan, & Wagner, 2005). MDFT is a unique, integrative, outpatient, family-based treatment for youth substance use and associated mental health, behavioural and emotional issues that blends principles from family and individual therapies, as well as drug counselling and multiple systems-oriented interventions (Rowe, 2012). It intervenes in each of four major life domains:

1. The adolescent as an individual and as a member of a family and peer network;
2. The parents both as individuals and as caregivers;
3. The family environment and relationships; and
4. Sources of influence outside the family, including peers, school and so on (Liddle, 2010).

¹ On first appearance, clinical terms for treatment modalities are indicated in blue and linked to their definitions in Appendix A.



To better understand the comparative efficacy of this type of treatment for this population, the rapid review aimed to assess the evidence for MDFT's efficacy compared to other treatments that are not family based on outcomes related to reducing the frequency and severity of substance use, abuse and dependence among youth.

Approach

A systematic search of the published and grey literatures was conducted using a combination of key terms and a variety of databases and websites (Appendix B). Articles were included if they were written in English and published between 2010 and 2015. The following criteria for Population of Interest, Intervention, Comparators, Outcome and Settings (PICOS) were used to determine the inclusion or exclusion of the articles retrieved:

Population	Youth ages 11–19 years with a substance use issue (alcohol, cannabis or other drugs)
Intervention	Multidimensional family therapy
Comparators	Treatment approaches that are not family based
Outcomes	Frequency and severity of substance use, abuse and dependence (alcohol, cannabis or other drugs)
Setting	Any

A total of 931 articles were initially assessed for relevance. Based on the screening of titles and abstracts, 67 full-text articles (approximately 7%) were reviewed to determine individual study relevance. Of these, 10 articles met the inclusion criteria, of which half were systematic reviews and included in this report. The five additional articles comprised three papers reporting results from the same randomized control trial (RCT) (Hendriks, van der Schee, & Blanken, 2011, 2012; Rigter et al., 2013), one reporting a pooled analysis of five RCTs (Greenbaum et al., 2015) and one reporting on two independent RCTs (Henderson, Dakof, Greenbaum, & Liddle, 2010). However, given the content overlap of these papers with the RCTs reported in the systematic reviews, and that systematic reviews represent the pinnacle of the evidence hierarchy, these additional papers are not described in detail in this rapid review. A Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) diagram is included in Appendix C.

Findings

Evidence from five systematic reviews (Baldwin, Christian, Berkeljon, & Shadish, 2012; Bender, Tripodi, Sarteschi, & Vaughn, 2011; European Monitoring Centre for Drugs and Drug Addiction, 2014; Filges, Rasmussen, Andersen, & Jørgensen, 2015; Tripodi, Bender, Litschge, & Vaughn, 2010) provided information on the effectiveness of MDFT in relation to non-family-based therapies to reduce youth substance use. Only 12-month outcomes in relation to dependency, substance use and abuse frequency as well as severity are described in detail below. A summary of the characteristics of these systematic reviews and all relevant reported outcomes (including at 3- and 6-month follow-up, when given) is provided in Appendix D.

MDFT versus CBT

Relevant outcomes from one RCT reported in the 2014 systematic review conducted by the European Monitoring Centre for Drugs and Addiction (EMCDDA) included measures of change in both frequency and severity of substance use for youth receiving MDFT compared to CBT. The proportion of youth reporting minimal substance use (no use or use on one occasion of any substance) at 12 months was significantly higher in the MDFT treated group compared to CBT. However, when this



outcome was assessed according to baseline substance use problem severity (above [high] or below [low] median number of days of using substances), no significant differences between treatments were noted for either high or low severity groups.

This same trial also showed significantly greater reductions in the severity of substance use problems, as measured using the [Personal Involvement with Chemicals \(PIC\)](#) scale of the [Personal Experience Inventory \(PEI\)](#), at 12-month follow-up in MDFT compared to CBT (European Monitoring Centre for Drugs and Drug Addiction, 2014). These results were sustained in the high-severity group, but not in the lower group.

Two systematic reviews compared MDFT to CBT in relation to aggregate outcomes of alcohol and cannabis use, separately. Tripodi and colleagues (2010) focused on an aggregated outcome of alcohol use, including frequency and quantity of drinking as well as abstinence, from two RCTs, and reported greater reductions in alcohol use at 12-month follow-up among those receiving MDFT, though results were not significant. Bender and colleagues (2011) examined an aggregate variable of cannabis use frequency using data from three RCTs and found a similar result.

In addition, more specific frequency-related outcomes for particular substances were reported by the EMCDDA (2014). They noted that the reduction in the prevalence of cannabis use in the 30 days prior to 12-month follow-up was not significantly different for MDFT compared with CBT. Alcohol use after 12 months was also not significantly different between treatments. The reduction in the use of substances other than alcohol and cannabis, however, was significantly greater among those receiving MDFT.

MDFT versus Adolescent or Peer Group Therapy

The systematic review by EMCDDA (2014) also included two RCTs examining MDFT in relation to [adolescent or peer group therapy \(AGT or PGT\)](#). One reported that 12-month reductions in any drug use were notably greater for MDFT than AGT, though not statistically significant. Conversely, the other noted a significantly greater reduction in 30-day frequency of any substance use after 12 months. The probability of abstinence from any substance was also significantly higher for MDFT. In terms of measures of severity, the reduction in the number of substance use problems for youth receiving MDFT was significantly greater than for those in PGT. In contrast, no significant difference in the number of youth reporting any substance use problems was observed between treatments.

As with CBT, both Tripodi et al. (2010) and Bender et al. (2011) also compared MDFT to these group therapies in relation to alcohol and cannabis use separately. They reported significantly greater reductions in alcohol use and in cannabis use, respectively, among those receiving MDFT compared to group therapy (both $p=0.02$).

MDFT versus MET/CBT5 or Adolescent Community Reinforced Approach

One of the systematic reviews reported on a trial comparing MDFT to an alternative intervention consisting of five sessions of motivational enhancement in combination with cognitive behavioural approaches (MET/CBT5), as well as therapy combining individual and family behavioural approaches ([adolescent community reinforcement approach \[ACRA\]](#)) (European Monitoring Centre for Drugs and Drug Addiction, 2014). Relevant findings reported were in regards to days abstinent from cannabis over 12-month follow-up; however, no significant difference was found for MDFT-treated clients compared to those in either MET/CBT5 or ACRA.



MDFT versus Individual Psychotherapy

The EMCDDA (2014) systematic review also presented findings (though it did not report measures of statistical significance) from another individual trial, in this instance comparing MDFT to [individual psychotherapy \(IP\)](#) in relation to cannabis use outcomes only. Lower prevalence rates of cannabis dependence (38% vs. 52%) were observed among youth receiving MDFT versus IP. Further, a greater number of MDFT-treated clients no longer experienced a cannabis use disorder at follow-up. The number of cannabis dependence symptoms reported by youth in treatment for 12 months was also reduced more substantially among those receiving MDFT than IP (43% vs. 31%).

Comparisons between the treatment modalities were also conducted for high-severity cannabis users (i.e., those with a number of cannabis consumption days exceeding the sample median), with the results revealing that the frequency of consumption of cannabis decreased more among those engaged in MDFT (European Monitoring Centre for Drugs and Drug Addiction, 2014).

MDFT versus Alternative Approaches Overall

Two systematic reviews reported on the comparative effectiveness of MDFT in relation to an aggregate of alternative therapies, including those presented in the above subsections. Filges et al. (2015) reported on five studies and found that at 12-month follow-up, MDFT demonstrated a non-significant reduction in the frequency of substance abuse and a significant reduction in drug abuse problem severity compared to the other treatment approaches. A systematic review by Baldwin and colleagues (2012) only reported on an aggregate outcome variable of substance abuse and delinquency treatment from four RCTs; this work did not observe a significant reduction in substance abuse and delinquency for MDFT compared to an aggregate of alternative treatments.

Discussion

This rapid review examined the efficacy of MDFT relative to other treatments that are not family based for reducing substance use among youth. Evidence from five systematic reviews revealed some support for greater effectiveness of MDFT. In particular, this approach appears to be superior to CBT and group therapies, such as PGT or AGT, on a number of dependency, substance use and abuse frequency, as well as severity outcomes (European Monitoring Centre for Drugs and Drug Addiction, 2014). There was also indication that youth demonstrating higher severity problematic substance use might benefit from MDFT and that this approach might achieve greater reductions in alcohol and cannabis use compared to group therapies.

However, in spite of the number of systematic reviews reporting on MDFT, overall it appears that consistency is lacking in the available evidence for this treatment mode. This rapid review revealed a great deal of heterogeneity between studies both in the measurement of substance-related outcomes and in the methods of reporting on RCT findings. As a result, it remains difficult to assess the magnitude of the specific benefits of MDFT in relation to other non-family based treatment approaches, as well as the context in which MDFT might be most useful.

It is clear from the findings reported in this rapid review that there are also a number of knowledge gaps remaining in this field. Although some of the efficacy measures described were specific to alcohol and cannabis, comparable indicators for opioids, stimulants and sedative-hypnotics were not available, thus MDFT's utility for reducing use of these substances represents a substantial gap in knowledge. Another notable gap was that none of the RCTs reported by the systematic reviews included here were conducted in Canada. Thus, the applicability of MDFT to a Canadian context cannot be assumed given the differences in the Canadian healthcare system and approaches to treatment, compared to the United States and European countries. Also, the RCTs focused on study populations spanning relatively broad youth age groups (e.g., 11–18 vs. 12–19), with varying ethnic



and gender distributions, and did not consider concurrent mental health issues. Additional research into the effectiveness of MDFT for youth of different ages, genders and ethnicities, as well as for those with concurrent disorders, is therefore needed. Resources such as [Strengthening Our Skills: Canadian Guidelines for Youth Substance Abuse Prevention Family Skills Programs](#) are available to treatment providers and can be used as a guide when adapting family-based initiatives to a local context. This resource will also serve as a guide for evaluating family-based initiatives in a Canadian context, and supporting continuous improvements over time.

Furthermore, although the systematic reviews reported here represent some 20 or more papers that have been published on MDFT as an intervention to address substance use among youth, these are based on only five RCTs, all conducted more than eight years ago. As a result, the relevance of these findings to addiction treatment practice today remains unknown.

Limitations

There were a few limitations to the methodology applied in this rapid review. First, the search was limited to English language articles published in the past five years. Also, given the number of systematic reviews available, we did not include any other types of studies. Both of these methodological restrictions might have resulted in some relevant studies or findings being missed.

Second, only outcomes evaluating the effectiveness of MDFT compared to other approaches in relation to dependency, substance use and abuse frequency, as well as severity, were assessed. Other indicators of treatment effects not covered here, which could provide further indication of the benefits of MDFT, include treatment retention or completion rates, familial interaction, school involvement, risky behaviours and others. These outcomes are important areas to address in future research in this field.

Also, a critical appraisal assessing the methodological strength of the individual systematic reviews included in this rapid review was not conducted. Thus, it is unclear whether the quality of the studies reviewed influenced the findings derived in this work.

Finally, although the statistical significance of comparisons between MDFT and other treatments was the primary means by which the effectiveness of MDFT was gauged in this rapid review, it should be noted that this measure is not necessarily indicative of clinically meaningful changes in substance-related behaviours at the individual level.

Conclusions

While there is indication that MDFT has greater efficacy than some non-family-based approaches, compared to other approaches MDFT demonstrated comparable effectiveness as indicated by the undifferentiated findings. Given the heterogeneity in outcome measures of the reviewed studies, it remains unclear for whom and in what circumstances MDFT might be most beneficial. Given that the literature on MDFT is based on only five trials, all conducted more than eight years ago, more current research is needed in this field, especially in a Canadian context, in order to provide the most relevant evidence to treatment providers. Future studies should focus on developing standardized substance-related outcome measures, specific high-risk subgroups and other types of substances with abuse potential.



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ISBN 978-1-77178-329-3

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Canadian Centre
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The Canadian Centre on Substance Abuse changes lives by bringing people and knowledge together to reduce the harm of alcohol and other drugs on society. We partner with public, private and non-governmental organizations to improve the health and safety of Canadians.

CCSA activities and products are made possible through a financial contribution from Health Canada. The views of CCSA do not necessarily represent the views of the Government of Canada.



Appendix A: Glossary of Terms

Adolescent community reinforcement approach (ACRA): a behavioural intervention aiming to replace the environmental factors supporting substance use with activities and behaviours that support recovery.

Adolescent or peer group therapy (AGT or PGT): group therapy model adapted to adolescents and their peer groups.

Cognitive behavioural therapy (CBT): a psychotherapeutic intervention that challenges negative thinking styles and affective states thought to promote maladaptive behaviours, and promotes the development of alternative coping skills and the implementation of behavioural strategies for reducing and eliminating problem behaviours.

Family therapy: a therapy method involving one or more family members that addresses family relationships and seeks to understand individual behaviour within the context of family.

Group therapy: counselling or “talk therapy” delivered in multiple settings (group, family, individual) focusing on day-to-day life issues that do not fit into other treatment categories.

Individual psychotherapy (IP): a psychodynamic or CBT-informed approach targeted at the individual.

Motivational enhancement therapy (MET): a substance use disorder therapy that relies heavily on principles of motivational interviewing, including reflective listening, open-ended strategies and comparisons of behaviour to normative standards.

Motivational interviewing (MI): a client-centred, semi-directive method for enhancing intrinsic motivation to change by exploring and resolving ambivalence.

Multidimensional family therapy (MDFT): a family-oriented outpatient intervention for youth designed to address problem substance use at four levels: the individual, his or her parents, family and external networks (i.e., peers, school, work, leisure setting).

Multifamily education intervention (MEI): consists of interventions used in mental health to inform and support extended family of the substance-involved youth (i.e., parents, relatives, etc.).

Personal Experience Inventory (PEI): multiscale self-report measure assessing substance use problem severity and psychosocial risk.

Personal Involvement with Chemicals (PIC): a 29-item subscale of the PEI focusing on the psychological and behavioural depth of substance use involvement and related consequences in the past 30 days.



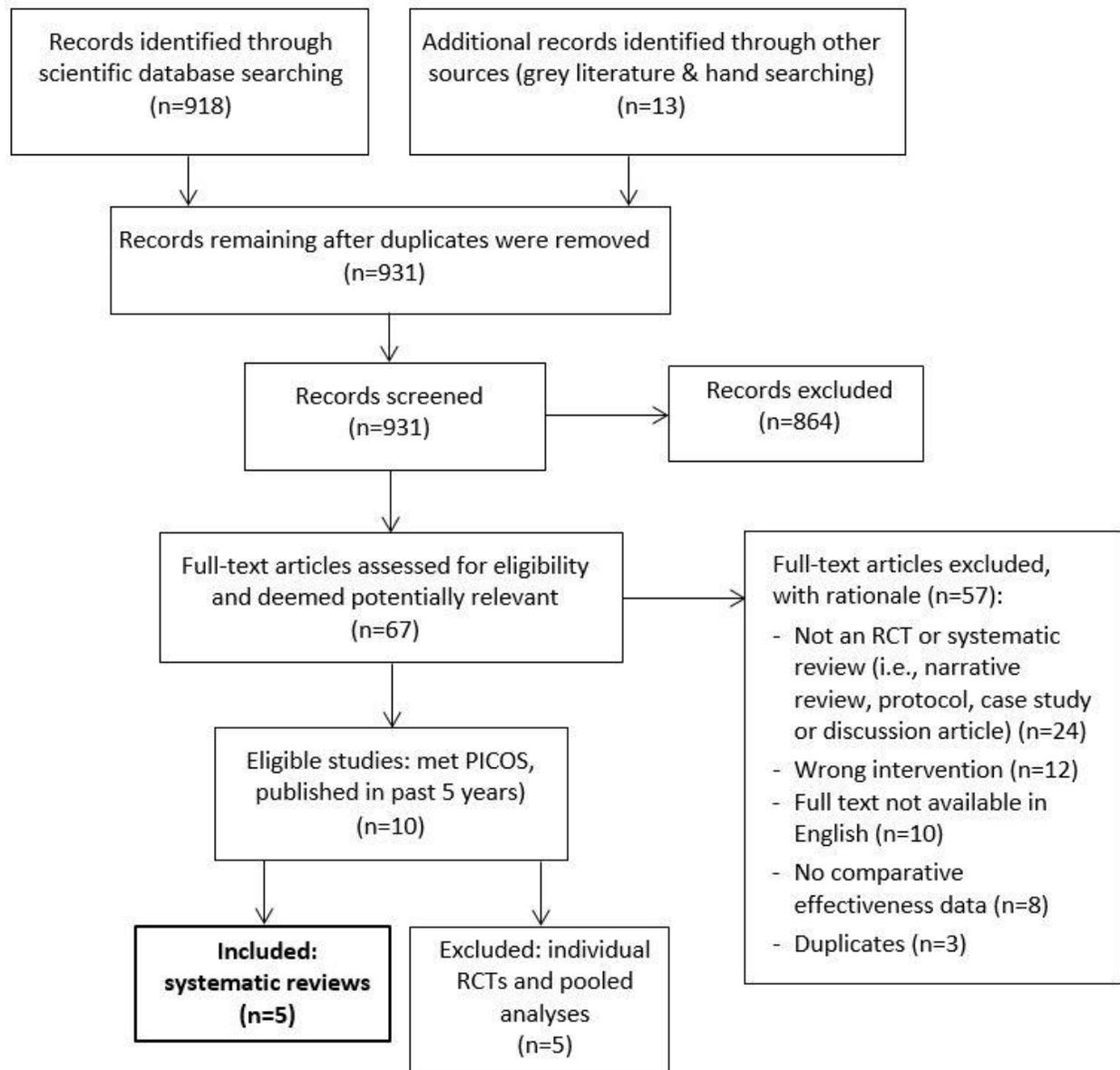
Appendix B: Search Strategy

The search strategy was developed and tested through an iterative process by an experienced medical information specialist in consultation with the review team. MEDLINE and the Psychology and Behavioral Sciences Collection on Ebsco, PsycINFO on APA PsycNET, and the Cochrane Library on Wiley were all searched. A grey literature search of relevant organizational sites (e.g., Centre on Addiction and Mental Health [CAMH], National Institute of Mental Health, Substance Abuse and Mental Health Services Administration [SAMHSA]) and databases (e.g., Project Cork, HSRProj, TRIP) was also undertaken. All database and grey literature searches were performed between the dates of October 30 and November 2, 2015.

Strategies used a combination of controlled vocabulary (e.g., “Substance-Related Disorders,” “Family Therapy,” “Adolescent Behavior”) and keywords (e.g., drug abuse, MDFT, adolescent). Vocabulary and syntax were adjusted across databases. Results were limited to the publication years 2010 to the present. When possible, animal-only and opinion pieces were removed from the results. Additional references were also sought through hand-searching the bibliographies of relevant items. Specific details regarding the database search strategies are available upon request.



Appendix C: Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Statement





Appendix D: Characteristics of Included Systematic Reviews

Citation	Relevant Studies Included	Study Design & Objectives	Participant Characteristics	Intervention & Comparator(s)	Relevant Reported Outcomes
Filges et al. (2015)	Dennis et al. (2004), Liddle et al. (2001), Liddle et al. (2008a), Liddle et al. (2009), Rigter et al. (2011)	Objectives: to evaluate the current evidence on the effects of MDFT on drug abuse reduction for young people in treatment for non-opioid drug abuse, as well as moderators of reduction effects. Design: Systematic review and meta-analysis of experimental, quasi-experimental or non-RCTs published to October 2008. N=5 unique RCTs reported in 16 papers Setting: 3 single site studies (US), 2 multisite studies (US – Miami; Europe – Belgium, France, Germany, The Netherlands, Switzerland) Study duration: up to 12-mo follow-up	Total participant population: n=1,239; range between studies n=83-450; Youth aged 11-18 years Mean age: 13.7-16.3 years Gender: 73-86% male Ethnicity: 18-72% Black, 3-51% White, 2-42% Hispanic; 1 study reported 40% first or second generation foreign descent DOC: Cannabis in 4 studies, the other did not report DOC. One reported 49% cannabis and 51% poly-drug as DOC.	MDFT: mean of 12-48 sessions (2/wk) lasting 3-6 months (n=373-408) & Individual- or group-based approaches (n=390-431): CBT: n=53-59 IP (TAU): n=195 AGT or MEI: n=28 or 34 MET/CBT5 or ACRA: n=99 or 100	<i>Drug abuse problem severity at 6-mo follow-up</i> <ul style="list-style-type: none"> MDFT vs. MET/CBT5 + AGT + CBT + IP + PGT: SMD, -0.35; 95% CI, -0.59 to -0.11; p=0.004 MDFT vs. MET/CBT5 + MEI + CBT + IP + PGT: SMD, -0.31; 95% CI, -0.53 to -0.10; p=0.004 MDFT vs. ACRA + AGT + CBT + IP + PGT: SMD, -0.33; 95% CI, -0.59 to -0.08; p=0.01 MDFT vs. ACRA + MEI + CBT + IP + PGT: SMD, -0.30; 95% CI, -0.53 to -0.07; p=0.01 <i>Drug abuse frequency reduction at 6-mo follow-up</i> <ul style="list-style-type: none"> MDFT vs. MET/CBT5 + CBT + IP + PGT: SMD, -0.24; 95% CI, -0.43 to -0.06; p=0.01 MDFT vs. ACRA + CBT + IP + PGT: SMD, -0.25; 95% CI, -0.40, -0.11; p=0.0007 <i>Drug abuse problem severity at 12-mo follow-up</i> <ul style="list-style-type: none"> MDFT vs. MET/CBT5 + AGT + CBT + IP + PGT: SMD, -0.25; 95% CI, -0.39 to -0.10; p=0.0007 MDFT vs. MET/CBT5 + MEI + CBT + IP + PGT: SMD, -0.27; 95% CI, -0.04 to -0.11; p=0.001 MDFT vs. ACRA + AGT + CBT + IP + PGT: SMD, -0.23; 95% CI, -0.39 to -0.06; p=0.007 MDFT vs. ACRA + MEI + CBT + IP + PGT: SMD, 0.25; 95% CI, -0.42, -0.07; p=0.007 <i>Drug abuse frequency reduction at 12-mo follow-up</i> <ul style="list-style-type: none"> MDFT vs. MET/CBT5 + CBT + IP + PGT: SMD, -0.28; 95% CI, -0.63 to 0.07; p=0.11 MDFT vs. ACRA + CBT + IP + PGT: SMD, -0.28; 95% CI, -0.63 to 0.07; p=0.11
EMCDD A (2014)	Dennis et al. (2004), Liddle et al. (2001), Liddle et al. (2004), Liddle et al. (2008a), Rigter et al. (2013)	Objective: to assess the evidence on the effectiveness of MDFT, compared to other therapies or a placebo, in treating illicit drug misuse in youth. Design: Systematic review of studies with an experimental design (e.g., RCTs, cluster RCTs) N=5 unique RCTs reported in 22 papers 1,539 participants total (range: 83-450)	Youth aged 11-18 years Non-opioid drug abuse Mean age: 13.7-16.3 years Gender: 74-85% male Ethnicity: 18-72% Black, 3-61% White, 4-42% Hispanic, 0-40% other DOC: Varied though cannabis dependence or abuse was	MDFT: 12-15 sessions delivered over 12-14wks; majority conducted at home. & IP: including MI and CBT in addition to individual substance misuse counselling. AGT or MEI: adolescent or family group	<i>MDFT vs. AGT:</i> <ul style="list-style-type: none"> Reduction in drug use (alcohol, cannabis and other drugs) (NS) <i>MDFT vs. CBT:</i> <ul style="list-style-type: none"> Reduction in cannabis use in the last 30 days at 12-mo follow-up (NS) Reduction in use of drugs (other than cannabis and alcohol) at 12-mo follow-up (-91% vs. 92%) (SS) Higher proportion reporting minimal substance use (no use/use on only 1 occasion of alcohol or drugs) at 12-mo follow-up (64% vs. 44%) (SS) Reduction in substance use frequency in HS and LS groups at 12-mo follow-up (NS for either group) Frequency of alcohol use at 12-mo follow-up (15% vs. -18%) (NS) Reduction in severity of drug use problems at 6-mo (not reported) and 12-mo follow-up (-59% vs. -29%) (SS) but not at intake or treatment completion (SNR)



<p>Setting: 3 single site studies (US), 2 multisite studies (US – Miami; Europe – Belgium, France, Germany, The Netherlands, Switzerland) Study duration: 12-mo follow-up for all RCTs</p>	<p>predominant in all; one reported 49% cannabis and alcohol vs. 51% polydrug.</p>	<p>therapies delivered in community clinical setting. CBT: individual, office-based outpatient. PGT: skills and support training delivered in clinic office. MET/CBT5: 2 sessions of MET + 3 sessions CBT; duration of 6-7wks. ACRA: 10 individual sessions with adolescent, 4 sessions with caregiver, 2 with whole family; duration 12-14wks.</p>	<ul style="list-style-type: none"> Reduction in severity of drug use problems for HS subgroup (SS) but not LS group (NS) <p><i>MDFT vs. PGT:</i></p> <ul style="list-style-type: none"> Reduction in 30-day frequency of substance use (alcohol and drugs) at 12-mo follow-up (-85% vs. -28%) (SS) Reduction in frequency of any drug use days at 12-mo follow-up (-72% vs. -26%) (SNR) Increased probability of abstinence at 12-mo follow-up (2.20; 95% CI, 0.77 to 6.33) (SS) Reduction in number of substance-related problems at 12-mo follow-up (-79% vs. -27%) (SS) Reduction in number of participants reporting any substance use problems (-65% vs. -32%) (NS) <p><i>MDFT MET/CBT5:</i></p> <ul style="list-style-type: none"> Increase in number of days abstinent from cannabis use at 12-mo follow-up (257 vs. 251 days) (NS) <p><i>MDFT vs. ACRA:</i></p> <ul style="list-style-type: none"> Mean total number of days abstinent from cannabis use over 12-mo follow-up slightly lower for MDFT <p><i>MDFT vs. IP:</i></p> <ul style="list-style-type: none"> Prevalence of dependence on cannabis at 12-mo follow-up (38% vs. 52%) (SNR) Prevalence of abuse of cannabis at 12-mo follow-up (33% vs. 22%) (SNR) Prevalence of no longer experiencing cannabis use disorder at 12-mo follow-up (18% vs. 15%) (SNR) Reduction in mean number of cannabis consumption days 43% (35 days) vs. 31% (SNR) MDFT achieved better results for reduction in number of dependence symptoms Reduction in frequency of cannabis consumption for HS group only (SNR) 		
<p>Baldwin et al. (2012)</p>	<p>Dennis et al. (2004), Liddle et al. (2001), Liddle et al. (2004), Liddle et al. (2008a)</p>	<p>Objective: to evaluate the post-treatment effects of different types of family therapies on adolescent substance abuse and delinquency as compared to TAU, alternative therapies and controls Design: Systematic review and meta-analysis of RCTs published up to February 2009. N= 4 of 24 RCTs retrieved relevant to MDFT Setting: US Study duration: not reported</p>	<p>Youth aged 11-19 years Participant population from relevant RCTs: total n=441; no characteristics reported.</p>	<p>MDFT & Group therapy PGT MET/CBT5 ACRA</p>	<p><i>Aggregate measure of all study outcomes on substance abuse and delinquency</i></p> <ul style="list-style-type: none"> MDFT vs. aggregate of all alternative treatments: SMD, 0.22; 95% CI, -0.16 to 0.60; p=0.21



Bender et al. (2011)	Liddle et al. (2001), Liddle et al. (2004), Liddle et al. (2008a)	<p>Objectives: to investigate the effects of interventions to reduce adolescent cannabis use and to conduct a comparison of the effects of individual vs. family-based treatments.</p> <p>Design: Systematic review and meta-analysis of experimental or quasi-experimental studies published 1960-2008.</p> <p>N=3 of 17 studies retrieved relevant to MDFT</p> <p>Setting: all single site, United States</p> <p>Study duration: up to 12-mo follow-up</p>	<p>Youth aged 12-19 years</p> <p>Participant population: number and characteristics not reported overall or for relevant studies.</p>	<p>MDFT: n=36-47 &</p> <p>Group therapy: n=28</p> <p>Peer group treatment: n=40</p> <p>CBT: n=35-53</p>	<p><i>Aggregate measure of all study outcomes quantifying cannabis use frequency at 3-mo follow-up:</i></p> <ul style="list-style-type: none"> MDFT vs. CBT: SMD, -0.25, 95% CI, -0.64 to 0.14; p=0.20 MDFT vs. PGT: SMD, -0.61; 95% CI, -1.06 to -0.15; p=0.009 <p><i>Aggregate measure of all study outcomes quantifying cannabis use frequency at 6-mo follow-up:</i></p> <ul style="list-style-type: none"> MDFT vs. CBT: SMD, -0.09; 95% CI, -0.47 to 0.30; p=0.65 MDFT vs. group therapy: SMD, -0.59; 95% CI, -1.09 to -0.10; p=0.02; MDFT vs. PGT: SMD, -0.61; 95% CI, -1.06 to -0.15; p=0.009 <p><i>Aggregate measure of all study outcomes quantifying cannabis use frequency at 12-mo follow-up:</i></p> <ul style="list-style-type: none"> MDFT vs. CBT: SMD, -0.06; 95% CI, -0.48 to 0.36; p=0.79 MDFT vs. group therapy: SMD, -0.57; 95% CI, -1.06 to -0.07; p=0.02
Triposi et al. (2010)	Liddle et al. (2001), Liddle et al. (2008)	<p>Objectives: to assess the effectiveness of substance use interventions for their ability to reduce adolescent alcohol use and to compare the effects of individual treatments with family-based approaches.</p> <p>Design: Systematic review and meta-analysis of experimental or quasi-experimental studies published 1960-2008.</p> <p>N=2 of 16 studied retrieved were relevant to MDFT</p> <p>Setting: Outpatient clinics; US</p> <p>Study duration: up to 12-mo follow-up</p>	<p>Youth aged 12-19 years</p> <p>Participant population: number and characteristics not reported overall or for relevant studies.</p>	<p>MDFT: 1 session/wk for 16 wks; n=14-39 &</p> <p>Group therapy: n=28</p> <p>CBT: n=49-59</p>	<p><i>Aggregate measure of all study outcomes quantifying alcohol use (abstinence, frequency and quantity of drinking at 3-mo follow-up:</i></p> <ul style="list-style-type: none"> MDFT vs. CBT: SMD, -0.40, 95% CI, -0.79 to -0.01; p=0.04 <p><i>Aggregate measure of all study outcomes quantifying alcohol use (abstinence, frequency and quantity of drinking at 6-mo follow-up:</i></p> <ul style="list-style-type: none"> MDFT vs. CBT: SMD, -0.19, 95% CI, -0.58 to 0.20; p=0.33 MDFT vs. group therapy: SMD, -0.59; 95% CI, -1.09 to -0.10; p=0.02 <p><i>Aggregate measure of all study outcomes quantifying alcohol use (abstinence, frequency and quantity of drinking at 12-mo follow-up:</i></p> <ul style="list-style-type: none"> MDFT vs. CBT: SMD, -0.17; 95% CI, -0.58 to 0.25; p=0.44 MDFT vs. group therapy: SMD, -0.57; 95% CI, -1.06 to -0.07; p=0.02

ACRA: adolescent community reinforcement approach; AGT: adolescent group treatment; CBT: cognitive-behavioural therapy; CI: 95% confidence interval; DOC: drug of choice; hrs: hours; EMCDDA: European Monitoring Centre for Drugs and Drug Addiction; HS: higher severity; IP: individual psychotherapy; LS: lower severity; MDFT: multidimensional family therapy; MEI: multifamily educational therapy; MI: motivational interviewing; mo: month; NS: non-significant; PGT: peer group treatment; RCT: randomized controlled trial; SMD: standardized mean difference; SNR: significance not reported; SS: statistically significant; TAU: treatment as usual; vs.: versus; wk: week



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ISBN 978-1-77178-329-3

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