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Functional Family Therapy (FFT) for Young People in Treatment for Non-opioid Drug Use: A Systematic Review

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Executive Summary/Abstract

BACKGROUND

Youth drug use is a severe problem worldwide. Usage of cannabis, amphetamine ecstasy and cocaine, referred to here as non-opioid drugs, are strongly associated with a range of health and social problems.

Functional Family Therapy (FFT) is a short-term, manual-based, behaviorally oriented family therapy program for young people with behavior problems such as drug abuse, juvenile delinquency and violence. Delivered in an outpatient setting, it aims to help young people and their families by improving family interactions and relationship functioning by addressing dysfunctional individual behavior.

As with many other forms of family therapy, FFT targets young people and their families as a system. As such, it recognizes the important role of the family system in the development and treatment of young people's drug abuse problems.

OBJECTIVES

The main aim of this review is to evaluate the current evidence on the effects of FFT on drug abuse reduction for young people in treatment for non-opioid drug use.

SEARCH METHODS

A wide range of electronic bibliographic databases were searched using a relatively narrow search strategy, in July 2013. We performed extensive searches in a broad selection of government and policy databanks, grey literature databases, citations in other reviews and included primary studies, and by hand searches of relevant journals and internet searches using Google. We also corresponded with researchers in the field of FFT. No language or date restrictions were applied to the searches.

SELECTION CRITERIA

To be eligible for inclusion, studies must have:

- involved a manual-based outpatient FFT treatment for young people aged 11-21 years enrolled for non-opioid drug use;

- used experimental, quasi-experimental or non-randomized controlled designs;
- reported at least one eligible outcome variable measuring abstinence, reduction of drug use, family functioning, education or vocational involvement, retention, risk behavior or other adverse effects;
- not focused exclusively on treating mental disorders; and
- had FFT as the primary intervention.

DATA COLLECTION AND ANALYSIS

The literature search yielded a total of 6,719 records, which were screened for eligibility based on title and abstract. From these, 108 potentially relevant records were retrieved and screened in full text, of which 9 records were potentially relevant. Finally, two studies based on three records were included in the review. Meta-analysis was not possible because only one study provided numerical results on the effect of FFT on drug use reduction.

RESULTS

Two studies were included and both analyzed relative effects, comparing FFT to other interventions. Only one study provided numerical results on drug use reduction comparing FFT to two other interventions (CBT and a group intervention). The reported results indicate a positive effect favoring FFT on drug use frequency at 4-month follow up, with no statistically significant difference at 7-month follow up.

AUTHORS' CONCLUSIONS

There is insufficient firm evidence to allow any conclusion to be drawn on the effect of FFT for young people in treatment for non-opioid drug use. There is a need for more research, and particularly for more methodologically rigorous studies in the field of treatment for young drug users.

The aim of this systematic review was to explore what is known about the effectiveness of FFT for the purpose of reducing youth drug use. The evidence found does not provide a basis for drawing conclusions about actual outcomes and impacts. Consequently, no substantive conclusion on the effectiveness can be made, neither supporting nor rejecting of the present FFT treatment approach.

1 Background

1.1 DESCRIPTION OF THE CONDITION

Youth drug abuse[1] of the kind that persists beyond the experimentation phase is a severe problem worldwide (United Nations Office on Drugs and Crime (UNODC), 2010). Abuse of non-opioid drugs such as cannabis, amphetamine and cocaine is strongly associated with a broad range of negative health implications such as traffic accidents, sexually transmitted diseases, mental problems and suicide as well as social problems including poor academic achievement, delinquency and violent behavior (Deas & Thomas, 2001; Essau, 2006; Rowe & Liddle, 2006; Office of National Drug Control Policy (ONDCP), 2000; Shelton, Taylor, Bonner, & van den Bree, 2009; Nordstrom & Levin, 2007; Lynskey & Hall, 2000).

While cannabis, amphetamine, cocaine and other non-opioid drugs remain illegal in most countries, surveys indicate widespread prevalence. In the US, 25.5 percent of 12th-grade students report having used an illicit drug (any kind) within the last month (Johnston, O'Malley, Miech, Bachman, & Schulenberg, 2014). In Canada, 21 percent of 15-24 year olds report having used of some kind of illicit drugs within the last year (Health Canada, 2011). In Australia, seven percent 12-17 year olds report using some kind of drug within the last month (White & Smith, 2009). The European Monitoring Centre for Drugs and Drug Addiction has found that that within Europe prevalence differs significantly from country to country but that overall around a quarter of Europeans report having used some kind of illicit drug in their lifetime (European Monitoring Centre for Drugs and Drug Addiction (EMCDDA), 2013).

The prevalence of specific kinds of illicit drug abuse varies significantly, with cannabis generally being the most commonly used drug. In the US, 22.7 percent of 12th-grade students report having used marijuana/hashish (types of cannabis), 4.1 percent amphetamine, and 1.1 percent cocaine during the last 30 days before the National Survey on Drug Use conducted in 2013 (Johnston et al., 2014). The European Drug Report of 2013 indicates that 11.7 percent of the 15 to 34 year-olds in

[1] The terms 'use', 'abuse' and 'dependence' are often used interchangeably and refer to an addiction stage of non-medical drug usage.

Europe have used cannabis, 1.3 percent amphetamine, and 1.9 percent used cocaine during the last year (EMCDDA, 2013).

Although not all young drug users progress to severe dependence, some do and may therefore require treatment (see e.g. Crowley, Macdonald, Whitmore & Mikulich, 1998). Research draws attention to the significant gap between the number of young people classified as in need of treatment and the number of young people who actually receive such treatment (Substance Abuse and Mental Health Services Administration (SAMHSA), 2010; National Survey on Drug Use and Health (NSDUH), 2007). In the US, for example, 7.2 million people aged 12 or older are classified as needing treatment for illicit drug abuse, but only 1.4 million of these young people actually receive treatment at a specialty facility for an illicit drug abuse problem (SAMHSA, 2011).

The treatment usually provided to young people is delivered in outpatient settings. Accordingly, 90 percent of the 89,521 clients under age 18 registered in substance abuse treatment in 2012 by SAMHSA were in outpatient treatment, which is the same proportion as the total treatment population (Substance Abuse and Mental Health Services Administration (SAMHSA), 2013). Equal proportions of the clients under age 18 were enrolled in facilities with a primary focus on substance abuse treatment and in facilities whose primary focus were provision of a mix of mental health and substance abuse treatment services; this differs from the total treatment population as youth tend to be treated in dual focus facilities more often than adults (SAMHSA, 2013). Cognitive-behavioral therapy and motivational interviewing are specific therapeutic approaches that are used at least sometimes by most treatment facilities (91% and 87% respectively: SAMHSA, 2013).

There is growing public concern about the effectiveness and high cost of available treatments for young people, and the high rates of treatment dropout and post-treatment relapse to drug abuse (Austin, Macgowan, & Wagner, 2005; Najavits & Weiss, 1994; Stanton & Shadish, 1997). While relapse must be acknowledged as an expected part of any treatment process targeting individual drug use, efforts should be made to make treatment as attractive, accessible and relevant as possible for young people in order to minimize the risk of unwarranted dropout and continuous relapse (Simmons et al., 2008; National Institute on Drug Abuse (NIDA), 2009). Furthermore, the services provided should be empirically supported to increase the likelihood that (a) treatment will be successful, and (b) public spending supports the interventions that are the most effective.

Researchers point to the fact that many research projects have empirically validated different types of treatment approaches as effective for young drug users (e.g. Rowe & Liddle, 2006; Waldron, Turner, & Ozechowski, 2006; Williams, Chang, & Addiction Centre Adolescent Research Group, 2000; Austin et al., 2005). The effectiveness, however, depends upon the interplay between a specific intervention and individual factors such as gender, ethnicity, family composition, co-morbidity

and history of drug abuse (Brannigan, Schackman, Falco, & Millman, 2004; Hawkins 2009; Horsfall, Cleary, Hunt, & Walter 2009). For example, research suggests that treatment outcomes of a specific program such as Functional Family Therapy may vary for different ethnic groups (Hops et al, 2011; Flicker, Waldron, Turner, Brody, & Hops, 2011). The current challenge in the field of substance abuse treatment for young people is therefore to establish not only what works best but also what works for different subgroups.

In terms of treatment types, there is some documentation of promising individually-based cognitive and motivational therapies (Waldron & Turner, 2008; Kaminer, 2008; Deas & Thomas, 2001; Galanter & Kleber, 2008). Family-based approaches on the other hand may be equally effective. Family therapy encompasses a range of different interventions with varying theoretical sources, including behavioral and cognitive behavioral theory, structural and strategic family theory, and family systems theory (Williams et al., 2000; Austin et al., 2005). Some reviews have suggested that these family-based therapies are superior to individual-based programs in reducing youth drug abuse (Williams et al., 2000; Lipsey, Tanner-Smith, & Wilson, 2010; Waldron, 1997).

Young people with persistent drug abuse have unique needs due to their particular cognitive and psychosocial development. Young people are especially sensitive to social influence, with family and peer groups being highly influential. Youth drug treatments which facilitate positive parental and peer involvement, and which integrate other systems in which the young person participates (such as schools, social services, and justice authorities) are thus key to reducing drug abuse by young people (NIDA, 2009). A number of studies and reviews have showed positive results for family therapies in general, but there is a need to synthesize individual study results for specific family therapies to determine whether and to what extent specific family therapy interventions work for young drug abusers (Williams et al., 2000; Austin et al., 2005; Waldron & Turner, 2008; Kaminer, 2008; Deas & Thomas, 2001).

This review is concerned specifically with Functional Family Therapy (hereafter FFT) (Alexander & Parsons, 1973; Alexander & Parsons, 1982; Rowe & Liddle, 2003), as aggregated evidence for the effects of this approach is lacking. The review will seek to clarify the effects of the FFT program for relevant groups of young people aged 11-21, and will focus on young people enrolled in treatment for drug abuse, irrespective of how their problem is defined. Enrolment in treatment is taken to imply that the severity of the young person's drug abuse has compelled a close, significant adult (for example, teacher, parent, social services, or school counselor) to demand that the young person enters treatment. FFT is an intervention offered as

an outpatient treatment[2] to young people age 11-21 that are living with their families[3].

This review focuses solely on non-opioid drug abuse[4], and is one in a series of reviews on manual-based family therapy interventions for young people in treatment for non-opioid drug abuse[5].

1.2 DESCRIPTION OF THE INTERVENTION

Functional Family Therapy (FFT) is a short-term, manual-based, behaviorally oriented family therapy program for young people with behavior problems such as drug abuse, juvenile delinquency and violence. Delivered in an outpatient setting, it aims to help young people *and* their families by improving family interactions and relationship function by addressing dysfunctional individual behavior (Sexton & Alexander, 2000; Sexton & Turner, 2011).

In an FFT program, the therapist provides intensive family therapy in an attempt to change the patterns of family interaction that are contributing to the problem behavior and to help family members develop specific skills in, for example, communication, conflict resolution, problem solving, and effective parenting. After the desired behavioral change has been achieved within the family, the therapist helps the family generalize changes to other situations and settings, such as school, community, and peers, and identifies support that can help to maintain the progress made (Sexton & Alexander, 2003; Onedera, 2006).

As with many other forms of family therapy, FFT targets young people and their families as a system. As such, it recognizes the important role of the family system in the development and treatment of young people's drug abuse problems (Ozechowski & Liddle, 2000); indeed, the FFT model asks that there be no 'identified patient'. While a specific FFT intervention may focus on improving specific problems such as drug abuse, the FFT approach in itself adds a broader view of the change process and clinical outcomes by switching from an individual problem focus to a relational

[2] A Cochrane review has evaluated psychosocial interventions for substance abuse and misuse in young offenders in locked facilities (Townsend et al., 2009).

[3] Technically, FFT requires only that the youth be residing with a caregiver for 6 months.

[4] Two Cochrane reviews have evaluated psychosocial treatments for treatment of opioid dependence (Amato et al., 2011; Minozzi et al. 2011). A further review (co-registered in Campbell and Cochrane Collaborations) on the effects of FFT for families with behaviour problems (Littell et al., 2007) is in progress and has broader inclusion criteria.

[5] See the following Protocols in the Campbell Library: Brief Strategic Family Therapy (BSFT) for young people in treatment for non-opioid drug use, (Lindstrøm et al.); Family Behavior Therapy (FBT) for young people in treatment for non-opioid drug use (Kowalski et al.); Multidimensional Family Therapy (MDFT) for young people in treatment for non-opioid drug use (Rasmussen et al.).

perspective. The intervention is designed to help families recalibrate their interaction patterns and improve family relations, and through this achieve individual goals such as decreased drug abuse (Alexander, Waldron, Robbins, & Neeb, 2013).

FFT was developed in the late 1960s and early 1970s (Alexander & Parsons, 1973) with the model described in full by Alexander and Parsons in the early 1980s (Alexander & Parsons, 1982). It was developed to serve diverse populations of under-served and at-risk adolescents and their families because these populations lacked resources, were difficult to treat, and were often perceived by professionals as lacking the motivation for change. The founders of FFT realized that successful treatment of these populations required service providers who were sensitive to the needs of these diverse families, who were competent to work with them, and who understood why the families had traditionally resisted treatment (Sexton & Alexander, 2003). The development of the FFT program has continued, and the therapy has been refined in response to the results of research and the experiences from successful implementation (Alexander & Robbins, 2010).

In a systematic review conducted by Austin et al. (2005), FFT appeared as one of five interventions identified as consistent with the majority of guidelines for effective treatment for adolescents with substance abuse. Austin et al. (2005) also note, however, that there is some inconsistency in the research on outcomes of FFT and that long-term follow-up assessment is needed. In a meta-analytical study, Waldron & Turner (2008) synthesized findings from 17 studies evaluating outpatient treatments for substance-abusing youth, including several therapy models, among them FFT, other family therapy approaches, group CBT, individual CBT and minimal treatment conditions. Waldron & Turner (2008) found that the effect size associated with reductions in drug abuse was significantly larger for family therapy relative to the minimal treatment condition, but the meta-analysis did not establish one of the treatment approaches as clearly superior to any other in terms of treatment effectiveness for substance-abusing youth.

1.2.1 Theoretical background

FFT is derived from both family system theory (Alexander & Parsons, 1973) and cognitive behavioral theory and techniques (Alexander & Robbins, 2010). The therapy focuses on family functioning, and is thus based on the premise that both positive and negative behavior can have a direct influence, and are influenced by multiple relational systems (Alexander & Sexton, 2002; Sexton & Alexander, 2000). It assumes that young people's problem behavior can serve a function within the family. Family members develop ways of interacting that help them meet their relational needs for closeness or distance, but these patterns of interacting may also create or maintain behavioral problems. When changes are made in how the family interacts (by, for example, improving communication, problem-solving, and parenting skills), behavioral problems will be resolved. Interventions must take into

account the needs of each family member and be tailored to the family's unique risk and protective factors (Alexander & Sexton, 2002; Sexton & Alexander, 2003; Alexander et al., 2013).

While FFT is established as a distinctly unique approach, it has not emerged in a vacuum and is related to other current treatment approaches. Accordingly, Calley (2011) states that one of the most striking elements of the functional family therapy approach is its similarity to other therapeutic models, such as multisystemic family therapy, motivational enhancement therapy and solution-focused brief therapy. She emphasizes that this is not a deficit of the FFT model but rather a reminder of the evolutionary nature of the theories informing psychotherapy in general. Some of the characteristics that make FFT stand out are the emphasis on relational functions (hence the title *Functional* Family Therapy), the level of implementation of detailed treatment manuals and protocols for training and supervision, as well as the distinctive phase model (Alexander et al., 2013). Furthermore, FFT is a multi-systemic treatment focusing on the multiple domains and systems of which the adolescent is part, such as the community, school and the juvenile justice system (Sexton & Alexander, 2003). Finally, FFT is a multilevel intervention in which the therapist works first to develop the family's inner strengths and sense of being able to improve their situation. This provides a foundation for change and future functioning that extends beyond the direct support of the therapist and other social systems. As FFT is a strength-based model, its philosophy is that the intervention offers self-sufficiency through a platform for change for the family (Sexton & Alexander, 2000; Sexton & Turner, 2011).

FFT therapists have diverse professional backgrounds. In one FFT intervention targeting youth with behavioral problems that was carried out in a community practice setting, the majority of therapists were Master's degree clinicians; others were Bachelor's level, and the therapists' clinical experience ranged from 1 to 40 years. Regardless of the variations in training and experience, all therapists received ongoing group-based FFT training, and outcome studies suggested that rather than the professional background, the decisive therapist characteristic was the level of treatment model adherence. Thus, the FFT intervention was found to be effective only when the therapists adhered to the treatment model (Sexton & Turner, 2011). In a previous study, undergraduate paraprofessionals trained in FFT produced significant reductions in recidivism rates among youth offenders (Barton, Alexander, Waldron, Turner, and Warburton, 1985), giving some indication of the level of training that might be required to successfully reproduce FFT (cf. Sexton 2011). In general, the FFT model emphasizes the importance of ongoing training and supervision to maintain therapists' model fidelity, and FFT provides training and supervision protocols to facilitate adherence in real-world settings (Alexander et al., 2013).

1.2.2 FFT components

As a clinical model, FFT is both flexible and structured: flexible because it requires individualized treatment strategies to be formulated by sensitive clinicians, and structured because it offers a fixed sequence of treatment strategies (Alexander & Sexton, 2002).

The FFT treatment contains five interdependent and sequentially linked phases, in addition to pre-treatment and post-treatment activities. Each of the five phases has specific assessment and intervention components that are tailored to the unique characteristics of each family: (1) Engagement in change; (2) Motivation to change; (3) Relational/interpersonal assessment and change planning; (4) Behavioral Change; (5) Generalization across behavioral domains and multiple systems (Alexander & Robbins, 2010; Alexander et al., 2013).

Research on FFT outcomes has emphasized investigations of the intervention's effectiveness in relation to desired outcomes (Alexander et al., 2013 p. 37-62) rather than investigating possible adverse effects (Dishion, McCord, & Poulin, 1999) of FFT. Critics have suggested that future evaluations of FFT need to be carried out by a broader group of researchers to ensure rigorous evaluation of the approach in practice settings and to nuance the documentation of outcomes (Calley, 2011). Stressing desired outcomes at the expense of turning attention to the investigation of adverse effects is characteristic of much research into effects of psychotherapy, not just FFT (cf. Barlow, 2010). Nonetheless, research suggests that possible adverse effects of therapy include exacerbating clients' problematic symptoms or initiating an experience of passive dependence (Dishion et al., 1999, Barlow, 2010).

Pre-treatment Preparation and Engagement phase

Before the therapist contacts the family, he or she will gather all information available about the youth and his or her family (including from formal assessments and official records). The ultimate goal of the Pre-treatment phase is that the therapist is fully ready both to assist the youth and family, and also to anticipate potential barriers and utilize strengths so that a positive experience for the family may be created (Alexander & Robbins, 2010; Onedera, 2006).

The engagement phase involves activities that encourage the family to attend sessions. The therapist strives to create a positive contact with the family by, for example, scheduling appointments via telephone rather than by letter (this has the additional advantage of allowing the therapist to form a first impression of the family and to identify potential problems such as resistance to or confusion about treatment). It is considered important that the therapist be culturally competent and able to assist the family in feeling respected and comfortable (Alexander et al, 2013).

Motivation phase

The goal of this phase is to create a positive and motivational context within which change can occur. Alexander (interview in Onedera, 2006) stresses that motivation is fundamental for subsequent behavioral change. It is considered important that any negativity is decreased in this early phase before targeting actual behavioral change; this is because negative emotions can prevent family members from making a realistic commitment to change (Onedera, 2006). Using a range of therapeutic techniques, the family members are helped to feel a reduction of blame, anger, and hopelessness and an increase in hopefulness (Alexander & Sexton, 2002; Sexton & Alexander, 2003).

The phase consists of two major domains of activity: Changing Focus and Changing Meaning. 'Change Focus interventions' attempt to disrupt negativity and unproductive family interactions by shifting, stopping or redirecting communication. 'Change Meaning interventions' seek to change the meaning of how family members understand themselves and each other (Alexander & Robbins, 2010; Alexander et al., 2013).

Relational assessment

The goals of relational assessment are to elicit and analyze information pertaining to relational processes, and to develop plans for the further process.

Relational assessment focuses on two family relationship domains: (a) the degree of connection between members of the family, and (b) the hierarchical pattern involved in those connections. In this phase, the therapist identifies how to approach specific changes in the family to meet the least resistance and create the most lasting effects. Relational assessment provides a framework that addresses not only the specific problem behavior (e.g. youth drug abuse) but also the unique abilities and styles of the family members with respect to each other. The focus is directed to intra-family and extra-family capacities which include values, attributions, functions, interaction patterns, and sources of resistance (Alexander & Robbins, 2010; Alexander et al., 2013).

Behavior change

In this phase, the main goals are to develop an implementation plan for change. It is important that the plan matches the unique family, each of its members, and their relational functions. The therapist provides concrete behavioral interventions to guide and model specific behavior changes (e.g. communication training, problem solving, negotiating, parental skills training, and conflict management). It is seen as important that the techniques used are individualized and developmentally appropriate, and that they fit the family relational system (Alexander & Sexton, 2002; Alexander et al., 2013).

Generalization

In the last phase, the goals are to generalize, maintain and support change by incorporating community resources. The aim is to encourage family members to solve their problems using the identified strengths and skills they have learned, and to reduce dependence on the therapist. Interventions seek to help the family to generalize across different situations, to be more efficacious in overcoming setbacks or relapse, and to use community resources. There is a focus on motivating the families to continue attending sessions after family life has improved whilst at the same time encouraging the family to rely on their own capacities. Community resources are actively mobilized in the generalization phase. Behavior is seen as indicative of the functionality of the family system (Alexander & Sexton, 2002; Alexander & Robbins, 2010; Alexander et al., 2013).

1.2.3 Duration and setting

FFT is a short-term intervention comprising on average 8-12 sessions for mild cases and up to 30 sessions for more complex cases. The sessions are normally spread over a period of between three and six months. The therapist spends at least one hour per week with the youth and his or her family. The program is flexible and can be implemented in a variety of settings, including at a clinical or community facility or with in the family home (Sexton & Alexander, 2003).

1.3 HOW THE INTERVENTION MIGHT WORK

FFT was originally designed to aid in the family unit becoming healthier; a reduction in recidivism rates for juveniles and the treatment of substance use has subsequently grown out of the model, but was not a driving force in its design. Where FFT is applied specifically to youth with non-opioid drug use problems, however, two rather different primary objectives can be discerned: 1) to eliminate or reduce young people's drug abuse, and 2) to change behaviors associated with drug abuse in young people and their families. Randomized controlled trials and systematic reviews have indicated that FFT can reduce drug abuse in participants, can contribute to a reduction in behavioral problems and delinquency, and is associated with improvements in family communication patterns and relationships (Austin et al., 2005; Waldron, Slesnick, Brody, Turner, & Peterson, 2001; Waldron & Turner, 2008; Hogue & Liddle, 2009; Stanton & Shadish, 1997).

Psychodynamic, behavioral, and social learning have been the key theories that shaped have FFT (Alexander et al., 2013). Fundamentally, this theoretical bedrock indicates that problem behavior is not approached as a mere reflection of individual psychopathology. Rather both positive and negative behavior is viewed in the social context, meaning that therapists focus their attention more on interactional dynamics. Furthermore, FFT is influenced by family systems and communication theories infusing the holistic perspective and implying that therapists view social

roles and relationships as central, if not causative, aspects of problem behavior (Alexander et al., 2013). Building on these theories, FFT requires that the therapists focus on the relational functions of all family members' behaviors relevant to the problem behavior (e.g. drug abuse) of the referred youth. In other words, FFT theorizes that changing individual drug abuse may be achieved through improving family relations and reducing dysfunctional interaction.

A basic premise of FFT is therefore that family members of the referred substance-abusing youth participate in the treatment process. The decision about who is to participate in FFT sessions in a particular case is based on the therapist's understanding of which family members will be important for the change process involving the referred youth (Alexander et al., 2013). While parents (or parental figures) are expected to participate, they are not necessarily expected to be motivated at the treatment outset to keep the family integrated. Parents, especially stepparents, may enter FFT motivated to have the youth removed from the home, and FFT treatment encompasses specify strategies to engage them in a positive change process (Alexander et al., 2013).

The program outcomes may be affected by mediating factors such as participant characteristics and program mechanisms. Participant characteristics that have been found to predict program drug abuse reduction or abstinence were: history and severity of drug abuse pretreatment; level of general peer and parental support, particularly in relation to non-drug use; and higher levels of school attendance and functioning pretreatment (Williams et al., 2000). More information is required by practitioners on the impact of other characteristics such as age, gender, ethnicity, family composition (e.g., single parenting), and co-occurring conditions. These participant characteristics are potential predictors of treatment outcome and practitioners need to be able to assess the program's relevance for any particular type of client.

Treatment variables with positive impacts on treatment outcomes have been identified in a number of reviews of a range of treatments for youth drug abuse (Waldron & Turner, 2008; Williams et al., 2000). Treatment completion is the variable most consistently related to reduction in drug abuse (Williams et al., 2000; Waldron & Turner, 2008). While it is established that building a therapeutic alliance early in treatment increases the likelihood that young people complete treatment and reduce their drug abuse (Waldron & Turner, 2008), it remains unclear whether this is a direct effect or an indicator of treatment motivation (which itself has been shown to have a positive impact on treatment outcome). Either way, these findings point to the importance of the FFT components of 'engagement' and 'motivation' as influences on treatment compliance and attendance.

1.3.1 Intervention mechanisms

The focus on family systems, the behavioral nature of the approach, and the requirement to address engagement and motivation issues are all possible

explanations of intervention impact. These mechanisms influence family behavior and functioning, and ultimately facilitate changes in young people's drug abuse.

In FFT, the Engagement component is the first step a therapist takes to prepare the family for change. This component stresses the importance of the therapist's capacity to create a positive relation to all family members. The therapist prepares for the meeting with the family by gathering all available information about the youth and his or her family. The goal of this is to be culturally equipped to meet the family with respect to and to understand as much as possible about, the context.

The Motivation phase is closely linked to the Engagement phase and contains a number of intervention techniques (e.g. 'divert and interrupt', 'reframing', and developing positive themes) which can be used by the therapist to gain change within the family. By using the intervention technique of 'reframing', the therapist creates alternative cognitive and attributional perspectives that help redefine meaningful events and thus reduce negativity. Reframing challenge clients to identify new directions for future change help to link family members to one another, so that each one feels a joint responsibility for the family's struggles.

Motivation, as key to positive treatment outcome (Williams et al., 2000), is also linked to the support and influence of the family system. The family system's ability to influence the young person toward a non-drug-using lifestyle is a possible mechanism of change related to the family systems focus of FFT. Studies have found that FFT positively influences family interaction, and contributes to the reduction in young people's drug abuse (Ozechowski & Liddle, 2000).

Therapeutic alliances are described as crucial in the mechanisms of change associated with FFT. Within FFT, therapeutic alliances are associated with interventions delivered in a fashion whereby each family member 1) trusts the therapist and his/her expertise, 2) believes the therapist is working hard to respect and value them regardless of their behavior, 3) believes the therapist is working hard to understand their emotions and values (Robbins, Turner, Alexander, & Perez, 2003). Research into the importance of therapeutic alliances suggests, that therapists who were able to achieve a balanced or similar level of alliances (i.e. avoiding unbalanced alliances in which therapists are more closely aligned with parents than youth or vice versa) were more likely to retain family in treatment (Robbins et al., 2003). These results underline the importance of the therapist's success in creating a positive, balanced family-therapist alliance in the engagement and motivation phase.

1.4 WHY IS IT IMPORTANT TO DO THIS REVIEW

Persistent drug abuse among young people is a significant social problem, and the treatment of young people's drug abuse is challenging and costly, not least because the treatments for such problems are plagued by high dropout rates and post-

treatment relapse. Research suggests that nearly half of the young drug users who enter treatment never complete it (SAMHSA), 2008). There is a need to identify effective treatments that address young people's drug abuse problems and that minimize dropout and post-treatment relapse. Furthermore, the growing interest among policymakers in increasing funding for evidence-based interventions was a strong motivation for collecting further evidence with a systematic review on a promising treatment for young drug users.

By aggregating the results from all available individual studies on FFT, this review will contribute to the body of knowledge on the treatment of young drug-users and their families. The review will inform practice by exploring the effects of FFT for relevant client groups.

2 Objectives

The main aim of this review is to evaluate the current evidence on the effects of FFT on drug abuse reduction for young people in treatment for non-opioid drug use.

3 Methods

3.1 TITLE REGISTRATION AND REVIEW PROTOCOL

The title for this systematic review was approved in The Campbell Collaboration on 31 May, 2010. The review protocol was approved on 21 September 2014. Title and protocol are available at: http://campbellcollaboration.org/lib/project/173/.

3.2 CRITERIA FOR CONSIDERING STUDIES FOR THIS REVIEW

3.2.1 Types of studies

Study designs eligible for inclusion were:

Controlled trials[6] where all parts of the study are prospective (i.e. recruitment of participants, assessment of baseline characteristics, allocation to intervention, selection of outcomes and generation of hypotheses, see Higgins & Green, 2008). These include:

- randomized controlled trials (RCTs);
- quasi-randomized controlled trials (QRCTs), where participants are allocated by means such as alternate allocation, person's birth date, the date of the week or month, case number or alphabetical order;
- non-randomized controlled trials (NRCTs), where participants are allocated by other actions controlled by the researcher, such as location difference or time difference.

Given that the aim of this review was to be as comprehensive as possible, we justify including NRCT designs because they may contain relevant information that is not captured in RCTs.

To be eligible for inclusion, NRCTs must have demonstrated pre-treatment group equivalence via matching, statistical controls, or evidence of equivalence on key risk

[6] A controlled trial typically includes at least two groups, an intervention/experimental group and a control group, and outcome measures recorded pre- and post–treatment.

variables and participant characteristics. These factors are outlined in section 3.4.3 under the subheading of *Confounding*, with the methodological appropriateness to be assessed according to the risk of bias model outlined in Section 10.2.

We did not find any relevant quasi-randomized or non-randomized studies for inclusion in this review.

3.2.2 Types of participants

The population included in this review was young people aged 11-21 years who were enrolled in outpatient manual-based FFT treatment for non-opioid drug use. Non-opioid drugs are defined as cannabis, amphetamines, ecstasy or cocaine. The misuse of prescription drugs and the use of ketamine, nitrous oxide and inhalants such as glue and petrol are not considered in this review.

Definitions of young people, and the age at which someone is considered a young person and so entitled to special services such as drug treatment, varies internationally (United Nations, 2011). Age group distinctions for young people are unclear because the boundaries are fluid and culturally specific (Weller, 2006). Furthermore, young people start experimenting with illegal drugs at different ages in different countries (Hibell et al., 2009), and patterns of independence from parents and of independent living vary internationally. In order to encapsulate these international differences we have set the age range from 11 to 21 years (Hibell et al., 2009; United Nations, 2011; SAMHSA, 2010; Danish Youth Council, 2011). This age range is consistent with the other Campbell reviews in this suite of reviews on family therapies in the treatment of non-opioid drug use in young people, even though FFT is not intended as a treatment for those over the age of 18.

We included only out-patient interventions in order to evaluate the effects of FFT on youths living with their families, since family interactions are fundamental to FFT.

We defined the population as young people referred to or in treatment for using non-opioid drugs. No universal international consensus exists on classifying drug users[7], and a number of assessment tools and methods of classifying the severity of drug use have been applied in different research studies (American Psychiatric

[7] Different systems classify clients into different categories, e.g., users, misusers and dependents. These specific categorizations are used in the Diagnostic and Statistical Manual of Mental Disorders (DSM) (American Psychiatric Association, 1994, 2000). While the DSM-IV is a widely used classification system, other relevant classification systems such as the International Statistical Classification of Diseases and Related Health problems (ICD, currently ICD-10) developed by the World Health Organisation (WHO) are also in wide use. Differences between the classification systems concern both terminology and categorization criteria. For example, the DSM-IV includes the category 'abuse', while the ICD-10 explicitly avoids this term on the grounds of its ambiguity; harmful use and hazardous use are the equivalent terms in WHO usage, but the categories are not identical: while the ICD-10 solely operates with physical and mental criteria, the DSM-IV also includes social criteria (WHO, 2011; Nordegren, 2002).

Association, 2000; World Health Organization (WHO), 2011; Nordegren, 2002). We included participants regardless of any formal drug use diagnosis. The main criterion for inclusion was that the young person was enrolled to participate in the treatment (intervention or comparison condition). Referral to and enrolment in drug use treatment suggests a level of drug use such that a significant other or authority (or the young person themselves) has found it necessary to seek treatment.

It is evident in the literature that there are various reasons why young people become enrolled in drug treatment programs, including FFT. One is that there is clear evidence of drug use, either observed or self-reported; another is that the young person is seen as being at significant risk of using drugs by nature of his/her environment or peer group. Given this complexity, the fact that an individual may fall into more than one of these groups, and the inherent difficulty in determining accurately the proportion of non-opioid drug users in any sample of young people, we included studies where at least 50% of participants had either used or were suspected of using drugs, and the rest of the sample were at risk for drug use through having peers that do so.

We included poly-drug users only if the majority of participants in a study used non-opioid drugs. Psychosocial interventions for youth opioid dependence has been evaluated in Cochrane reviews (Amato et al., 2011; Minozzi et al., 2011) and we wished to avoid duplication of effort. We excluded populations who exclusively used alcohol.

3.2.3 Types of interventions

The review included outpatient manual-based FFT interventions of any duration delivered to young people and their families (see 1.2 Description of the intervention). The FFT intervention must have been delivered in an outpatient setting and not include overnight stays in a hospital or another treatment facility. The FFT intervention could have taken place in the home, at a community center, in a therapist's office or at an outpatient facility. Interventions in restrictive environments, such as prisons, detention centers, institutions for sentence-serving juvenile delinquents or other locked institutions[8] were excluded.

FFT is a family intervention requiring active participation by the young drug user and his or her family, with one of the primary aims being the improvement of family functioning. In cases where the young drug user is placed outside the family home, as with inpatient treatment or incarceration in a locked facility, the core condition of the program would be seriously compromised.

[8] A Cochrane review has evaluated psychosocial interventions for substance abuse and misuse in young offenders in locked facilities (Townsend et al., 2009).

Studies where FFT was delivered with add-on components were included as long as FFT was the primary intervention.

Eligible comparison conditions were no intervention, waitlist controls and alternative interventions including Treatment as Usual (TAU) as we are interested in both absolute and relative effects. Due to ethical considerations and the nature of the problem (i.e. young peoples' drug use), the likelihood of finding a no treatment control condition was considered small. We expected that the most frequent comparison condition would be alternative interventions (Lipsey et al., 2010).

3.2.4 Types of outcome measures

We considered the following outcomes:

Primary outcome(s)

Abstinence or reduction of drug use, as measured by (for example):

- Biochemical test (e.g. urine screening for drug use);
- Self-reported estimates of drug use (e.g. Timeline Followback TLFB; Sobell & Sobell, 1992);
- Psychometric scales (e.g. Addiction Severity Index; McLellan, Luborsky, Woody & O'Brien, 1980).

Secondary outcomes

- Family functioning (e.g. as measured by the Beavers Interactional Competence Scale; Beavers & Hampson, 2000).
- Education or vocational involvement (e.g. as measured by grade point average, attendance, self-reported or reported by authorities, files, registers, or employment record).
- Treatment retention (e.g. as measured by days in treatment, completion rates and/or attrition rates).
- Risk behavior, such as crime rates, prostitution (e.g. as measured by self-reports or reports by authorities, administrative files, registers).
- Other adverse health outcomes (e.g. as measured by length and frequency of hospitalization, suicide and overdose).

The primary outcome is abstinence or reduction of drug use, as the main review objective is to evaluate current evidence on FFT's effects on drug use reduction for young people in treatment for drug use. We were seeking evidence on how to best reduce or eliminate drug use as drug use is understood as the young people's primary problem.

Outcomes were considered over the following intervals:

- Short term (end of treatment to less than 6 months after end of treatment)

- Medium term (6 to 12 months after end of treatment)
- Long term (more than 12 months after end of treatment)

3.3 SEARCH METHODS FOR IDENTIFICATION OF STUDIES

The search was performed by one of the review authors (AKJ)

3.3.1 Electronic searches

Relevant studies were identified through electronic searches of bibliographic databases, government and policy databanks. No language or date restrictions were applied to the searches.

The following bibliographic databases were searched:

Bibliotek.dk searched until July 2, 2013

Bibsys searched until July 2, 2013

Cinahl (EBSCO) searched on until July 2, 2013

Cochrane Library searched until June 12, 2013

Criminal Justice Abstracts (EBSCO) searched until July 2, 2013

Embase (Ovid) searched until July 2, 2013

ERIC (EBSCO) searched until July 2, 2013

Libris searched until July 2, 2013

Medline (Ovid) searched until July 2, 2013

PsycINFO (EBSCO) searched until June 12, 2013

Science Citation Abstract searched until July 2, 2013

Social Care Online searched until July 2, 2013

Social Science Citation Abstract searched until July 2013

Socindex searched until July 2, 2013

3.3.2 Search terms

An example of the search strategy for MEDLINE searched through the Ovid platform is listed below. This strategy was modified for the different databases (see section 10.4 for details).

1. FFT.af.
2. Famil* adj1 Functional* adj1 therap*.af.
3. 1-2/or

3.3.3 Searching other resources

The review authors checked the reference lists of other relevant reviews and each of the included primary studies for new leads. We identified 16 leading international

experts who had published in this subject area, and contacted them individually in attempt to identify unpublished and ongoing studies. We provided the experts with the inclusion criteria for the review along with the list of included studies, asking for any other published, unpublished or ongoing studies relevant to the review.

3.3.4 Hand search

The following five international journals were hand searched for relevant studies:

- Addiction
- Journal of Consulting and Clinical Psychology
- Journal of Substance Abuse Treatment
- Journal of Clinical and Adolescent Psychology
- Research on Social Work Practice

Searching was performed on journal editions from January to September 2013 in attempt to identify any recently published studies that may not have been found in the systematic search.

3.3.5 Grey literature

Additional searches for relevant studies and useful leads were made using *Google* and *Google Scholar*, where we checked the first 150 hits. OpenGrey (http://www.opengrey.eu/) was used to search for European grey literature. Copies of relevant documents were made and we recorded the exact URL and date of access for each relevant document. DissExpress was searched in attempt to identify any relevant dissertations.

In addition, we searched the following sites for relevant ongoing or unpublished research projects and useful leads:

National Institute on Drug Abuse (NIDA) http://www.nida.nih.gov/nidahome.htm

The European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) http://www.emcdda.europa.eu/index.cfm

Substance abuse and Mental Health Services administration (SAMHSA) http://www.samhsa.gov/

3.4 DATA COLLECTION AND ANALYSIS

3.4.1 Selection of studies

Two members of the review team[9] independently screened titles and available abstracts to exclude studies that were clearly irrelevant under the supervision of ML[10] (TLF & LH). Studies considered eligible by at least one reviewer was retrieved in full text. The full texts were then screened by two members of the review team (ML & DLS) to determine study eligibility based on the inclusion criteria. Any disagreements about eligibility were resolved by discussion. The study inclusion screening sheet was piloted and adjusted as required and was used throughout screening. The overall search and screening process is illustrated in a flow-diagram (Figure 11.1).

3.4.2 Data extraction and management

Two members of the review team (ML & SKN) independently coded the included studies. Information was extracted on: characteristics of participants, intervention characteristics and control conditions, research design, sample size, outcomes and results (the codebook can be found in Appendix 10.1). Extracted data were stored electronically.

3.4.3 Assessment of risk of bias in included studies

We assessed the methodological quality of studies using a risk of bias model developed by Prof. Barnaby Reeves in association with the Cochrane Non-Randomised Studies Methods Group (Reeves, Deeks, Higgins, & Wells, 2011) [11]. This model, an unpublished extension of the existing Cochrane Collaboration's risk of bias tool (Higgins & Green, 2008), covers both risk of bias in RCTs and in NRCTs that have a well-defined control group.

The extended model is organized and follows the same steps as the existing Risk of Bias model according to the Cochrane Hand book, chapter 8 (Higgins & Green, 2008). The extension to the model is explained in the three following points:

1) The existing Cochrane risk of bias tool needs elaboration when assessing non-randomized studies because, for non-randomized studies, particular attention must be paid to selection bias/risk of confounding. The extended model therefore

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[9] Maia Lindstrøm, Therese Lucia Friis, Louisa Henriksen, Dorte Laursen Stigaard, Majken Mosegaard Svendsen and Anne-Sofie Due Knudsen are members of the review team.

[10] Maia Lindstrøm, author of the protocol of this review.

[11] This risk of bias model was introduced by Prof. Reeves at a workshop on risk of bias in non-randomized studies at SFI Campbell, February 2011. The model is developed by the Cochrane Non-Randomized Studies Method Group (NRSMG).

specifically incorporates a formalized and structured approach for the assessment of selection bias in non-randomized studies[12] by adding an explicit item about confounding (Reeves et al. 2011). It is based on a list of confounders considered important and defined in the protocol for the review. The assessment of confounding is made using a worksheet where for each confounder it is marked whether the confounder was considered by the researchers, the precision with which it was measured, the imbalance between groups and the care with which adjustment was carried out. This assessment will inform the final risk of bias score for confounding.

2) Another feature of non-randomized studies that make them at greater risk of bias compared to RCTs is that RCTs must have a protocol in advance of starting to recruit whereas non-randomized studies need not. The item concerning selective reporting therefore also requires assessment of the extent to which analyses (and potentially other choices) could have been manipulated to bias the findings reported, e.g., choice of method of model fitting, potential confounders considered/included. In addition the model includes two separate yes/no items asking reviewers whether they think the researchers had a pre-specified protocol and analysis plan.

3) Finally the risk of bias assessment is refined, making it possible to discriminate between studies with varying degrees of risk. This refinement is achieved with the addition of a 5-point scale for certain items (see the following section *Risk of bias judgment* for details).

The refined assessment is pertinent when thinking of data synthesis as it operationalizes the identification of studies (especially in relation to non-randomized studies) with a very high risk of bias. The refinement increases transparency in assessment judgments and provides justification for not including a study with a very high risk of bias in the meta-analysis.

Risk of bias judgment items and assessment

The risk of bias model used in this review is based on 9 items (see section 10.2 for Risk of Bias tool).

The 9 items refer to

- **sequence generation** (Judged on a low/high risk/unclear scale – NRCT will automatically have high risk of bias)
- **allocation concealment** (Judged on a low/high risk/unclear scale)
- **confounders** (Judged on a 5 point scale/unclear, only relevant for non-randomized studies, i.e. NRCT)

[12] The extended model was developed to ensure standardization of guidelines and procedures in the Risk of Bias assessment of NRS.

- **blinding** (Judged on a 5 point scale/unclear)
- **incomplete outcome data** (Judged on a 5 point scale/unclear)
- **selective outcome reporting** (Judged on a 5 point scale/unclear)
- **other potential threats to validity** (Judged on a 5 point scale/unclear)
- **a priori protocol** (Judged on a yes/no/unclear scale)
- **a priory analysis plan** (Judged on a yes/no/unclear scale)

The assessment was based on pre-specified questions (see section 10.2). "Yes" indicates a low risk, "No" indicates a high risk of bias, and "Unclear" indicates an unclear or unknown risk of bias. In the 5 point scale 1 corresponds to No/Low risk of bias (e.g., 1 = a high quality RCT) and 5 corresponds to Yes/High risk of bias (e.g., 5= too risky, too much bias, e.g., a poor quality study). A judgment of 5 points on any of the items assessed translates to a risk of bias so high that the findings would not be considered in the data synthesis (because they are more likely to mislead than inform) (see section 10.2). None of the included studies in the review or parts thereof were judged 5 on the risk of bias scale.

Confounding was not relevant in the review since we did not find any NRCTs meeting the inclusion criteria.

Assessment

Two members of the review team (ADK & MMS) independently assessed the risk of bias for each included study and these were checked by a review author (TF). We report the results of this assessment in risk of bias tables for the two included studies (see section 9.3).

3.4.4 Measures of treatment effect

Standardized mean differences (SMD) were used as the effect size metric for drug use and risk behavior; the data used for these calculations were means, standard deviations and sample size. RevMan 5.0 and Excel software were used for storing data and statistical analyses..

3.4.5 Unit of analysis issues

We planned to take into account the unit of analysis of the studies to determine whether individuals were randomized in groups (i.e. cluster randomized trials), whether individuals may have undergone multiple interventions, whether there were multiple treatment groups, and whether there were multiple publications for some studies.

Cluster randomized trials

If any cluster randomized trials had been identified we would have checked for consistency in the unit of allocation and the unit of analysis, as statistical errors can

occur when they are different. When suitable cluster analysis is used, effect estimates and their standard errors can be meta-analyzed (Higgins & Green, 2008). If we had found cases where study investigators had not applied appropriate analysis methods controlling for clustering, we would have approximated the intra-cluster correlation (see Donner, Piaggio, & Villar, 2001) and corrected standard errors.

Multiple interventions per individual

If any studies with multiple interventions per individual were identified, they would have been reported separately.

Multiple intervention groups

All possible comparisons from studies with multiple intervention/control groups were analysed.

Multiple publications

A total of two unique studies, reported in three papers, were included in the review.

Multiple time points and outcomes

All follow-up durations reported in the primary studies were recorded. When reporting separately by time point, there were no remaining dependencies within each of those time points.

3.4.6 Dealing with missing data

The review authors assessed missing data and attrition rates for the included studies. In cases of missing data (e.g. valid Ns, means and standard deviations), we contacted the primary study authors, but received no reply[13]. We recorded attrition rates and (when possible) reasons for attrition from included studies. Information on intention to treat analysis (ITT) were also recorded.

3.4.7 Assessment of heterogeneity

We planned to assess statistically significant heterogeneity among primary outcome studies with the Chi-squared (Q) test, tau-squared and I-squared statistics (Higgins & Green, 2008). A significant Q or tau-squared (P<.05) and I-squared greater than 50 percent would have been considered as indicating statistical heterogeneity.

[13]One author could not be located and the other author was contacted for missing data in May 2013.

3.4.8 Assessment of reporting biases

Reporting bias refers to both publication bias and selective reporting of outcome data and results. Selective reporting was dealt with in the risk of bias assessment and any concerns reported in section 4.3.5. Had we found sufficient studies, we would have used funnel plots for information about possible publication bias (Higgins & Green, 2008).

3.4.9 Data synthesis

If studies had been coded with a very high risk of bias on an item (5 on the risk of bias scale) they would not be included in the data synthesis. Analysis of the absolute effects of FFT would have involved comparing FFT to no treatment and to untreated wait list controls.

The relative effects of FFT (versus other interventions) were reported from studies that compared FFT to alternative interventions. All follow-up durations reported in the primary studies were recorded and we report separate results for all time points reported in the studies.

We planned to pool results from primary studies based on outcomes and perform meta-analysis with inverse variance weighting using random effects statistical models that incorporate both the sampling variance and between-study variance components into the study level weights. We planned to use a random effects model to represent the overall effect since we expected the studies to deal with diverse populations of participants.

We report SMDs and 95 percent confidence intervals in section 4.4.

3.4.10 Analysis of heterogeneity

We planned to investigate the following study-level covariates where possible with the aim of explaining observed heterogeneity: intervention characteristics (e.g., treatment duration, treatment intensity), participants' characteristics (e.g., gender, age, family composition, ethnicity, co-morbidity, and history of drug use) and comparison intervention characteristics.

If the number of included studies had been sufficient (dependent on the spread of the study means of the covariates and study sizes, (see Borenstein, Hedges, Higgins, & Rothstein, 2009; Simmonds & Higgins, 2007), we planned to perform moderator analyses (meta-regression) to explore how observed variables were related to heterogeneity using a mixed model. Otherwise, single factor subgroup analysis was planned.

3.4.11 Sensitivity analysis

Sensitivity analysis were planned to evaluate whether the pooled effect sizes were robust across study design and components of methodological quality. For

methodological quality, we planned to consider sensitivity analysis for each major component of the risk of bias checklists. To check for the possible influence of developer bias on effect sizes, we planned to run a sensitivity analysis to compare those studies conducted by program developers with studies conducted by independent researchers. Developer bias can occur in studies conducted by the intervention developers who unconsciously influence the success of an intervention (Petrosino & Soydan, 2005; Eisner, 2009; Sherman & Strand, 2009).

We also planned to perform sensitivity analysis for program fidelity, i.e., compliance with program manual and requirements for therapist training.

4 Results

4.1 RESULTS OF THE SEARCH

We ran the main searches in June 2013. We searched 14 international and Nordic bibliographic databases, performed an extensive search for grey literature, and hand searched five core journals in October 2013 (see section 3.3).

After excluding duplicates, we found 6719 potential relevant records from the database search (bibliographic databases, 4343; grey literature, 725; hand searches and others, 1,651

All 6719 records were screened based on title and abstract, and 108 records were retrieved and screened in full text. Of these, 93 did not fulfill the screening criteria and were excluded.

Three papers met the inclusion criteria and were data-extracted by the review's authors.

A total of two unique studies, reported in three papers, were included in the review. Further details of the included and excluded studies are given in section 9.

4.2 DESCRIPTION OF THE STUDIES

4.2.1 Included studies

Two studies met our inclusion criteria:

Waldron et al. (2001)

This is an RCT on the effects of individual cognitive-behavioral therapy (CBT), family therapy (FFT), combined individual and family therapy (CBT and FFT), and a group intervention for drug-using Hispanic and Anglo American youths aged 13-17, performed in New Mexico, USA. The study is reported in two articles: Waldron et al. (2001) evaluated the trial and reported the treatment outcomes related to drug use at 4 – and 7-month assessments, and was published in the Journal of Consulting and Clinical Psychology in 2001. French et al. (2008) attempted a cost-effectiveness analysis of the randomized clinical trial conducted by Waldron et al. (2001), and was published in the Journal of Substance Abuse Treatment in 2008. The main article is

by Waldron et al. (2001). The cost-effectiveness study by French et al. (2008) is included in this review as it provides outcomes different from the main article. Even though the study reported on a four-armed trial, we were only able to use the CBT, the group intervention and FFT groups because the joint intervention included both CBT and FFT.

Friedman (1989)

This is an RCT of drug-using youths aged 14-21 comparing functional family therapy (FFT) and a parent group method. It was performed at six different sites across the US and was published in The American Journal of Family Therapy in 1989.

Location

Both studies were carried out in the US. Waldron et al. (2001) took place at The University of New Mexico Center for Family and Adolescent Research. Friedman (1989) was conducted in six different "drug free" outpatient drug treatment programs.

Design

Both included studies were described by the investigators as RCTs. Both were randomized by family.

Sample size

Waldron et al. (2001) randomized 120 participants; 30 to FFT, 31 to CBT, 30 to the group intervention, and 29 to CBT and FFT combined. These numbers reflect the sample sizes at the point of randomization (not at recruitment or completion).

Reported sample sizes in Friedman (1989) are 135 participants; 85 in FFT, and 50 in the parent group method. These numbers reflect the sample sizes at the point of follow up. Friedman (1989) reported that 169 families started in treatment, but the numbers randomized were not reported.

Participants

Participants in the two studies were aged between 13-21 years. The majority were male, ranging from 60 to 80 percent of the study population. Approximately half of the participants lived with both parents. Ethnicity varied between studies; almost all participants were white in Friedman (1989), and nearly half the participants in Waldron et al. (2001) were Hispanic. Main drug used in both studies was marijuana. The average number of years of education was 9.3.

Participant characteristics

	Waldron et al. (2001)	Friedman (1989)
Age range (Mean), years	13-17 (16)	14-21 (17,9)
Gender, males	80%	61%
Family composition, single parent	45%	44%
Family composition, two parent	55%	50%
Family composition unknown	0%	7%
Ethnicity, White	38%	90%
Ethnicity, Hispanic	47%	-
Ethnicity, Other[1]	15%	10%
Main drug used	Marijuana	Marijuana
Years of education	9.3	9.3

1: Friedman (1989) report percentages for white/nonwhite only

Inclusion criteria in included studies

Inclusion criteria in Waldron et al. (2001) were that participants needed to be aged 13-17 years, living at home with a primary caretaker who was also willing to participate, and meeting diagnostic criteria for a primary substance abuse disorder. Inclusion criteria were not reported in Friedman (1989).

Exclusion criteria in included studies

Waldron et al. (2001) excluded youths abusing only alcohol and/or tobacco. Youths and families were also excluded if the adolescent needed services other than outpatient treatment, if there was evidence of psychotic or an organic disorder, or if a sibling was participating in the study. Exclusion criteria were not reported in Friedman (1989).

Experimental interventions

FFT was the experimental intervention in both included studies.

Comparison conditions

The comparison condition in Friedman (1989) was a parent group method in which the adolescent clients were not included. They were given individual drug counseling.

The study by Waldron et al. (2001) included two eligible comparison conditions; cognitive-behavioral therapy (CBT), and a group intervention.

Time points for measurements

Time points for measurement were 15 month follow-up (6 months treatment, 9 months follow-up period) in Friedman (1989) and 4 and 7 months following initiation of treatment (1 and 4 months post treatment) in Waldron et al. (2001)

Primary outcome

Only Waldron et al. (2001) reported on the primary outcome of youth drug use. This was reported as percentage of days of use, measured using the 'The timeline follow back interview'.

Secondary outcome

Few secondary outcomes were reported.

Education or vocational involvement

A measure of education or vocational involvement was reported in Friedman (1989) as: 'Change that the Mothers Reported in the Clients' Academic Problems'.

Risk behaviour

Risk behaviour measured as "Delinquency"/"Any delinquency", based on The Youth Self-Report delinquency subscales, was used in the study by Waldron et al. (2001) and reported in French et al. (2008).

4.2.2 Excluded studies

Six studies which initially appeared to be eligible were excluded. The primary reason for exclusion of four of these studies is that participants were not in outpatient drug treatment primarily for non-opioid drug use. The remaining two studies focused on the comparison between ethnic matching of therapist and client respectively on the therapeutic alliance. The full characteristics of excluded studies are given in section 9.2.

4.2.3 Studies awaiting assessment

A search of the clinicaltrials.gov database revealed two potentially relevant studies that are ongoing. These are listed in Table 9.5.

4.3 RISK OF BIAS IN INCLUDED STUDIES

4.3.1 Sequence generation

Both included studies were described as randomized by the trial investigators. Waldron et al. (2001) reported the procedure for randomization and was judged as having a low risk of bias for sequence generation. Friedman (1989) did not report

the randomization procedure and was therefore judged as having an unclear risk of bias on this domain.

4.3.2 Allocation concealment

Neither of the two studies reported how allocation was handled, and both were therefore judged as having an unclear risk on this domain.

4.3.3 Confounders

This item is only relevant for non-randomized studies and consequently was not assessed.

4.3.4 Blinding

This item was judged on a 5 point scale/unclear in accordance with the risk of bias tool described in section 3.4.3. As is common in social interventions, and especially when outcomes are self-reported, there is an inherent risk of bias given the impossibility of blinding the participants or those delivering the interventions. Both studies were rated as unclear for blinding of outcome assessors because of lack of reporting on data collection and blinding procedures.

4.3.5 Incomplete outcome data

This item was judged on a 5 point scale/unclear in accordance with the risk of bias tool described in section 3.4.3. Dropout rates were reported in both studies, but only Waldron et al., (2001) performed analysis for any imbalance in attrition between groups. Waldron et al. (2001) was rated 1 for incomplete outcome data with respect to the outcomes “abstinence or reduction of drug use” and ‘unclear’ with respect to the outcome “risk behavior”. Friedman (1989) only reported on ‘education or vocational involvement ‘ and was rated 3 for incomplete outcome data.

4.3.6 Selective reporting

The study by Friedman (1989) was rated 4 due to no reporting of outcome results except for ‘Education or vocational involvement’. The trial investigator stated that there was no difference between the two groups with respect to number of sessions attended, but no numbers were provided. Waldron et al. (2001) was rated 1 with respect to the outcomes “abstinence or reduction of drug use” and “risk behavior” because these outcomes were reported carefully. However, the outcome “family functioning” in this study was rated 3 because the numeric data was missing.

4.3.7 Other potential sources of bias

His item was judged on a 5 point scale/unclear in accordance with the risk of bias tool described in section 3.4.3. In this part of the risk of bias tool we paid special attention to how the trial investigators measured treatment adherence. The study by Friedman (1989) was rated 3 because only the therapist adherence for the FFT

condition was measured. Waldron et al. (2001) was rated 1 because they addressed treatment adherence and report that a high adherence was achieved.

4.3.8 A priori protocol

Explicitly stating a priori hypotheses and methods without prior knowledge of results minimizes bias. The studies did not report whether an a priori protocol was produced and if so, whether it was followed.

4.3.9 A priori analysis plan

The studies did not report whether an a priori analysis plan was produced and if so, whether it was followed.

4.4 EFFECTS OF THE INTERVENTIONS

The two included studies both analyzed relative effects, comparing FFT to other interventions. A table with all numerical results can be found in section 9.4.

4.4.1 Primary outcome results

Drug use reduction was measured by percent of days of marijuana use in Waldron et al. (2001). The reported results indicate a positive effect favoring FFT on drug use frequency at 4-month follow up; SMD=0.78 (95% CI 0.25, 1.31) compared to CBT, and SMD=0.97 (95% CI 0.44, 1.51) compared to the group intervention.

The percent of days of marijuana use was not significantly different for the 7-month follow up; SMD=0.28 (95% CI -0.23, 0.79) compared to CBT, and SMD=0.04 (95% CI -0.46, 0.55) compared to the group intervention.

Numerical outcome results were not available in Friedman (1989).

4.4.2 Secondary outcome results

Family functioning and treatment retention was not reported in either of the included studies.

Educational or vocational involvement

Friedman (1989) reported results from a multiple regression equation (including 19 covariates), comparing the two interventions on the change that mothers reported in the clients' academic problems. There was no significant difference between groups. An F-value of 2.91, a p-value of 0.093 and a change in R^2 of 0.03 were reported.

Risk behavior

The study by Waldron et al. (2001) measured risk behavior using the delinquency subscale from the Youth Self Report (YSR) with the results reported in French et al., 2008. Results are mixed, indicating a positive effect favoring FFT at 4-month follow

up; SMD=0.55 (95% CI 0.04, 1.06) compared to CBT, and no significant difference with SMD=0.37 (95% CI -0.14, 0.8) compared to the group intervention.

No significant differences between groups were found for the 7-month follow up; SMD=0.28 (95% CI -0.23, 0.79) compared to CBT, and SMD=0.04 (95% CI -0.46, 0.55) compared to the group intervention.

5 Discussion

5.1 SUMMARY OF MAIN RESULTS

Our main objective was to evaluate the current evidence on the effect of FFT on drug use reduction for young people in treatment for non-opioid drug use.

Only one study provided data on drug use: this indicated a positive relative effect favoring FFT in comparison to CBT and a group intervention on drug use frequency at 4-month follow up, but no significant relative effect for the 7-month follow up.

Only one study reported results on education, comparing FFT and a parent group intervention on the change that mothers reported in the clients' academic problems. There was no significant difference between groups.

One study reported on delinquency. Results were mixed, indicating a positive relative effect favoring FFT at 4-month follow up compared to CBT, but no significant difference compared to the group intervention.

No significant relative effects of FFT were found for the 7-month follow up, compared to CBT or compared to the group intervention.

No studies reported on family functioning or retention. It was not possible to assess moderators of drug use reduction effects, or whether FFT works better for particular types of participants.

In short, we found there is currently insufficient evidence for conclusions to be drawn. The small number of available studies precludes any conclusions concerning effectiveness, ineffectiveness or potential damage of FFT for young people in treatment for non-opioid drug use.

5.2 OVERALL COMPLETENESS AND APPLICABILITY OF EVIDENCE

We found only two trials that examined whether FFT reduced youth drug use. Both studies were performed in the US. It was not possible to analyze the absolute effects of FFT as both studies compared FFT to other active treatments. Only one of the studies reported on the primary outcome of drug use reduction. Data on secondary outcomes were very limited.

It is important to consider program fidelity (i.e., compliance with program manual and requirements for therapist training) when evaluating the effects of an intervention such as FFT. Waldron et al., 2001, addressed treatment fidelity and reported that high adherence was achieved (see section 9.3 for a description of the method used). Friedman, 1989, considered the degree of adherence to the manual concerning the FFT intervention and reported that 3 percent of the therapist interventions were considered to be inconsistent with the functional method as described in the manual achieved (see section 9.3 for a description of the method used). A measurement of adherence to the parent group condition was not reported.

5.3 QUALITY OF THE EVIDENCE

Both studies were randomized controlled trials, although neither could be characterized as a robust RCT with low risk of bias on all assessed risk of bias items. The two included studies provided insufficient information on core issues to allow us to assess the risk of bias (e.g. allocation concealment and number of participants randomized) despite genuine efforts to contact the study authors. These methodological weaknesses may reflect inadequate reporting, flawed methodology, or both, and therefore compromise our confidence in the validity of the two studies.

5.4 LIMITATIONS AND POTENTIAL BIASES IN THE REVIEW PROCESS

The narrow search strategy performed in this review may limit the likelihood of identifying all relevant studies. However, we attempted to minimize the risk of missing relevant studies by conducting an extensive search of the grey literature, by extensive hand searching and by contacting international experts within the field. Indeed, the large number of grey literature and hand searches literature that has been assessed for relevance attests to this effort.

5.5 AGREEMENTS AND DISAGREEMENTS WITH OTHER STUDIES OR REVIEWS

The majority of the identified narrative reviews (Waldron & Turner, 2008; Vaughn & Howard, 2004; Austin, 2005; Ozechowski & Liddle, 2000) report that FFT-treatment shows evidence of positive effectiveness in drug use among youth. This is predominantly consistent with the current reviews results, although our confidence in these results is limited.

Two reviews (Waldron & Turner, 2008; Vaughn & Howard, 2004) include data on FFT from Friedman (1989) and conclude that FFT showed significant reductions in substance use of more than 50 % at follow up. Waldron & Turner (2008) classifies FFT as a well-established treatment for adolescent substance abuse based on Friedman (1989), Waldron et al. (2005) and Waldron & Slesnick et al. (2001).

Vaughn & Howard (2004) and Austin et al. (2008) indicate that youth participating in FFT demonstrated reductions in marijuana use from pre-treatment to post-treatment. These findings are consistent with Ozechowski & Liddle (2000), who conclude that improvements in self-reported drug use from intake to 4 months post-intake for FFT.

Consistent with our expectations, most of the reviews (Waldron & Turner, 2008;. Vaughn & Howard, 2004; Austin et al., 2005; Ozechowski & Liddle, 2000; Liddle, 2004; James, Alemi & Zepeda, 2013; Lipsey et al., 2010) state that it is not possible to decide whether or not FFT is more effective than other interventions for decreasing drug use**.** The reviews recommend further research which can evaluate the influence of FFT on abuse treatment outcomes.

6 Authors' Conclusions

Even though reliable conclusions about the effectiveness of FFT are lacking, some observations are worth mentioning.

6.1 IMPLICATIONS FOR PRACTICE AND POLICY

The current landscape of family therapy approaches for treatment of youth drug use shows that many initiatives have been tried. A certain inconsistency seems to be developing: while existing FFT programs have yet to be evaluated thoroughly, new FFT interventions continue to surface. This is not only costly, it is also risky, as initiatives backed only by unclear research could ultimately be damaging. It is therefore crucial to know more about the effectiveness of treatments to understand where money should be spent and to understand exactly what kind of support young drug users can benefit from. Further all the available evidence was US-based, and so the findings may not be generalizable to other settings and systems outside the US.

6.2 IMPLICATIONS FOR RESEARCH

Firstly, it is important to address the need for more research in the field. A small body of evidence exists in relation to the treatment of young drug users, with only a very modest number of controlled evaluations of treatments for this group, all conducted in the US. Well-designed, randomized controlled trials from diverse locations within this population are needed and should be reported clearly in accordance with the principles of the CONSORT 2010 statement.

Secondly, it is important to consider the possibility of adverse effects of these interventions. The popular belief is that FFT, as well as other family therapy approaches, is harmless, but very little research has been conducted that focuses on the potential harms of such family therapy approaches.

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The review authors take full responsibility for the content of this publication.

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Reference denoted with * is the primary reference

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9 Tables

9.1 CHARACTERISTICS OF INCLUDED STUDIES

Waldron et al., 2001

Methods	Design: RCT (1 site, 4 intervention arms) total n = 120. We only use 3 interventions arms with a total n=91 in this review
Participants	Age: 13-17 years (mean age 16). Gender: 80% male. Ethnicity: 47% Hispanic, 38% Anglo American, 7.50% Native American, 7.50% Mixed/other. Family status: 45% was single parent household and 55% was two-parent household. The average years of education for the primary caregivers were 13.97 years. The average annual income of the caregivers was $38.537. Main drug of use: Marijuana. Severity: At pretreatment the average percentage of days of use for adolescent was approximately 60. Comorbidity: The percentages of the sample at or above the mean for various clinical problems were 29.7%, anxious/depressed; 27.3%, attention difficulties; 47.7%, externalizing behavior; and 45.3%, internalizing behavior. Inclusion criteria: Youths between the ages of 13 and 17 years were eligible for the study if they were living at home with a primary caretaker who was also willing to participate and if they met diagnostic criteria for a primary substance abuse disorder. Exclusion criteria: Youths primary abusing only alcohol and/or tobacco were excluded from the study. Youths and families were also excluded if the adolescent needed services other than outpatient treatment, if there was evidence of psychotic or organic state, or if a sibling was participating in the study.
Interventions	Intervention: Functional family therapy. The intervention consisted of 12 weekly sessions of a system oriented, behaviorally based family therapy with 2 phases: engaging families in treatment and enhancing motivation for change, and implementing behavioral changes in the family. Duration: 12 weekly sessions. The average number of weeks for completing the treatment was 16.29. Location: The University of New Mexico Center for Family and Adolescent Research for drug-abuse treatment, USA. Comparison: Cognitive-behavioral therapy (CBT), combined individual and family therapy (not used in this review) and a group intervention.
Outcomes	Primary outcome: Days of use, Measure: Time Line Follow Back (TLFB) Secondary outcome: Delinquency

	Measure: Youth Self Report (YSR)
Notes	The secondary outcome is reported in French et al. (2008)

Friedman, 1989

Methods	Design: RCT (6 sites, 2 intervention arms) total n = 135
Participants	Age: 14-21 years (mean age 17.9). Gender: 61% male. Ethnicity: 90% white, 10% non-White. Family status: 8% of the parents were separated, 36% of the parents were divorced, and 50% of the parents were living together. 6% unknown. Main drug of use: Alcohol and Marijuana. Severity: The highest prevalence rates for use of substances during a 3-month period before treatment were for alcohol; 88%, marijuana; 87%, amphetamines; 52%, cocaine; 28%, tranquilizers; 23%, hallucinogens; 22%, PCP; 15%, and barbiturates; 15%. Comorbidity: Not reported. Inclusion criteria: Not reported. Exclusion criteria: Not reported.
Interventions	Intervention: Functional family therapy. N= 85. Duration: 24 weekly sessions. Location: In six different "drug-free" outpatient treatment programs. Comparison: Parent Group Method. N = 50. A program of 24 weekly sessions based on a package which combined ideas, elements, and procedures borrowed from: 1) the Parent Effectiveness Training (PET) method 2) the Parent Communication Project of the Canadian Addiction Research Foundation the parent Assertiveness Training program. The adolescent clients were not included in the family therapy. They were given individual drug counseling
Outcomes	Primary outcomes: No outcomes reported Secondary outcome: Education or vocational involvement Measures: Change that the Mothers Reported in the Clients' Academic Problems.
Notes	

9.2 CHARACTERISTICS OF EXCLUDED STUDIES

Study	Reason for exclusion
Barton (1985)	Participants are not in outpatient drug treatment primarily for non- opioid drug use.
Doan (2012)	Participants are not in outpatient drug treatment primarily for non- opioid drug use.
Flicker (2008a)	Focus is on comparison between ethnic matching of therapist and client.
Flicker (2008b)	Focus is on therapist alliance.
Lally (2007)	Participants are not in outpatient drug treatment primarily for non- opioid drug use.

Slesnick (2004)	Participants are not in outpatient drug treatment primarily for non- opioid drug use.

9.3 RISK OF BIAS JUDGEMENT, INDIVIDUAL STUDIES

Waldron et al., 2001

Bias	Author's judgement	Support for judgement
Sequence generation	Low risk	"An urn randomization procedure (…) was used to retain random allocation while balancing treatment condition groups on a priori continuous and categorical variables. With this procedure, relative probabilities of assignment to treatment groups (urns) are computer adjusted on the basis of previous randomizations to ensure pre-treatment group equivalence. The variables included in this project's urn were gender, age, level of substance use, ethnicity, psychiatric severity, and family constitution." (p. 804)
Allocation concealment	Unclear	Not reported
Blinding – outcome assessors?		*The outcomes are given unclear as it is not possible to conclude whether the outcome assessors were blinded or not.*
Abstinence or reduction of drug use – biochemical test	*Unclear*	*Not reported*
Abstinence or reduction of drug use – self reported estimates	*Unclear*	*Not reported*
Abstinence or reduction of drug use – psychometric scales	*Not relevant*	*Not relevant*
Abstinence or reduction of drug use – overall judgement	Unclear	*
Social functioning and family functioning	Not relevant	Not relevant
Education or vocational involvement	*Unclear*	*Not reported*
Retention	Not relevant	Not relevant
Risk behaviour	Unclear	Not reported

Other adverse effects	Not relevant	Not relevant
Incomplete outcome data addressed?		"Some of the 120 adolescents failed to complete measures either at the 4-month (n=8) or at the 7-month (n=7) assessment period. Six others missed both follow-up assessments; these 6 were removed from subsequent analysis, leaving 114 families. We assessed whether the values from remaining families appeared to be missing, randomly using the missing completely at random (MCAR) statistics (...). This statistic (...) provided evidence that the values were not missing at random. To avoid possible bias from subsequent analyses (i.e., listwise deletion) we created estimates, for the missing scores. The regression plus random residuals MVA module in SPSS provided the estimates....." (p. 807-808) Intent-to-treat sample used (p. 806). *The outcome is given 1 as the study has very little missing data.*
Abstinence or reduction of drug use – biochemical test	*Unclear*	*Not reported*
Abstinence or reduction of drug use – self reported estimates	*1*	*
Abstinence or reduction of drug use – psychometric scales	*Not relevant*	*Not relevant*
Abstinence or reduction of drug use – overall judgement	1	*
Social functioning and family functioning	Not relevant	Not relevant
Education or vocational involvement	Not relevant	Not relevant
Retention	Not relevant	Not relevant
Risk behaviour	Unclear	Not reported
Other adverse effects	Not relevant	Not relevant
Free of selective reporting?		*The urinalysis outcome is given 3 as the measurement, and thereby data collection is made but the results are reported inappropriately. Outcomes for social functioning and family functioning is given 3 as these are mentioned in a footnote but not reported explicit in the study.*

		Other outcomes are given 1 as they are reported carefully.
Abstinence or reduction of drug use – biochemical test	*3*	*"Analyses of the differences in urine screen rates over time or between condition differences did not approach statistical significance." (p. 809-810) (Note: the numerical outcomes (for the individual conditions) are however not reported)*
Abstinence or reduction of drug use – self reported estimates	*1*	*(see table 3 + French, table 2)*
Abstinence or reduction of drug use – psychometric scales	*Not relevant*	*Not relevant*
Abstinence or reduction of drug use – overall judgement	1	*
Social functioning and family functioning	3	"No statistically significant effects of treatment on either the Internalizing or the Externalizing Scale of the CBCL in the adolescent or primary caregiver family conflict scores were found." (p. 810) (Note: the numerical outcomes (for the individual conditions) are however not reported - se footnote 2, p. 810)
Education or vocational involvement	Not relevant	Not relevant
Retention	Not relevant	Not relevant
Risk behaviour	1	(This measure is reported in French - see Table 2)
Other adverse effects	Not relevant	Not relevant
Free of other bias?	1	To examine therapist effects, a repeated measures analysis was conducted with the percentage of days substance was used as the dependent measure and therapists as the independent variable with no significant interaction, F(2,28) = 0.96. To evaluate treatment adherence, we rated one therapy session for half of the total sample (n=60), selected random, on a 10 point scale for adherence (1= least adherence, 10 = greatest adherence) to the clinical manuals for the FFT condition (n=11, M=9.09, SD= 1.04), the CBT condition (N=11, M=08.91, SD=1.04), the family therapy sessions in the joint condition (n=9, M=9.33, SD=0.71), the CBT sessions in the joint condition (n=11, M09.09, SD=0.83), and the group condition (n=18, M09.50, SD=0.52). Ratings were based on standardized session checklists. The range of ratings was on a 7-10-point scale. A one-way analysis of variance (ANOVA) was calculated with the five tape sources operating as the independent variable and adherence rating treated as

		the independent variable. The results indicated that the five sources of tapes were not significantly different in adherence rating, F(4,55) = 1.09, p< 0.37. *This study is given 1 as it addresses treatment fidelity and reports that high adherence was achieved.*
A priori protocol?	Unclear	Not reported
A priori analysis plan?	Unclear	"(…) however, 10 of these completed follow-up assessments, and their data were included in all analyses as part of the full intention-to-treat sample." (p. 806)

* Denotes that support for judgement is described in the general risk of bias category field above.

Friedman, 1989

Bias	Author's judgement	Support for judgement
Sequence generation	Unclear	Not reported
Allocation concealment	Unclear	Not reported
Blinding – outcome assessors?	Unclear	*The one outcome that is reported is given unclear as it is not possible to conclude whether the outcome assessors were blinded or not.*
Abstinence or reduction of drug use – biochemical test	Not relevant	No data reported
Abstinence or reduction of drug use – self reported estimates	Not relevant	No data reported
Abstinence or reduction of drug use – psychometric scales	Not relevant	No data reported
Abstinence or reduction of drug use – overall judgement	Not relevant	No data reported
Social functioning and family functioning	Not relevant	No data reported
Education or vocational involvement	*Unclear*	*Not reported*
Retention	Not relevant	No data reported

Risk behaviour	Not relevant	No data reported
Other adverse effects	Not relevant	No data reported
Incomplete outcome data addressed?	3	"Of the 169 families who started in treatment, 135, or 80%, were retrieved for follow-up evaluation 15 months later. (p. 338) In 93% of the families assigned to family therapy, either the mother alone or both parents started in treatment; but in only 67% of those assigned to a parent group did the mother alone or both parents start in treatment. (p. 337-338)
Abstinence or reduction of drug use – biochemical test	Unclear	No data reported
Abstinence or reduction of drug use – self reported estimates	Unclear	No data reported
Abstinence or reduction of drug use – psychometric scales	Unclear	No data reported
Abstinence or reduction of drug use – overall judgement	Unclear	No data reported
Social functioning and family functioning	Unclear	No data reported
Education or vocational involvement	*3*	*
Retention	Unclear	No data reported
Risk behaviour	Unclear	No data reported
Other adverse effects	Unclear	No data reported
Free of selective reporting?	4	*No numeric outcome results except 'Education or vocational involvement.'*
Abstinence or reduction of drug use – biochemical test	Not relevant	Not relevant
Abstinence or reduction of drug use – self reported estimates	*4*	*No numeric outcome results reported.*
Abstinence or	*4*	*No numeric outcome results reported.*

reduction of drug use – psychometric scales		
Abstinence or reduction of drug use – overall judgement	*4*	*No numeric outcome results reported.*
Social functioning and family functioning	*4*	*No numeric outcome results reported.*
Education or vocational involvement	2	Only F value, p value and R^2 change reported
Retention	4	It is reportedd that "disprortionate number of parents of the relative older clients in the parent group subsample did not show for any of the parent sessions" (p. 339). However, it is also reported that "there were no significant differences between the two groups of clients on either the number of individual sessions or the number of peer group sessions in which they participated (p. 342).
Risk behaviour	*4*	*No numeric outcome results reported.*
Other adverse effects	*4*	*No numeric outcome results reported.*
Free of other bias?	3	The degree to which the therapists adhered to the standardized treatment model as described in the training manual was measured as follows. Tapes of 20 family therapy sessions (of 12 different families) were randomly selected, and a monitoring procedure was utilized in which 20-minute segments of each of the sessions were scored by two independent raters for degree of adherence to the manual. In all, 346 therapist interventions were rated; only 10 of these, or 3%, were considered to be inconsistent with the functional method as described in the manual. (p. 337) Measurements of adherence to the parent Group condition is not reported!
A priori protocol?	Unclear	Not reported
A priori analysis plan?	Unclear	Not reported

* Denotes that support for judgement is described in the general risk of bias category field above.

9.4 OUTCOMES

Study	Outcome/follow-up	Comparison	Statistics
	Drug use frequency		
Waldron et al. (2001)	4-month follow up	FFT vs. CBT	SMD=0.78 (95% CI 0.25, 1.31)
		FFT vs Group	SMD=0.97 (95% CI 0.44, 1.51)
	7-month follow	FFT vs. CBT	SMD=0.28 (95% CI -0.23, 0.79)
		FFT vs Group	SMD=0.04 (95% CI -0.46, 0.55)
	Delinquency		
	4-month follow up	FFT vs. CBT	SMD=0.55 (95% CI 0.04, 1.06)
		FFT vs Group	SMD=0.37 (95% CI -0.14, 0.8)
	7-month follow	FFT vs. CBT	SMD=0.28 (95% CI -0.23, 0.79)
		FFT vs Group	SMD=0.04 (95% CI -0.46, 0.55)
Friedman (1989)	Educational or vocational involvement		
	15 month follow-up	FFT vs Parent group	F-value=2.91, p-value=0.093 and change in $R^{2=}$0.03

9.5 ONGOING STUDIES AWAITING ASSESSMENT

Title	Family and Adolescent Motivational Incentives for Leveraging Youth
Interventions	FFT +/- contingency management vs Motivational Enhancement Therapy/CBT +/- contingency management
Design	RCT
Primary outcome measures	Urine assays
Secondary outcome measures	Timeline Followback semi-structured interview
Estimated enrollment	160
Start date	July 2012
Estimated completion date	April 2017
Ages eligible	13 to 17 years
Genders eligible	Both
Inclusion criteria	13 to 17 years of age Meets DSM-IV diagnostic criteria for substance abuse or dependence Living at home with the participating parent Sufficient residential stability to permit probable contact at follow-up(e.g., not homeless at time of intake)
Exclusion criteria	Evidence of psychotic or organic state of sufficient severity to interfere with the understanding of study instruments and

	procedures Deemed dangerous to self or others at intake Services other than outpatient treatment are required for the youth (e.g., inpatient, detoxification) Marijuana use is reported as being less than 13% of the previous 90 days
Principal Investigator	Michael Robbins, Oregon Research Institute

Title	**Family Therapy Via Video Teleconference for Substance-Abusing Rural Adolescents (RAFT)**
Interventions	FFT as normal vs FFT via video link vs treatment as usual
Design	RCT
Primary outcome measures	Timeline Followback semi-structured interview
Secondary outcome measures	Urine assays
Estimated enrollment	120
Start date	February 2012
Estimated completion date	November 2015
Ages eligible	13 to 18 years
Genders eligible	Both
Inclusion criteria	• 13-18 years of age • Meet DSM-IV diagnostic criteria for substance abuse or dependence • Reside with at least one parent or parental figure who is willing to participate in the study • Reside in a rural community approximately 30-50 miles from the CFAR office • Have sufficient residential stability to permit contact with CFAR throughout the study (e.g., not homeless or runaway at time of intake)
Exclusion criteria	• Incarcerated or in a restrictive placement outside the home (e.g., residential treatment, in-patient care) • Evidence of a psychotic or organic state of sufficient severity to interfere with the ability to understand the research and clinical procedures • A sibling is already participating in the study • Evidence of posing a danger to self or others based on routine safety screening protocols (see Intake below) • Evidence that more intensive services other than outpatient treatment are required (e.g., in-patient care, detoxification)
Principal Investigator	Timothy J Ozechowski, Oregon Research Institute

10 Appendices

10.1 CODE BOOK FOR DATA EXTRACTION

Author	Study x
Year	
Country	
Is this study about an FBT intervention evaluation?	
Are the participants 11 - 21 years of age?	
Are the participants in outpatient drug treatment for illicit non-opioid drug use?	
Is the report a … P=Primary study RE=Review (Effect/meta-analysis) RD=Review (Descriptive) D=Descriptive T=Theoretical paper O=Other	
Is the study a RCT with a control group?	
Is the study a non-randomized controlled study with a control group?	
Is the study..	
Notes	
State reason if necessary for excluded or uncertain.	
If lack of info., state question(s) to be sent to study authors.	
Objectives of the study	
How many separate sites/facilities are included in the study?	
If RCT, was random assignment performed in the same way in all sites?	
List all the treatment groups in the study	
Were there any implementation differences between groups?	
Location of treatment	

Location details	
If multiple sites, were there any implementation differences between sites?	
Was participant inclusion criteria mentioned?	
If yes describe.	
Was participant exclusion criteria mentioned?	
If yes describe.	
Describe how the participants were referred to the intervention.	
Is the intervention mandated?	
If yes by whom and how many?	
Gender (e.g. % male)	
Age (details on age as presented in the study	
Race/ ethnicity	
Socioeconomic status	
Family composition	
Other characteristics	
Specify the main drug	
Provide short description of the distribution of drug use	
List/describe history/severity of drug use	
List any co-morbid condition	
Report total of participants randomized	

Intervention	
Name the intervention	
How is the intervention delivered?	
If Family, Other or Combination, describe the way it is delivered	
Describe any practical circumstances relevant to the intervention	
If deviation from manual, describe/list the components given in the intervention	
Describe any co-interventions given with the intervention	
Frequency of the intervention	
Intensity	
Duration of the intervention	

Who delivered the intervention ?	
List program delivers qualifications.	
List program delivers characteristics.	
Describe methods used to ensure adherence to the intervention - specific to the the intervention	
What did the investigators do to check/measure treatment fidelity?	
Other important information	

Control group	
Name the control/comparison condition intervention?	
How is the control intervention delivered?	
If Family, Other or Combination, describe the way it is delivered.	
Describe any practical circumstances relevant to the intervention.	
If deviation from manual, describe/list the components given in the intervention	
Describe any co-interventions given with the comparison intervention	
Frequency of the intervention	
Intensity	
Duration of the intervention	
Who delivered the intervention?	
List program delivers qualifications.	
List program delivers characteristics.	
Describe methods used to ensure adherence to the intervention.	
What did the investigators do to check/measure treatment fidelity?	
Did they measure session attendance?	
Other important information	

Baseline time - describe how baseline is defined.	
End of treatment (from baseline time)	
...1st follow-up	
..2nd follow-up	
..3rd follow-up	

..Other	
Author's main conclusion	
Limitations of the study as reported by the study authors	
Researchers affiliation with program	
Your own concerns and notes	
Question for review authors	

10.2 RISK OF BIAS TOOL

Risk of bias table

Item	Judgement[a]	**Description** (quote from paper, or describe key information)
1. Sequence generation		
2. Allocation concealment		
3. Confounding[b,]		
4. Blinding?[b]		
5. Incomplete outcome data addressed?[b]		
6. Free of selective reporting?[b]		
7. Free of other bias?		
8. A priori protocol?[d]		
9. A priori analysis plan?[e]		

[a]Some items on low/high risk/unclear scale (double-line border), some on 5 point scale/unclear (single line border), some on yes/no/unclear scale (dashed border). For all items, record "unclear" if inadequate reporting prevents a judgement being made.
[b]For each outcome in the study.
[c]This item is based on list of confounders considered important at the outset and defined in the protocol for the review (*assessment against worksheet*).
[d]Did the researchers write a protocol defining the study population, intervention and comparator, primary and other outcomes, data collection methods, etc. in advance of starting the study?
[e]Did the researchers have an analysis plan defining the primary and other outcomes, statistical methods, subgroup analyses, etc. in advance of starting the study?

Risk of bias tool

Studies for which RoB tool is intended

The risk of bias model is developed by Prof. Barnaby Reeves in association with the Cochrane Non-Randomised Studies Methods Group.[14] This model, an extension of the Cochrane Collaboration's risk of bias tool, covers both risk of bias in randomised controlled trials (RCTs and QRCTs), but also risk of bias in non-randomised studies (in this case non-randomised controlled trials NRCTs).

The point of departure for the risk of bias model is the Cochrane Handbook for Systematic Reviews of interventions (Higgins & Green, 2008). The existing Cochrane risk of bias tool needs elaboration when assessing non-randomised studies because, for non-randomised studies, particular attention should be paid to selection bias / risk of confounding.

Assessment of risk of bias

Issues when using modified RoB tool to assess included non-randomised studies:

- Use existing principle: score judgment and provide information (preferably direct quote) to support judgment
- Additional item on confounding used for RCTs and NRCTs.
- 5-point scale for some items (distinguish "unclear" from intermediate risk of bias).
- Keep in mind the general philosophy – assessment is not about whether researchers could have done better but about risk of bias; the assessment tool must be used in a standard way whatever the difficulty / circumstances of investigating the research question of interest and whatever the study design used.
- Anchors: "1/No/low risk" of bias should correspond to a high quality RCT. "5/high risk" of bias should correspond to a risk of bias that means the findings should not be considered (too risky, too much bias, more likely to mislead than inform)

1. Sequence generation

- Low/high/unclear RoB item
- Always high RoB (not random) for a non-randomised study
- Might argue that this item redundant for NRS since always high – but important to include in RoB table ('level playing field' argument)

2. Allocation concealment

- Low/high/unclear RoB item

[14] This risk of bias model was introduced by Prof. Reeves at a workshop on risk of bias in non-randomised studies at SFI Campbell, February 2011. The model is a further development of work carried out in the Cochrane Non-Randomised Studies Method Group (NRSMG).

- Potentially low RoB for a non-randomised study, e.g. quasi-randomised (so high RoB to sequence generation) but concealed (reviewer judges that the people making decisions about including participants didn't know how allocation was being done, e.g. odd/even date of birth/hospital number)

3. RoB from confounding (assess for each outcome)

- Assumes a pre-specified list of potential confounders defined in the protocol
- Low(1) / 2 / 3 / 4 / high(5) / unclear RoB item
- Judgment needs to factor in:
  - proportion of confounders (from pre-specified list) that were considered
  - whether most important confounders (from pre-specified list) were considered
  - resolution/precision with which confounders were measured
  - extent of imbalance between groups at baseline
  - care with which adjustment was done (typically a judgment about the statistical modeling carried out by authors)
- Low RoB requires that all important confounders are balanced at baseline (not primarily/not only a statistical judgment OR measured 'well' and 'carefully' controlled for in the analysis.

Assess against pre-specified worksheet. Reviewers will make a RoB judgment about each factor first and then 'eyeball' these for the judgment RoB table.

4. RoB from lack of blinding (assess for each outcome, as per existing RoB tool)

- Low(1) / 2 / 3 / 4 / high(5) / unclear RoB item
- Judgment needs to factor in:
  - nature of outcome (subjective / objective; source of information)
  - who was / was not blinded and the risk that those who were not blinded could introduce performance or detection bias
  - see Ch.8

5. RoB from incomplete outcome data (assess for each outcome, as per existing RoB tool)

- Low(1) / 2 / 3 / 4 / high(5) / unclear RoB item
- Judgment needs to factor in:
  - reasons for missing data
  - whether amount of missing data balanced across groups, with similar reasons
  - see Ch.8

6. RoB from selective reporting (assess for each outcome, NB different to existing Ch.8 recommendation)

- Low(1) / 2 / 3 / 4 / high(5) /unclear RoB item
- Judgment needs to factor in:
    - existing RoB guidance on selective outcome reporting
    - see Ch.8
    - also, extent to which analyses (and potentially other choices) could have been manipulated to bias the findings reported, e.g. choice of method of model fitting, potential confounders considered / included
    - look for evidence that there was a protocol in advance of doing any analysis / obtaining the data (difficult unless explicitly reported); NRS very different from RCTs. RCTs must have a protocol in advance of starting to recruit (for REC/IRB/other regulatory approval); NRS need not (especially older studies)
    - Hence, separate yes/no items asking reviewers whether they think the researchers had a pre-specified protocol and analysis plan.

10.3 CONFOUNDING WORKSHEET

Assessment of how researchers dealt with confounding		
Method for *identifying* relevant confounders described by researchers: If yes, describe the method used:	yes no	☐ ☐
Relevant confounders described: List confounders described on next page	yes no	☐ ☐
Method used for controlling for confounding At design stage (e.g. matching, regression discontinuity, instrument variable): …….. …….. …….. At analysis stage (e.g. stratification, multivariate regression, difference-indifference): …….. …….. …….. Describe confounders controlled for below		

Confounders described by researchers

Tick (yes[0]/no[1] judgment) if confounder considered by the researchers [Cons'd?]

Score (1[good precision] to 5[poor precision]) precision with which confounder measured

Score (1[balanced] to 5[major imbalance]) imbalance between groups

Score (1[very careful] to 5[not at all careful]) care with which adjustment for confounder was carried out

Confounder	Considered	Precision	Imbalance	Adjustment
Gender	☐	☐	☐	☐
Age	☐	☐	☐	☐
History of drug use	☐	☐	☐	☐
Other	☐	☐	☐	☐
Other:	☐	☐	☐	☐

Other:	☐	☐	☐	☐

10.4 SEARCH HISTORIES EXAMPLES

Bibliotek.dk update June 2013

Search number	Terms	Totals
S1	(Func? og og Famil?" og therap*) eller FFT	13

Cinahl May 2011
Ebsco platform

Search number	**Terms**	**Totals**
S1	TX FFT or TX Function* n1 Famil* n1 therap*	87

Criminal Justice Abstracts May 17 2011
Ebsco platform

Search number	**Terms**	**Totals**
S1	TX FFT or TX Function* n1 Famil* n1 therap*	30

Cochrane library update June 2013

Search number	**Terms**	**Totals**
S1	FFT or Function* near/1 Famil* near/1 Therap*	62

Embase update June 2013
Ovid platform

Search number	**Terms**	**Totals**
S1	fft.ti,ab,kw	2050
S2	(function* adj1 Famil* adj1 therap*).ti,ab,kw	32
S3	1 or 2	2074
S4	limit 3 to yr="2011 - 2013"	269

ERIC May 2011
Ebsco

Search number	Terms	Totals
S1	TX FFT or TX Function* n1 Famil* n1 therap*	905

Libris June 2011

Search number	Terms	Totals
S1	FFT OR Function* Famil* Therap*	103

Medline update June 2013

Search number	Terms	Totals
S1	(function* adj1 Famil* adj1 therap*).ab,kw,sh,ti.	23
S2	fft.ab,kw,sh,ti.	1491
S3	2 or 3	1509
S4	limit 4 to yr="2011 - 2013"	144

PsycINFO Update July 2013
Ebsco platform

Search number	Terms	Totals
S1	TX FFT or TX Function* n1 Famil* n1 therap*	459
S2	Limiters - Publication Year from: 2011-2013 Search modes - Boolean/Phrase	72

Social Care Online June 2011

Search number	Terms	Totals
S1	(freetext="fft" or freetext="function* famil* therap*")	1782

SocINDEX
Ebsco platform

Search number	Terms	Totals
S1	TX FFT or TX Function* n1 Famil* n1 therap*	394

Libris May 2011

Search number	Terms	Totals
S1	Resultat av søket: FFT eller Function? og Famil? og Therap?	85

Science Citation Index June 2011

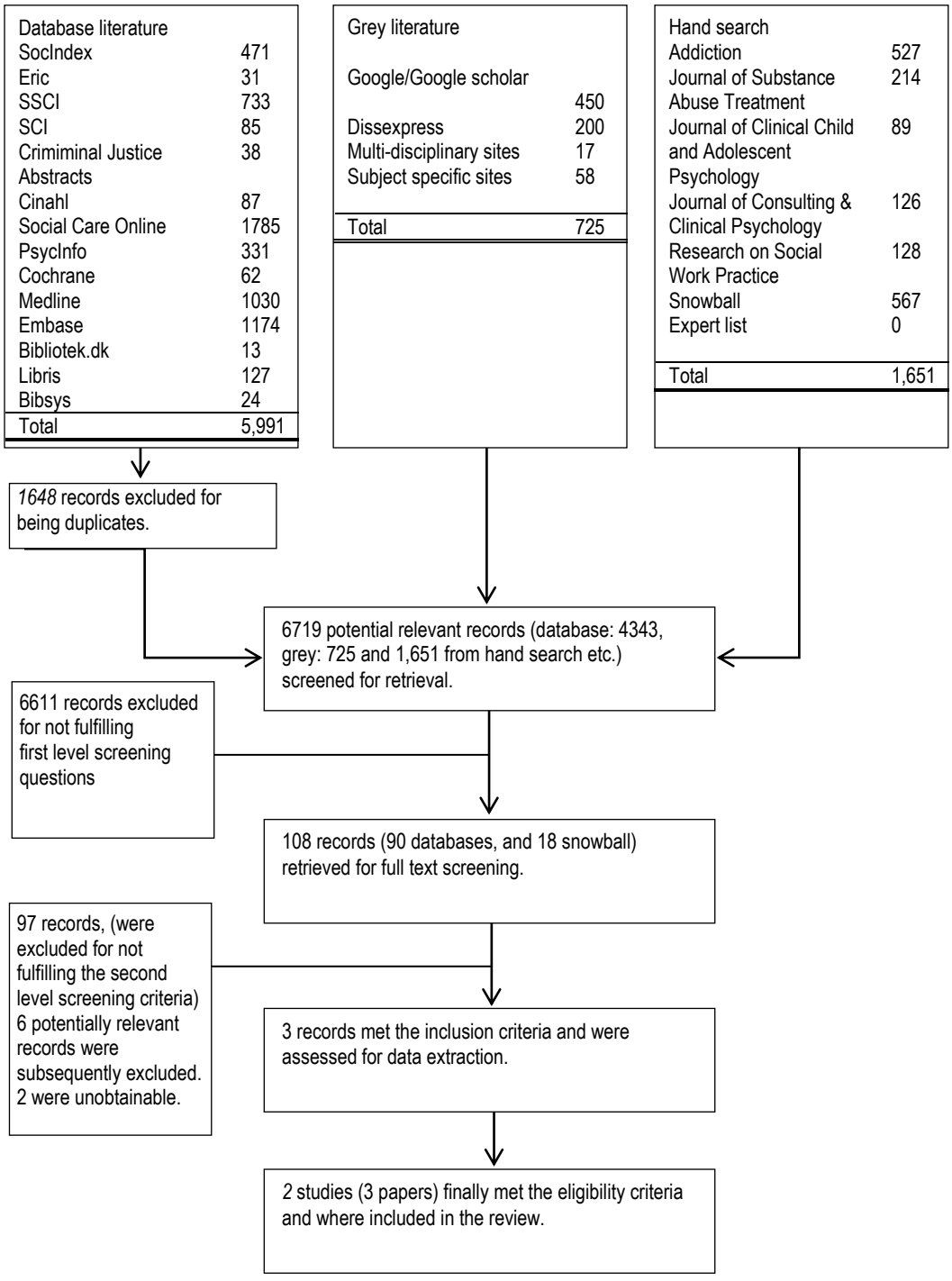
Search number	Terms	Totals
S1	(Functional same Famil* same Therap*)	85

Social Science Citation Index June 2011

Search number	Terms	Totals
S1	Topic=(fft) OR Topic=((Functional same Famil* same Therap*)) Databases	223

11 Figures

11.1 FLOW CHART FOR LITERATURE SEARCH



12 Information about This Review

12.1 REVIEW AUTHORS

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12.2 ROLES AND RESPONSIBILITIES

Please give brief description of content and methodological expertise within the review team. The recommended optimal review team composition includes at least one person on the review team who has content expertise, at least one person who has methodological expertise and at least one person who has statistical expertise. It is also recommended to have one person with information retrieval expertise.

Who is responsible for the below areas? Please list their names:

- Content: Ditte Andersen
- Systematic review methods: Trine Filges
- Statistical analysis: Trine Filges
- Information retrieval: Anne-Marie Klint Jørgensen

12.3 SOURCES OF SUPPORT

SFI Campbell, SFI – The Danish National Centre for Social Research.

12.4 DECLARATIONS OF INTEREST

The authors have no vested interest in the outcomes of this review, nor any incentive to represent findings in a biased manner.

12.5 PLANS FOR UPDATING THE REVIEW

Trine Filges will be responsible for updating the review every second year.