**C2 protocol:**

Functional Family Therapy for families of youth (age 11-18) with behaviour problems

**Reviewers:**

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**Contribution of reviewers**

AW and JL drafted the protocol with input from AB. KH wrote the search strategy. KH will conduct electronic searches and search for grey literature. KH and AW will contact experts. All four reviewers will screen titles and abstracts (working in pairs). KH will retrieve potentially eligible studies. All four reviewers will work in pairs to make eligibility decisions. JL will be paired with other reviewers to extract data from studies. JL will take the lead on the first draft of the review, with input from all reviewers.

**Internal sources of support**

Norwegian Knowledge Centre for the Health Services, NORWAY

**External sources of support**

Nordic Campbell Center, DENMARK

**What's new**

This protocol is co-registered within the Cochrane Collaboration.
Background

Behavioral problems are among the most commonly diagnosed problems in children. In 2003, 6.3% of children ages 6 to 17 in the USA were diagnosed with behavioral problems, yet rates of parental concerns about these problems were much higher, suggesting that child behavior problems may be underdiagnosed in this sample (Blanchard 2006). Clinically relevant behavior problems were identified in 10% to 18% of children and youth between the ages of 4 and 18 living in Germany in 2001 (Barkmann 2005). In Turkey, 11.9% of 2- to 3-year-old children scored in the clinically significant range and 18.6% were in the borderline range on the Child Behavior Checklist (Erol 2005). A cross-national study found few differences in children's internalising or externalising behavior problems as a function of nationality, gender, or age (Lambert 1994).

A number of family-based interventions have been developed to prevent and/or treat behavioral problems among children and youth. Among these, Functional Family Therapy (FFT) is one of the oldest and best known.

Functional Family Therapy (FFT) is a family-based intervention program for youth with behavioral problems and their families. Begun in 1969, the core elements of this model have remained intact as it has been implemented among youth at risk for or presenting with behavioral problems such as delinquency, violence, substance abuse, Conduct Disorder, Oppositional Defiant Disorder, or Disruptive Behavior Disorder. It is estimated that substance use or abuse has been prevalent in roughly 80 percent of youth participating in these programs (Alexander 2002, p. 49). Participants have included court mandated referrals and chronic delinquents released from state institutions. FFT has been used as an alternative to incarceration or as a re-entry program for youth returning to the community following release from institutional settings. It has been offered in mental health, juvenile justice, and child welfare settings. It has been widely used in the USA in both rural and urban areas, and has been deployed and studied in other countries (e.g., in Sweden, the FFT program served adolescents who were arrested by the police).

FFT reflects a core set of theoretical principles, in which behavior is seen as a representation of the family relational system; i.e., as indicative of the functionality of the family. The overarching goals of FFT are described by its developers as follows:

1. Changing the maladaptive behaviours of youth and families, especially those who at the outset may not be motivated or may not believe they can change;
2. Reducing the personal, societal, and economic consequences of disruptive behavior disorders; and
3. Doing so with less cost, in terms of time and money, than many other treatments currently available (Alexander 2002, p. 7).

FFT is a short-term (90-day), intensive and comprehensive program that can be delivered in clinical settings, school settings, or at home. The program requires 8 to 30 hours of direct service to youth and their families over an average of 12 home visits in 90 days. FFT has four specific objectives (engagement, motivation, behavior change, and generalization) that are accomplished in three phases. Each phase is built
upon the previous phase and has an assessment and intervention component directed at specific goals.

Phase 1: In the early phase, workers focus on engagement and motivation. Engagement involves 'maximizing factors which enhance the perception that positive change might occur (intervention credibility), and minimizing factors (e.g., poor program image, difficult location, insensitive referral) that might signify insensitivity and/or inappropriate resources' (Alexander 2002, p. 15). To develop or enhance family members' motivation, workers 'identify and quickly begin to modify the pattern of changeable intrafamily risk factors, especially negativity, hopelessness, and blaming; [and] initiate and/or strengthen intrafamilial protective factors that can mitigate the effect of risk factors that cannot be changed' (Alexander 2002, p. 15).

Phase 2: The middle phase is aimed at behaviour change. The objective is to 'develop long term behavior change patterns that are culturally appropriate, context sensitive, and individualized to the unique characteristics of each family member' (Alexander 2002, p. 15). Workers focus on cognitive, interactive, and emotional issues; emphasize positive communication and parenting skills; and provide concrete resources that 'guide and symbolize specific changes in behavior' (Alexander 2002, p. 15). This phase aims to reduce intrafamilial risk factors and enhance intrafamilial protective factors.

Phase 3: The late phase focuses on generalization of behavior change to other settings and social systems. This involves mobilizing community support systems and modifying deteriorated family-system relationships (e.g., with schools, probation officers) (Alexander 2002, p. 15).

As used in FFT, the term 'family' refers to a wide range of family forms and structures. It includes a variety of living arrangements, and often refers to a unit that includes a youth who resides with one or more adult figures (a parent or guardian) who are deemed responsible for the youth's conduct. "In general, FFT initiates intervention with the unit that represents the current reality for the identified youth" (Alexander 2002, p.16).

Assessment focuses on the functional nature of problems within the family, rather than a diagnosis. Assessment is a continuous, multilevel, multidimensional, and multimethod process that includes individual, family, behavioral, and contextual factors (Alexander 2002, p. 22). It focuses on the promotion and maintenance of problematic sequences (chains of behaviors, events, or interactions), identifying interrelationships, and identifying risk and protective factors.

Therapists are expected to adjust FFT to family members' capacities and the specific problems they face. FFT uses reframing (redefining individual and family problems and strengths), interpretations of patterns of maladaptive behaviour with links to emotions, deepening understanding of actions, and communication training with focus on positive communication. It incorporates theories of information processing, social cognition, and the psychology of emotion (Alexander 2002, p. 10).

The model is said to be useful for complex and multidimensional problems because of its flexible structure and cultural sensitivity. Effectiveness is attributed to the careful
sequencing of techniques, helped by the continuous assessment and intervention processes, organized in phases that build upon each other (Alexander 2002).

FFT therapists are expected to have Masters' degrees in psychology, counselling, marriage and family therapy, social work, or a related area (Alexander 2002). FFT is usually implemented in ‘sites’ which are working groups of FFT trained professionals and support staff. It takes approximately one year to implement FFT in a new site. It is necessary to have a certificate to practice FFT, and FFT requires close training and supervision. There are four levels of certification: Functional Family therapist, FFT Clinical Team leader, FFT Clinical Supervisor, and FFT Trainer. Working FFT teams meet weekly with a FFT supervisor to discuss cases and clinical issues.

Costs per family range from $1,350 to $3,750 USD for an average of 12 home visits over 90 days (Alexander 2002).

Prior Research
Alexander 2002 cites fourteen published outcome studies of FFT. Of these, eight studies were conducted in Salt Lake City, Utah, by the developers of FFT; six were conducted by independent investigators, five in the USA (Philadelphia, Indiana, and Ohio) and one in Lund, Sweden. Eight of the fourteen studies appear to be randomized controlled trials, four use quasi-experimental designs, and two appear to have no comparison group. Sample sizes range from 27 to 325, but most studies (12) involved samples of fewer than 100 families. Follow-up periods range from zero to five years (four studies did not include follow ups, two studies had follow-ups that were shorter less than three months, six studies had follow-ups that ranged from 6 months to 2 years, and two studies had follow-up observations after 2 years).

Previous Reviews
Traditional narrative reviews of the research on FFT have been provided by FFT program developers (Alexander 2002, Sexton 2000) and others (US DHHS 2001). A cost-benefit analysis of prevention and intervention programs for youth, suggests that FFT might produce a net savings of over $14,315 USD per youth served in Washington State and $26,216 USD per youth outside of Washington State (Aos 2001, Aos 2004). However, this analysis was limited to certain outcomes and appears to be limited to data from published reports.

FFT trials have been included in meta-analytic reviews of effects of a wider array of interventions with juvenile offenders (Lipsey 1998) and families (Shadish 2002), but these reviews do not report separate results for FFT. To date there is no systematic review of effects of FFT.
Objectives

To assess the effectiveness of FFT for youth with behavior problems.

Criteria for considering studies for this review

Types of studies

Randomized controlled trials (RCTs) and quasi-experimental designs (QEDs). QEDs must use parallel cohort (multiple-group) designs with statistical controls for baseline differences between groups.

Types of participants

Families of young people aged 11-18 with one or more of the following behaviour problems: delinquency, violence, anti-social behaviour, substance abuse, conduct disorder, oppositional defiant disorder, or disruptive behaviour disorders.

Types of interventions

Certified FFT programs (as described above) compared with usual services (e.g., in the juvenile justice system), alternative services (such as individual, family, or group therapy), or no treatment.

Types of outcome measures

Primary outcomes
Internalising behaviour problems (depression, anxiety)
Externalising behaviour problems (antisocial behavior, delinquency, crime)
Placement in a restrictive or secure facility (incarceration, detention, residential treatment, psychiatric hospitalization)

Secondary outcomes
School attendance
School performance
Pro-social behavior
Peer relations
Self esteem
Parent's psychiatric symptoms
Qualities of family functioning (adaptability, cohesion, communication, supervision).

Acceptable outcome measures are: standardised instruments (such as the Child Behavior Checklist, Achenbach 1991), police and court records (arrest, conviction), parent reports, teacher reports, self-reports (delinquency, drug-use, peer relations), and drug tests.
Outcomes will be assessed at the end of treatment, six month follow-up, one year follow-up, and longer follow-ups (if data are available). In any case, we will capture the timing of outcome assessment as it is presented in reports.

We will also document service costs.

**Search strategy for identification of studies**

Electronic searches will be made of bibliographic databases as well as government policy databanks and professional websites. Reference lists of articles will be examined, and experts will be contacted to search for so called 'grey literature'. There will be no publication, geographic, or language restrictions. Searches will cover the following sources.

*Biomedical sciences databases*
- MEDLINE
- EMBASE
- CINAHL
- PsycINFO
- Cochrane Library, Cochrane Central Register of Controlled Trials (CENTRAL)

*Social Sciences and general references databases*
- ASSIA (1969 - )
- C2-SPECTR (1969 - )
- Dissertation Abstracts International (DAI) (1969 -)
- ERIC (1969-)
- Info Trac (1969 - )
- Science Direct (1969 -)
- Sociological Abstracts (1969 - )
- Web of Knowledge / Web of Science (1969 - )
- Social Sciences Citation Index (1969 - )

*Government policy sources:*
- U.S. Department of Health and Human Services
- U.S. National Institutes of Health, CRISP database
- U.S. Centers for Disease Control
- U.S. Government Printing Office
- UK Home Office
- Sweden
- Norway
- Etc.

*Search engines*
- Google

*Personal contacts*
- We will make contact with FFT developers, practitioners and independent researchers to identify unpublished reports and ongoing studies.
Cross-referencing of bibliographies
References in reviews and primary studies will be scanned to identify new leads.

Search terms
Search terms for MEDLINE (modified as necessary for other databases) will be as followed:
1. functional family therapy
2. (research or evaluation or outcome$ or effect$ or trial$ or study or studies)
3. 1 and 2

Methods of the review

Selection of trials / screening
Two reviewers (JL and AB, AW, or KT) will independently read titles and available abstracts to exclude irrelevant studies. Any citation deemed potentially relevant by at least one reviewer will be retrieved in full text. Two reviewers (JL and AB, AW, or KT) will independently read all retrieved studies to determine whether they meet the above selection criteria. Disagreements will be resolved by consensus with a third author. Specific reasons for exclusion will be documented for each study that did not meet inclusion criteria.

Assessment of methodological quality
Included studies will be judged against the following criteria: generation of allocation sequence, allocation concealment, standardization and blinding of assessments, incomplete outcome data (exclusions and attrition), and selective or incomplete reporting of outcomes. Random allocation will be assessed by reviewers, given its importance in minimizing bias (Schulz 1995). The quality of allocation concealment will be rated by the reviewers using categories described in the Cochrane Handbook (Higgins 2005). Studies that support intent-to-treat analysis will be distinguished from those that provide per-protocol ("as treated") analyses.

Data management
Information on study design and implementation, sample characteristics, intervention characteristics, and outcomes will be extracted from studies and coded into Trial Stat, a software program containing a data extraction form and a system made to handle data management in a systematic review. The reviewers will independently code all studies. If inter-rater differences occur, these will be discussed in order to refine coding schemes and resolve any discrepancies. Citations and data will be entered and organized in RevMan 4.2.8.

Data synthesis and analysis
Data synthesis will be conducted in RevMan 4.2.8 and with Comprehensive Meta-analysis 2.0.

Continuous data will be analysed if means and standard deviations are available or there is some other way to calculate effect size (e.g., from t-tests, F-tests, or exact p-values, see Lipsey 2001). If reports have insufficient data, we will retrieve additional information from the authors. Where scales measure the same clinical outcomes in different ways (e.g., psychiatric symptoms), standardized mean differences (SMD)
will be estimated using RevMan's formula for SMD, which is Hedge's $g$ (this is like Cohen's $d$ but includes an adjustment for small sample bias). Inverse variance methods will be used to pool SMDs. Confidence intervals of 95% will be used for individual study data and pooled estimates.

For binary outcomes we will calculate odds ratios and their 95% confidence intervals. RevMan 4.2.8 uses Mantel-Haenszel methods for combining binary outcome data across studies.

When some primary studies report an outcome (e.g., incarceration) as a dichotomous measure and others use a continuous measure of the same construct, we will first conduct two separate meta-analyses (one for odds ratios and another for SMDs). Next, in order to increase the statistical power of the meta-analyses, odds ratios will be converted to $d$ indices using the Cox formula (log odds ratio divided by 1.65; Sanchez-Meca 2003) and we will perform another meta-analysis that includes all possible studies. For studies that provide both dichotomous and continuous measures of the same construct, study average effect sizes (ES) will be calculated with Hedges' $g$. Meta-analysis will be performed on study average ES using Comprehensive Meta Analysis software.

If a study provides multiple continuous measures of the same construct (e.g., parent and youth reports on family cohesion) at the same point in time, an average effect size will be used to avoid dependence problems.

If studies report multiple measures of the same construct at different points in time, we will conduct separate meta-analyses for outcomes measured at the following points in time: at the end of treatment, six month follow-up, one year follow-up (and longer follow-ups, if data are available).

Heterogeneity will be evaluated with $I^2$, the Chi-square test of heterogeneity, and by comparing results of fixed effect and random effects models (Higgins 2002). If, as expected, we find evidence of heterogeneity (e.g., statistically significant Chi-square tests and $I^2$ greater than 50%), we will rely on results of random effects models.

To our knowledge, there are no cluster-randomised trials of FFT. However, if we do find cluster-randomised trials or studies with a hierarchical data structure (e.g., participants served by the same therapists), we will make corrections so that the effect sizes have the proper weight in these analysis.

**Subgroup analyses**

Following the recommendations of the Campbell Collaboration (Shadish 2004), we will assess results of RCTs separately from results of QEDs. We will use subgroup analyses to assess results of FFT compared to usual services (e.g., juvenile court programs), FFT compared to alternative treatments (e.g., individual or family therapies), and FFT compared to no treatment (if we find any such studies). If it is possible to classify target populations into distinct subgroups (e.g., by delinquency status or presenting problem), subgroup analysis will be used to examine overall effects of FFT with different subpopulations.
Moderator analysis
Previous meta-analyses indicate that studies conducted by investigators who have an allegiance to the program models they are investigating produce significantly more positive results than those conducted by investigators without such allegiance (Luborsky 1999, Shadish 2002, Wampohl 2001). Hence, if there are enough studies to warrant such a comparison, we will examine potential allegiance effects by comparing results of studies conducted by FFT program developers to those obtained by others. In addition, moderator analysis could be used to assess effects of study design (RCTs versus QEDs), attrition (e.g., over 20%), target population, and comparison condition. We suspect that moderators will be confounded (e.g., studies conducted by program developers may be of lower quality than those conducted by independent investigators) and that we will not have enough studies (statistical power) to conduct meta-regression.

Analysis of potential moderators of effects will be performed using an analogue to the analysis of variance technique to determine whether differences between subgroups are statistically significant. Meta-regression analysis will be used to assess potential effects of multiple moderators if the power to detect potentially meaningful differences (differences in ES of at least .1) is greater than or equal to .8 (Cohen's standard) and the correlation between moderators in the analysis is less than |.4|, or if previous analyses indicate that there may be two or more potent moderators.

Sensitivity analysis
We will use sensitivity analysis to examine the potentially biasing effects of outliers (e.g., studies with unusually large sample sizes, those with extremely high or low ES).

Publication bias and other potential sources of bias will be assessed with funnel plots, and, where appropriate, trim-and-fill analysis. In the absence of bias, funnel plots should be symmetrical. In the event of asymmetry, trim-and-fill analysis can be used to estimate the number of potentially missing studies due to publication bias. Other sources of asymmetry will be investigated, including associations between sample size and methodological rigor or intervention qualities.

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Potential conflict of interest
None known.
Additional references

Achenbach 1991


Alexander 2002


Aos 2001


Aos 2004


Barkmann 2005


Blanchard 2006


Erol 2005


Higgins 2002

Higgins 2005


Lambert 1994


Lipsey 1998


Lipsey 2001


Littell 2005


Luborsky 1999


Sanchez-Meca 2003


Schulz 1995


Sexton 2000

Shadish 2002


Shadish 2004


US DHHS 2001


Wampohl 2001


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