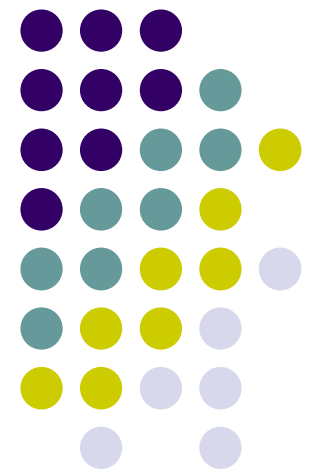


Treatment Foster care for Emotional and Behavioural Problems: An Inclusive Meta-analysis

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Youth Horizons



Treatment Fosterercare (TFC)



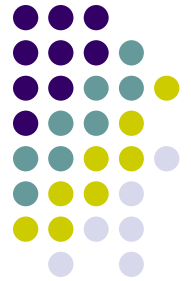
- TFC is a rapidly expanding genre of child welfare service used primarily for meeting the needs of children with emotional and behavioural disturbances and/or care and protection issues within their family of origin.
- TFC has also been used in a range of other areas such as meeting physical health needs and the treatment of autism.
- TFC programmes began to appear in the 1970's; current numbers are difficult to estimate however in 1995 Galaway & Nutter determined that 293 programmes in the US and Canada met 6 criteria for TFC.
- TFC is also known as Therapeutic Fosterercare, Specialist Fosterercare, Therapy Fosterercare, Parent-therapist programs and Family Based Treatment, to name a few.



Treatment Fostercare (TFC)

- Whilst there is considerable variation between TFC programmes, there are common defining characteristics:
 - Treatment of only one or two children within the homes of carefully selected substitute families
 - Low caseloads
 - Frequent, treatment-oriented supervision of the treatment parents
 - Provision of treatment services that are well documented for each child

Treatment Fostercare (TFC)



- Defining characteristics cont.
 - Preparing treatment parents to function as professionals through intensive pre-service and in-service training, good pay and frequent performance evaluations
 - Intensive support services to treatment parents
 - Crisis intervention services
 - Education liaison
 - Health screening and medical services
 - Coordination of each child's system of care

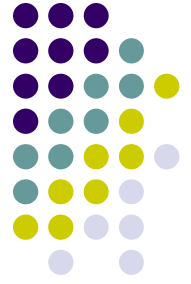
Meadowcroft (1989)

Meta-analysis



- The statistical analysis of a large collection of analysis results (studies) for the purpose of integrating the findings (Glass, 1976).
- Just as we use statistics to integrate the results from a number of individual subjects to ascertain if the overall result for that study is statistically significant, meta-analysis integrates the results of a number of related studies.
- This presentation has been written for a general audience and some technical issues will be omitted or simplified.

Meta-analysis



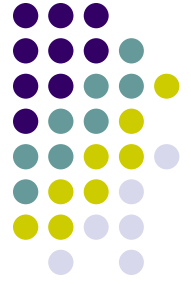
- Meta-analysis typically:
 - determines if the effect of a given intervention across studies is statistically significant
 - provides a quantitative estimate of the size or strength of this effect
 - indicates if the range of effect estimates from a specific group of studies is heterogenous
 - Roughly, if a group of effect estimates are heterogenous it is likely that an external factor or *moderator* is influencing the outcome of the studies

Meta-analysis – Effect statistics



- This review will use the effect statistic called **Cohen's g**
- By convention
 - Values of g of 0.80 or more are described as “large”
 - Values of g in the region of 0.50 are described as “medium”
 - Values of g of 0.20 or less are described as “small”
- In this meta-analysis most of the outcomes are to do with reducing undesirable behaviours hence the effects are negative; -0.8 is “large”, -0.5 “medium” etc.

Meta-analysis – Effect statistics



- Another effect statistic we will use is called a **Risk Ratio**
- The reflects the ratio of the risk of an event occurring in one group versus the risk of the event occurring in a second group.
- For instance, if in a study of an immunisation for the common cold 20 of 100 persons in the treatment group had at least one cold after a year compared to 40 of 100 in the control group the risk ratio would be $20/100$ vs. $40/100$ or $0.2/0.4$ giving a risk ratio of 0.5. If 10 people in the treatment group got colds the risk ratio would be 0.25.



- Risk ratios are harder to interpret, but there is some consensus that:
- When the intervention is attempting to reduce something “bad” risk ratios of more than 0.5 are negligible
- When the intervention is attempting to increase something “good” risk ratios of less than 3 are negligible
- A risk ratio of 1 or close to 1 means that there has been no effect

Experimental design



- Single group outcome studies (SGO) – one group, test/measure, do the intervention, test/measure again to see if there is any change.
- Non-equivalent control group studies (NEG) – two groups, one experimental and one control group, however the control group is chosen on the basis of convenience, i.e. comparing a TFC programme with a nearby residential programme.
- Randomised controlled trial designs (RCT) – two groups, one experimental and one control, but subjects are randomly assigned to the groups before the intervention starts. This ensures that the two groups are equivalent.

“Inclusive” Meta-analysis



- Many meta-analyses exclude studies of a lower methodological quality, such as single-group outcome studies (SGO's) and non-equivalent group studies (NEG) and include only studies of high methodological quality such as Randomised Controlled Trials (RCT's).
- This can be problematic if only a minority of studies are RCT's. It is better to analyse all studies; the effect of methodological quality can in any case be investigated in the meta-analysis as a moderating variable.

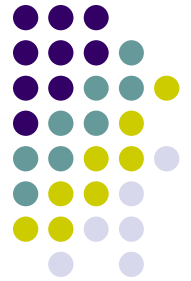
“Inclusive” Meta-analysis



- Similarly, important studies can be lost from the meta-analysis if the original paper lacks a crucial piece of information e.g. a missing standard deviation. This information can often be estimated or imputed. This is appropriate only when most of the data provided by the study is not estimated or imputed.
- In this review estimated or imputed data is used in some studies in order to ensure that as many studies as possible are included in the analysis. The influence of studies with estimated or imputed data can be investigated as a moderating variable.

Results:

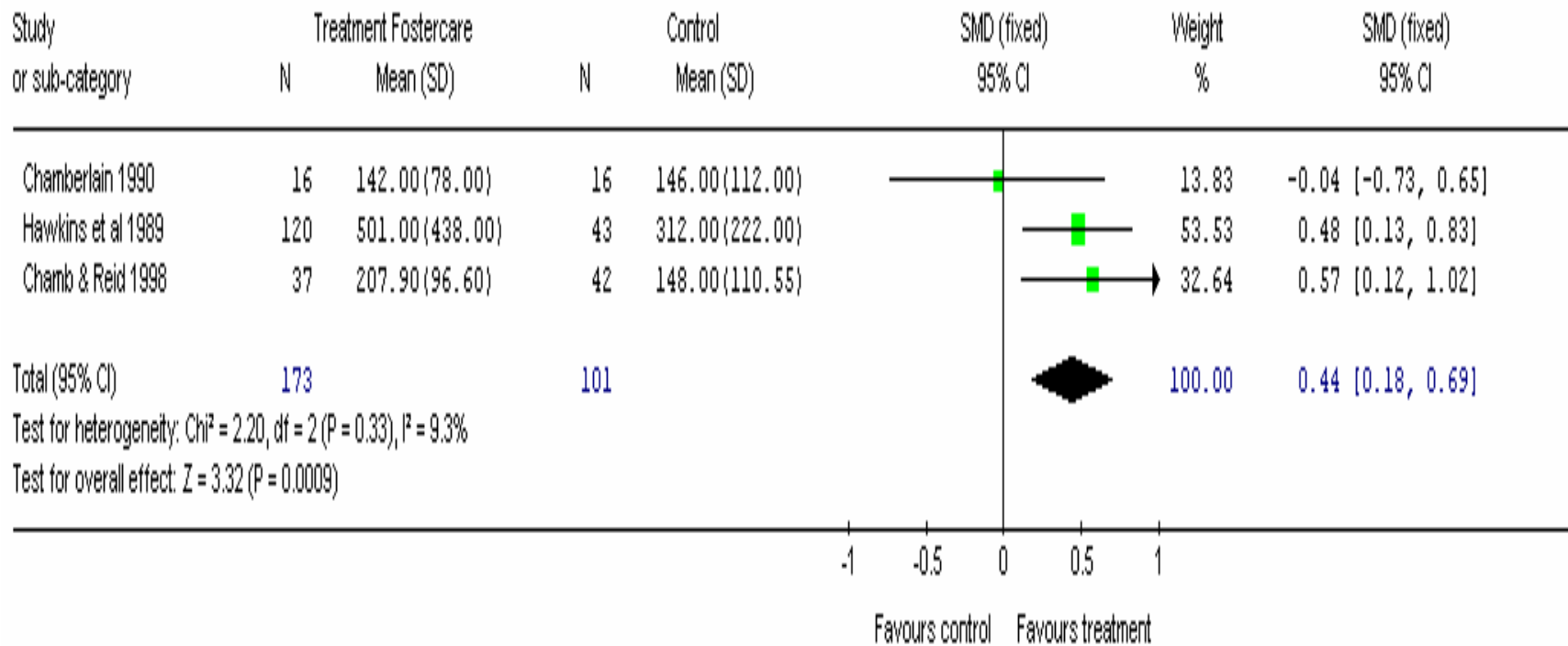
Care related outcomes



- Days in treatment: Three studies, one RCT, two NEG. Mixed sex except C&R 1998, boys.
- *Statistically significant, medium effect size.*



Review: Treatment Fostercare
 Comparison: 02 TFC vs. Control
 Outcome: 20 Days in treatment

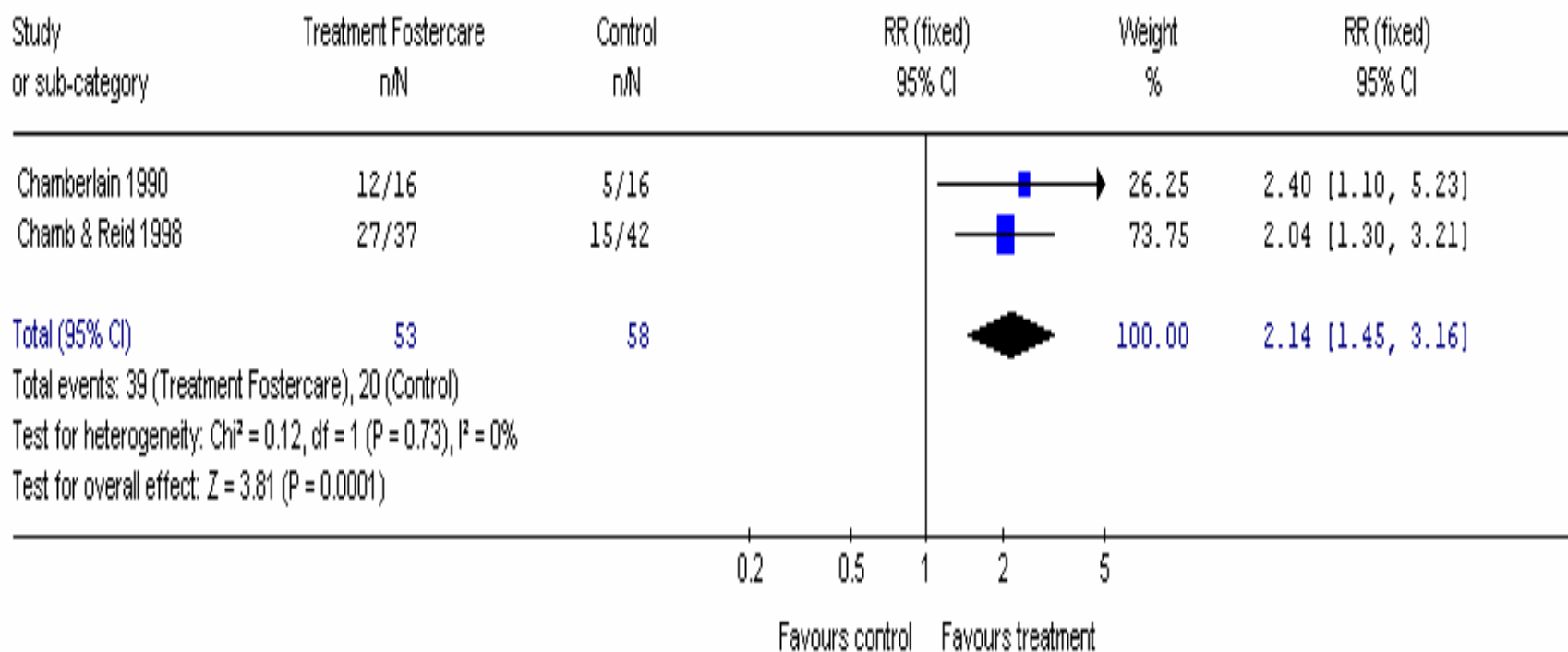


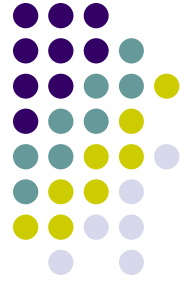


- Proportion of group who completed 6-12 months of treatment: Two studies, one RCT, one NEG. Mixed except C&R 1998, boys.
- *Statistically significant, approximately twice as many young persons in TFC completed treatment compared to other programmes.*



Review: Treatment Fostercare
 Comparison: 02 TFC vs. Control
 Outcome: 19 Proportion of group who completed 6-12 months treatment

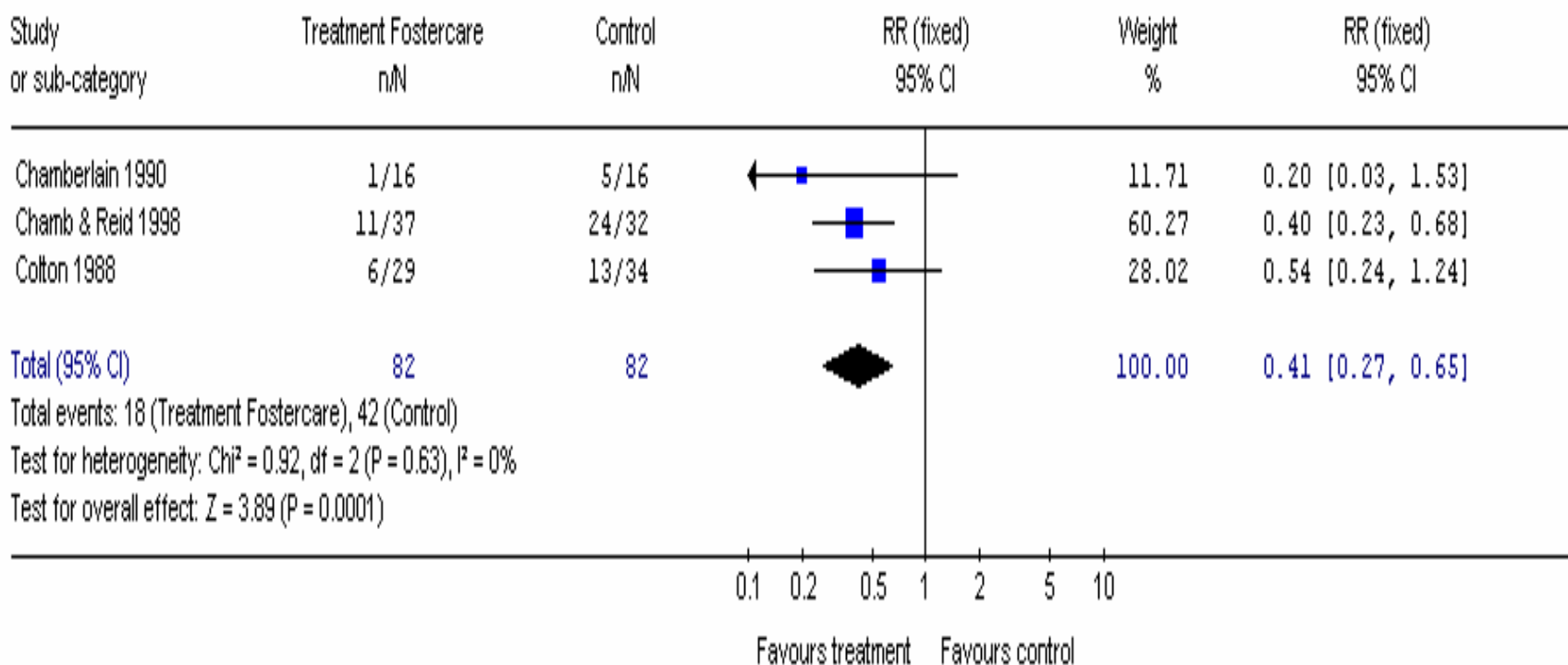




- Proportion of group who ran away at least once in the course of treatment: Three studies, one RCT, two NEG. Mixed except C&R 1998, boys.
- *Statistically significant, approximately four young persons in TFC ran away for every 10 who ran away in other programmes.*



Review: Treatment Fostercare
 Comparison: 02 TFC vs. Control
 Outcome: 18 Proportion of group who ran-away

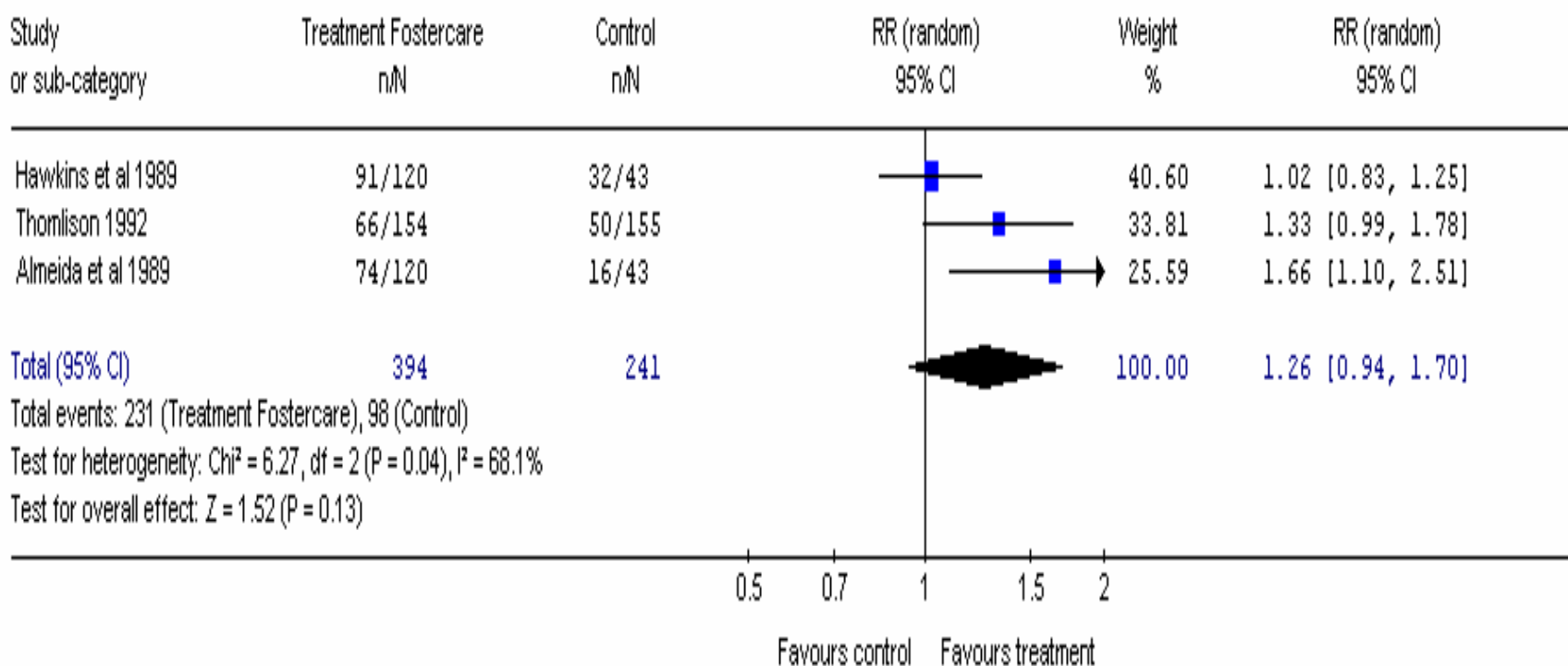




- Proportion of group discharged into the care of family upon completion of treatment: Three studies, two NEG, one SGO (Thomlison). Boys and girls combined.
- *Approximately one and a quarter more individuals in TFC placed with family at discharge than in the comparison programmes, however NOT statistically significant.*
- Results significantly heterogenous under fixed and random effects models: Suggests that factor or factors unknown are influencing the outcomes (variation more than expected by chance alone).

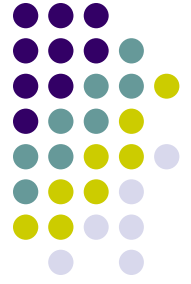


Review: Treatment Fostercare
 Comparison: 02 TFC vs. Control
 Outcome: 17 Placement with family at discharge



Results Summary:

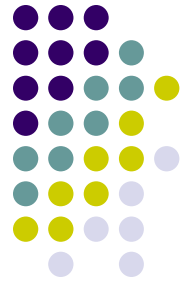
Care related outcomes



- TFC resulted in significant changes in three of four outcomes surveyed relative to control conditions.
- The effect sizes obtained were generally small to medium (g of 0.44, RR's of 1 – 2 for desirable outcomes and 0.41 for an undesirable outcome).
- The outcomes were mostly not heterogenous. That is, most of the studies were able to obtain the similar results; they were consistent and reliable.

Results:

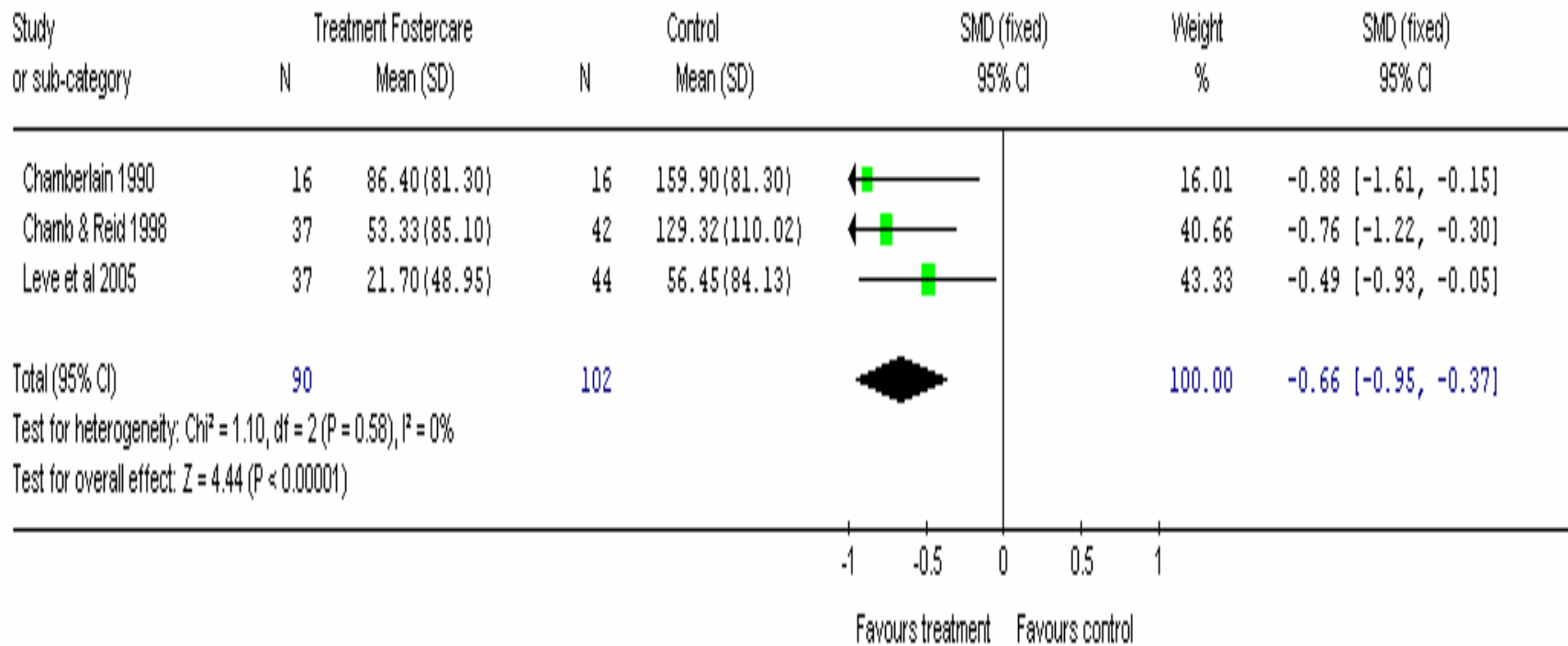
Criminal and delinquent behaviour



- Days in lockup during the course of treatment up to one year post treatment: Three studies, two RCT, one NEG. C&R 98 boys, Leve girls, Chamberlain 90 mixed.
- *Statistically significant, moderate to large effect, TFC results in fewer days in lockup on average per individual than the comparison programmes.*
- Note, different time periods involved: Chamberlain 1990 based on treatment end to one year post, Chamberlain & Reid 1998 and Leve 2005 based on baseline to plus one year i.e. during treatment.



Review: Treatment Fostercare
 Comparison: 02 TFC vs. Control
 Outcome: 13 Days in lockup during to post 1 year, all studies

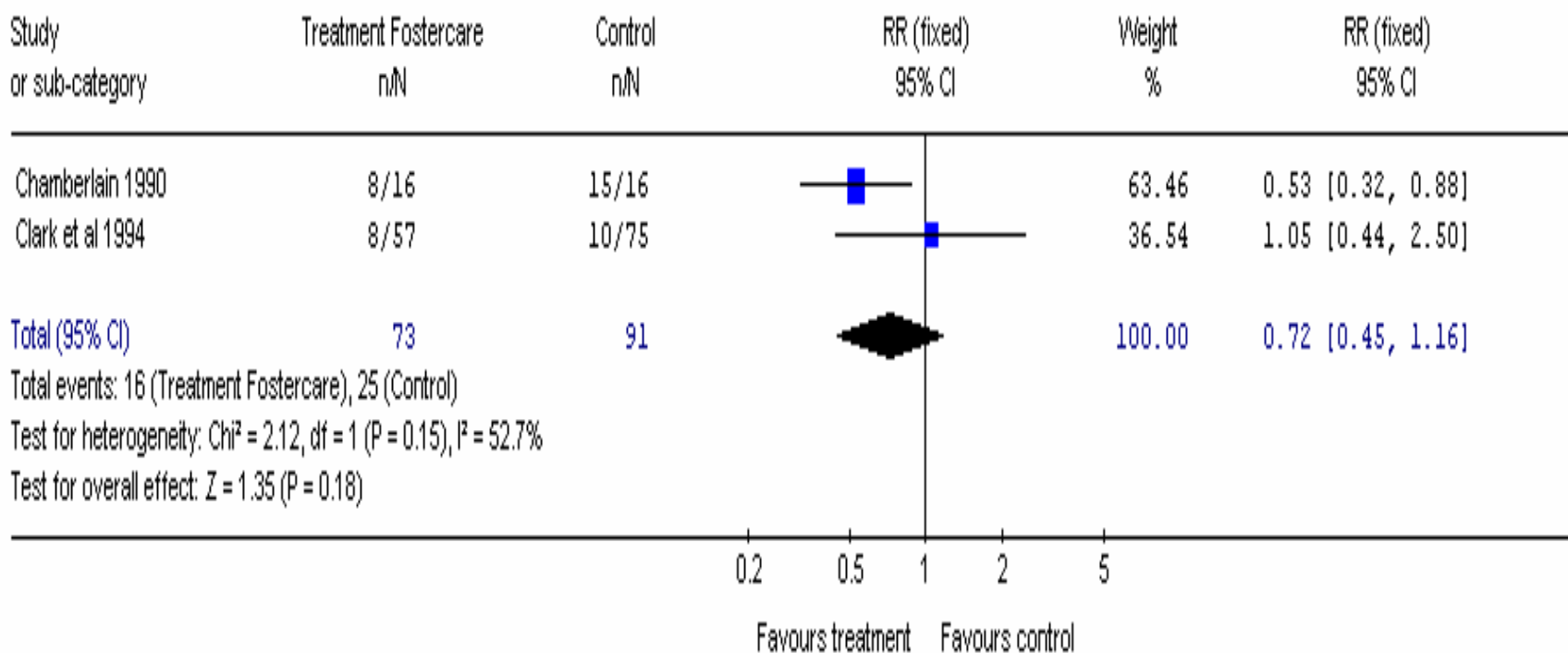




- Proportion of group locked up for any period during treatment: Two studies, one RCT, one NEG. Boys and girls combined.
- *Approximately 70% fewer individuals in TFC locked up on average than in the comparison programmes, however NOT statistically significant.*



Review: Treatment Fostercare
Comparison: 02 TFC vs. Control
Outcome: 14 Lockup, proportion of group locked up during treatment

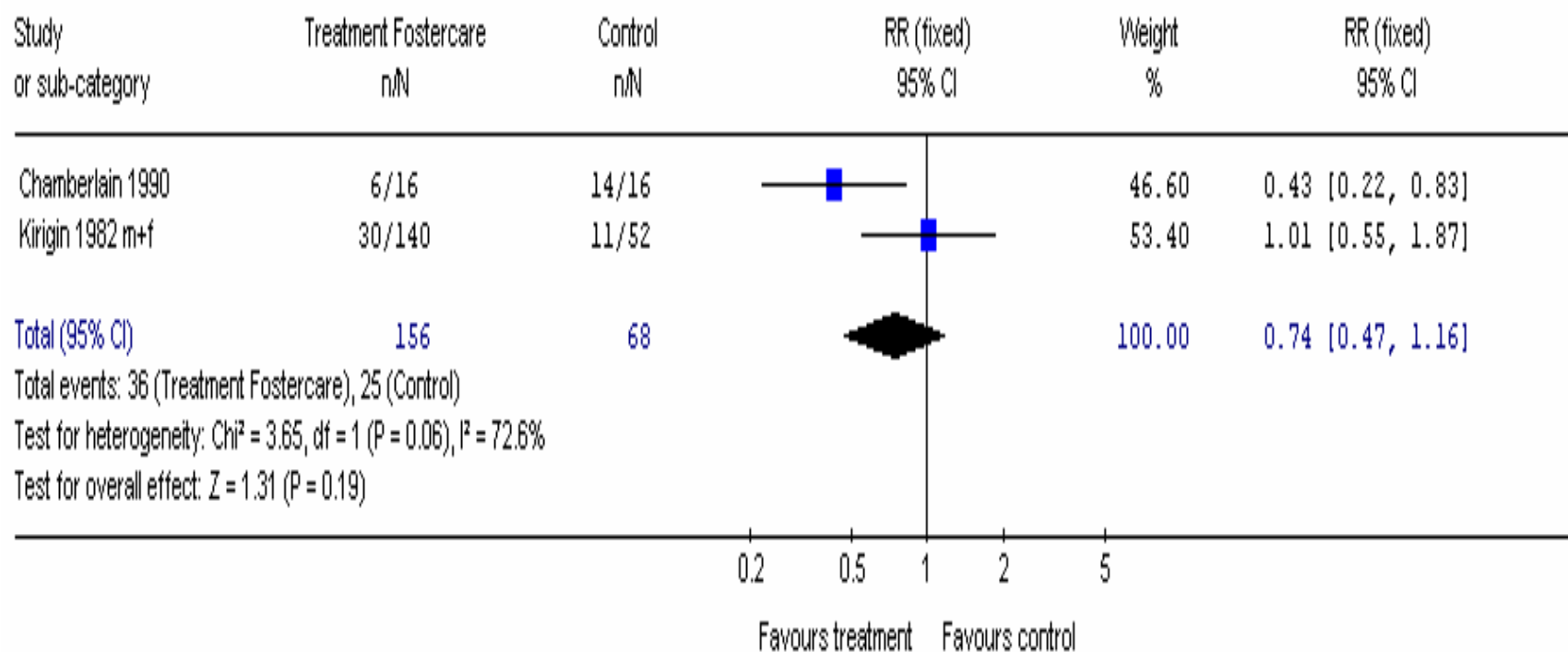




- Proportion of group institutionalised for any period from treatment end up to one year post treatment: Two studies, both NEG. Boys and girls combined.
- *Approximately 70% fewer individuals in TFC institutionalised on average than in the comparison programmes, however NOT statistically significant.*



Review: Treatment Fostercare
 Comparison: 02 TFC vs. Control
 Outcome: 16 Proportion of group institutionalised treatment end to plus 1 year

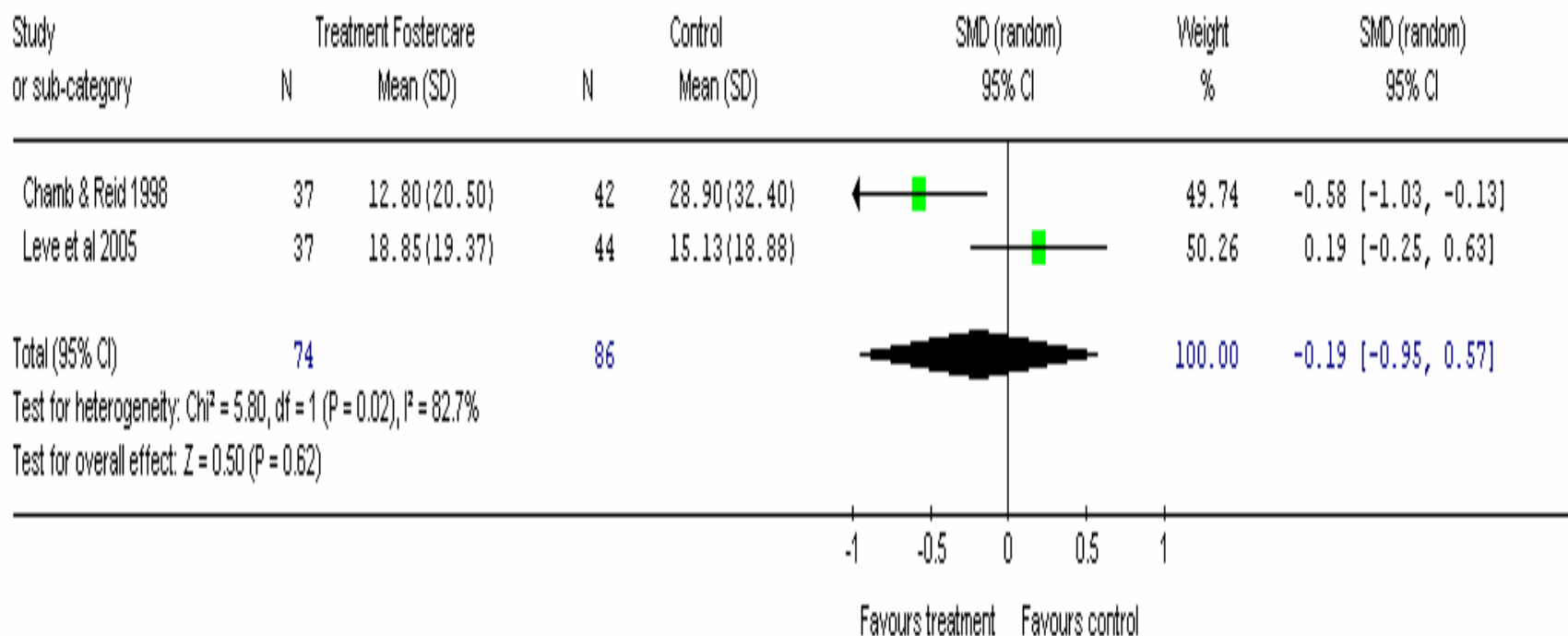




- Rate of self-reported anti-social and criminal behaviour at 1 year post referral (general delinquency scale of the Elliot SRD questionnaire): Two studies, both RCT; C&R 98 boys, Leve 2005 girls.
- *Small effect size, NOT statistically significant.*
- Results significantly heterogenous: Suggests that factor or factors unknown are influencing the outcomes.
- Indication that boys do better than girls.



Review: Treatment Fostercare
 Comparison: 02 TFC vs. Control
 Outcome: 11 Self report delinquency, general delinquency at 1 year post baseline

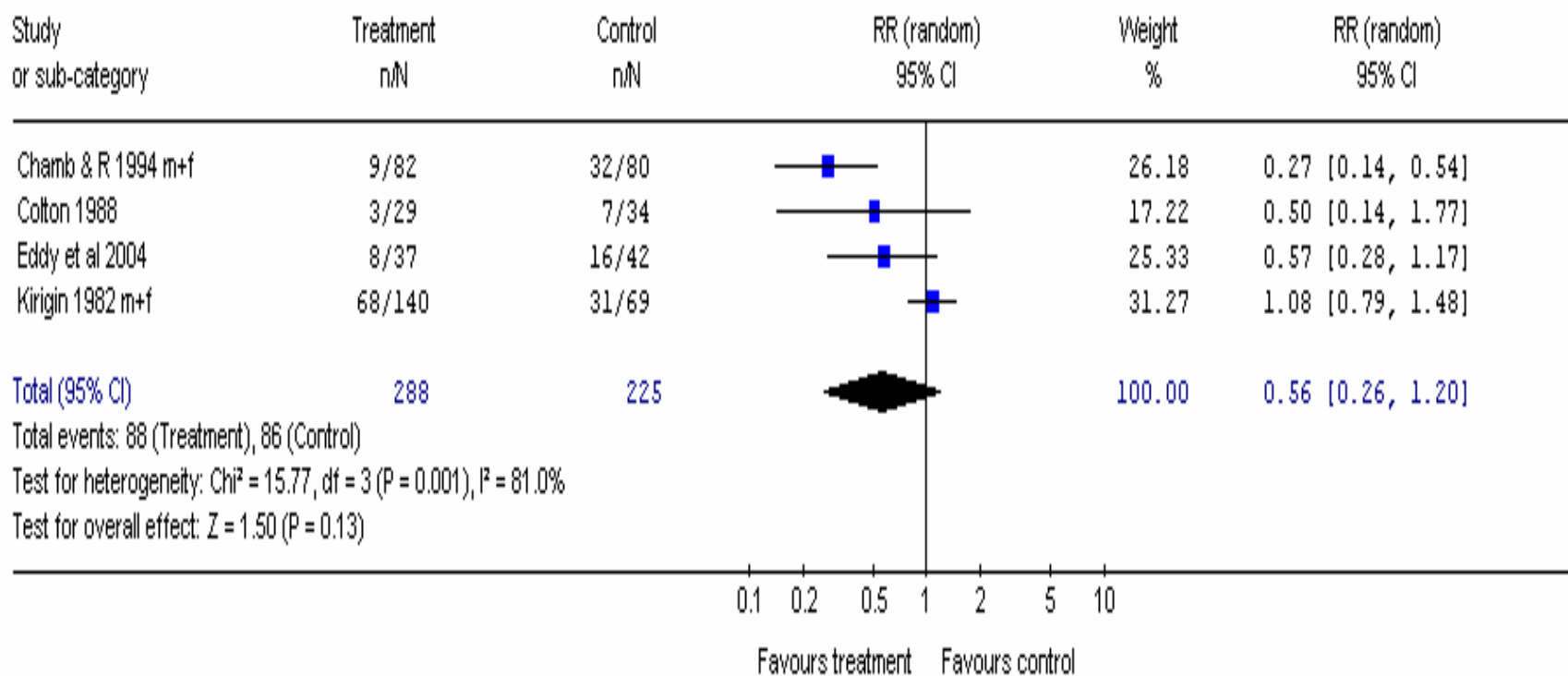


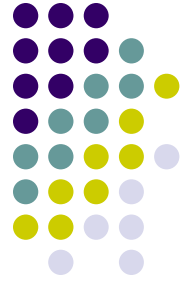


- **Proportion of group with any criminal referral one year post treatment:** Four studies, one RCT, two NEG, one SGO; one boys only, three mixed.
- *Groups receiving TFC had a little over half the rate of criminal referrals than those in the comparison programmes, however NOT statistically significant.*
- Results significantly heterogenous: Suggests that factor or factors unknown are influencing the outcomes, I^2 almost 90%.
- One study had a negative outcome (treatment worse than control group).



Review: Treatment Fostercare
 Comparison: 02 TFC vs. Control
 Outcome: 05 Criminal referrals, proportion of group with, all studies





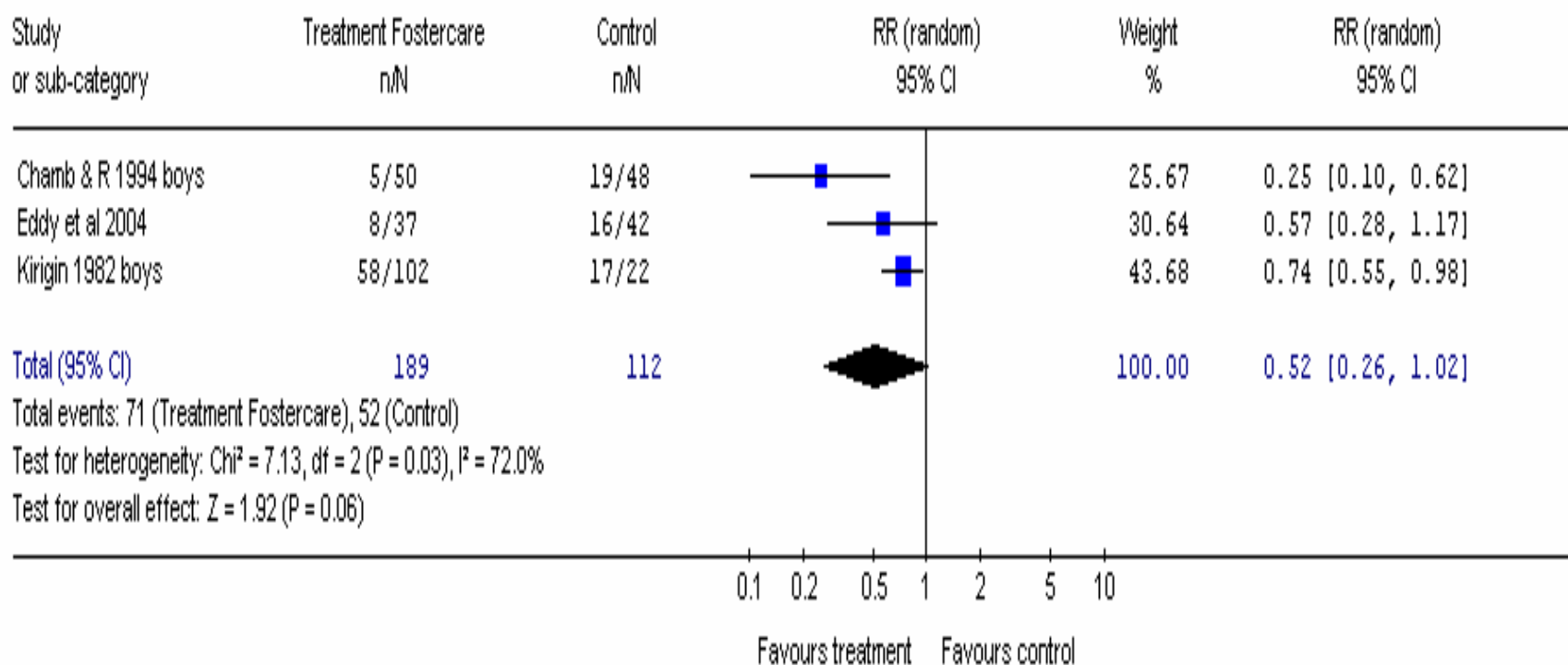
- But look at the results for boys vs. girls

...well, actually they are very similar.

- However both results are heterogenous or nearly so; other factors are likely to be involved.

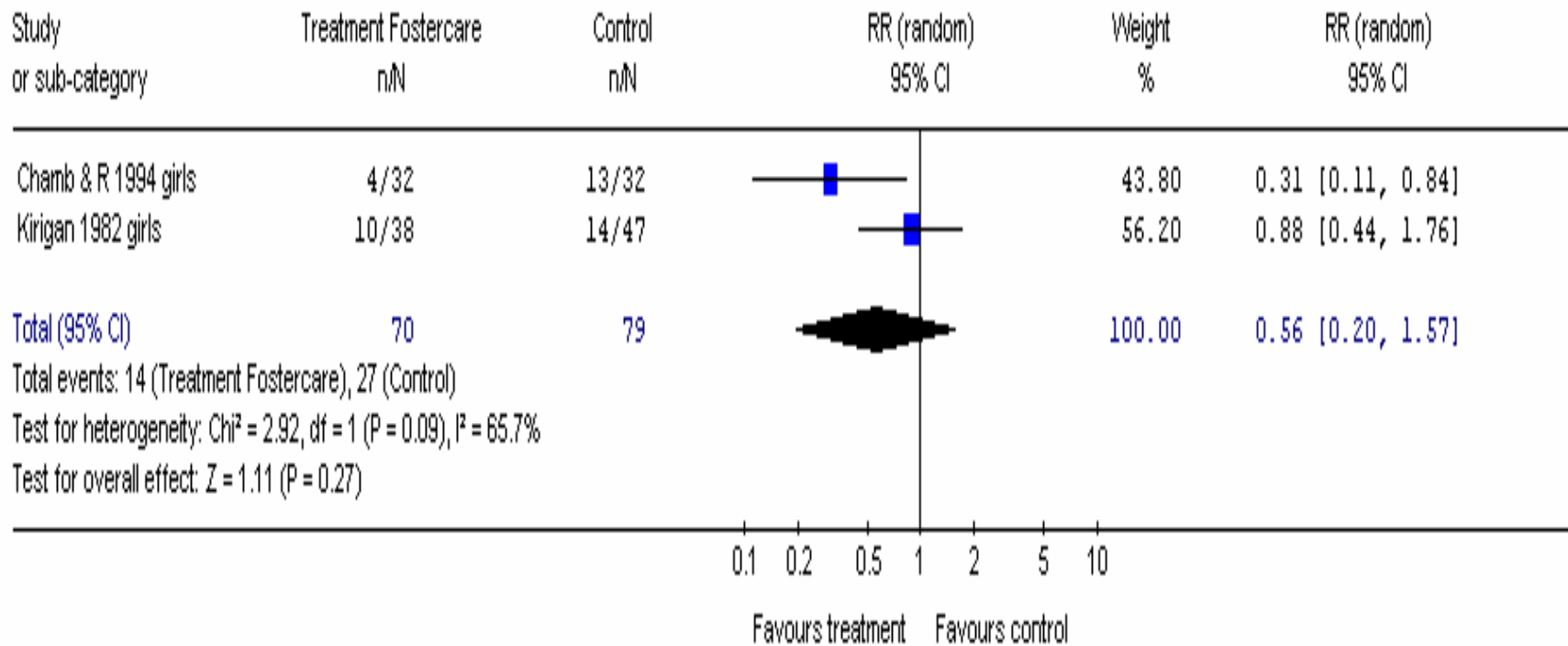


Review: Treatment Fostercare
 Comparison: 02 TFC vs. Control
 Outcome: 28 Criminal referrals, proportion of group with, boys only





Review: Treatment Fostercare
 Comparison: 02 TFC vs. Control
 Outcome: 29 Criminal referrals, proportion of group with, girls only

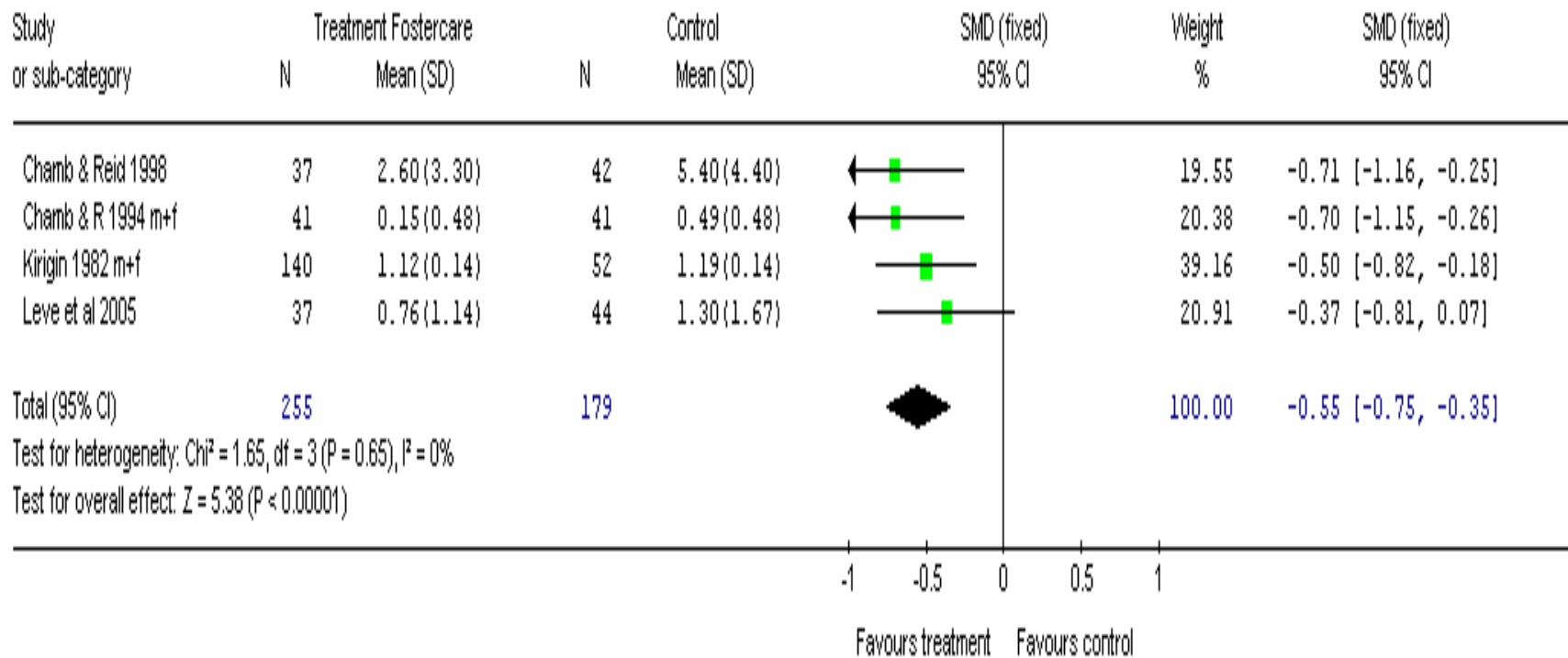




- **Rate of criminal referrals per individual:** Four studies, two RCT, one NEG, one SGO. One girls, one boys, two mixed.
- Medium effect size (-0.55), statistically significant, not heterogenous.
- RCT's only, two studies, one girls, one boys, (not graphed), statistically significant, medium effect size.
- Indications that TFC less effective for girls.



Review: Treatment Fostercare
 Comparison: 02 TFC vs. Control
 Outcome: 09 Rate of criminal referrals, M+F combined, all studies, to 1 year post treatment

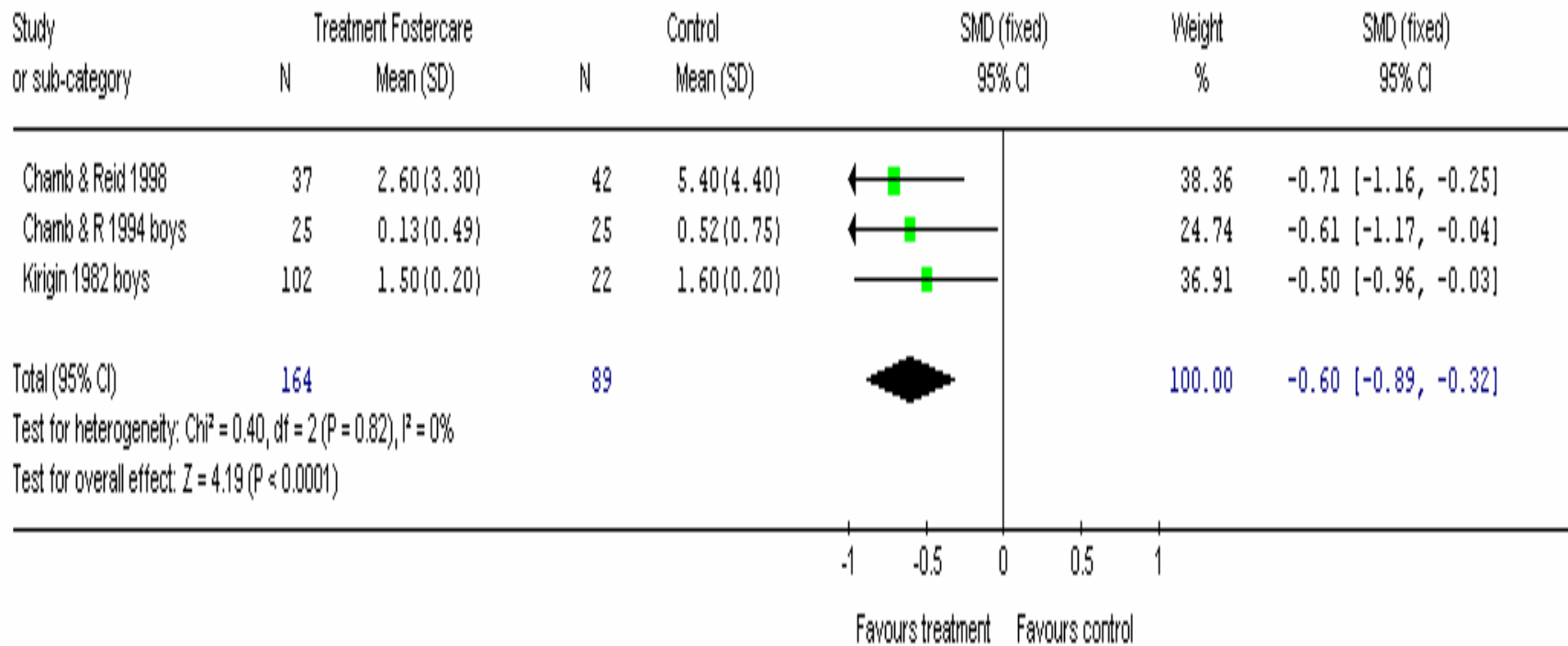




- Girls vs. boys(girls do less well).
 - A moderator analysis using the Q statistic (DeCoster, 2004) found a significant difference between boys and girls ($\text{Chi}^2 = 4.1$, $\text{df } 1$, $p=0.04$)
 - That is, girls do less well and this is a significant difference between the sexes, not merely a chance variation.
- RCT's vs. other studies ...(about the same).

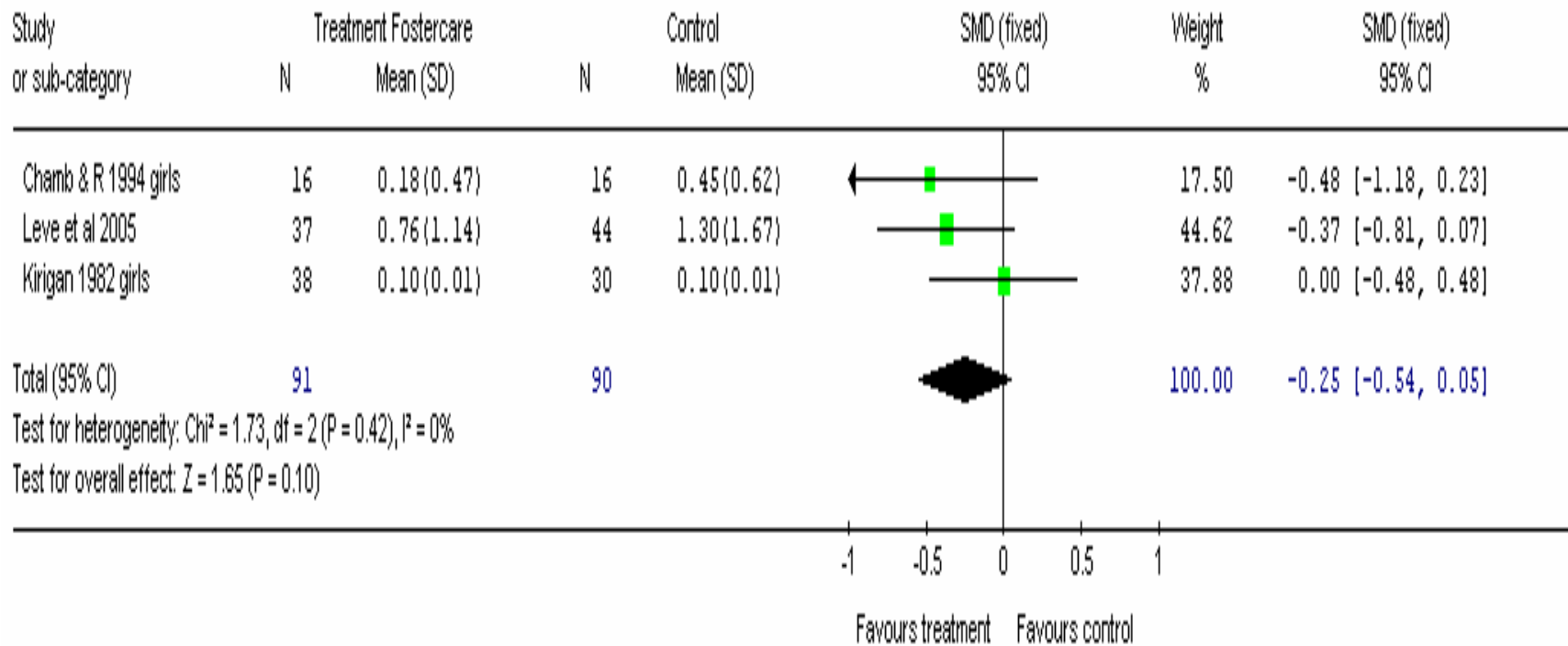


Review: Treatment Fostercare
 Comparison: 02 TFC vs. Control
 Outcome: 30 Rate of criminal referrals, boys only



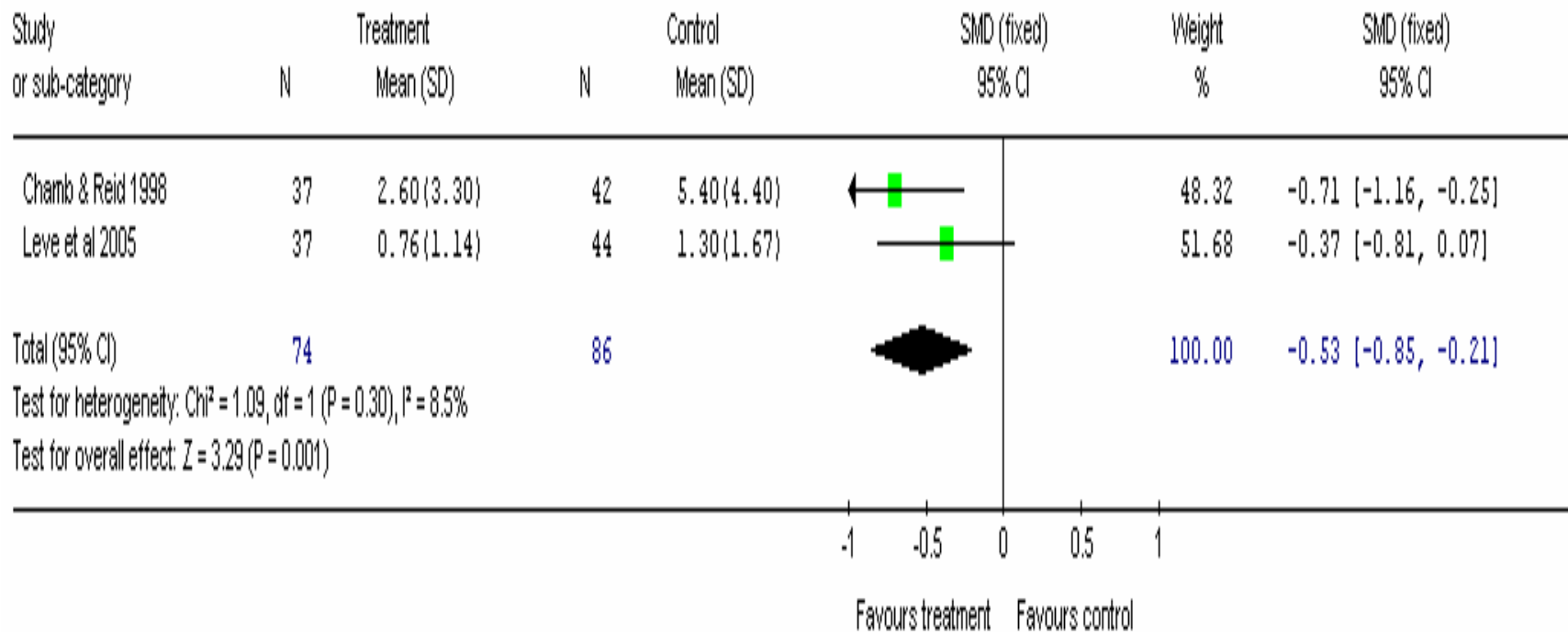


Review: Treatment Fostercare
 Comparison: 02 TFC vs. Control
 Outcome: 31 Rate of criminal referrals, girls only



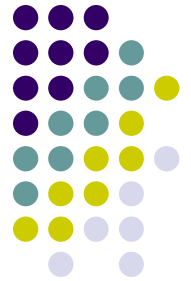


Review: Treatment Fostercare
 Comparison: 02 TFC vs. Control
 Outcome: 10 Rate of criminal referrals, M+F combined, RCT's only, all time periods



Results summary:

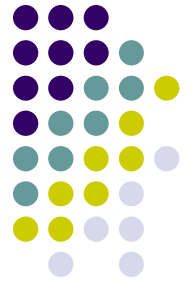
Criminal and delinquent behaviour



- Significant effects were found in two of the six domains analysed.
- TFC resulted in a significant reduction in criminal referrals per individual relative to control conditions with a medium effect size, however the risk reduction as a proportion of the group with any criminal referrals was not significant.
- There was no significant effect on self-reported delinquency and two of three outcomes related to incarceration and institutionalisation.
- Girls do less well having a significantly poorer outcome for criminal referrals than boys and a poorer outcome in self-report delinquency (but not significantly so). Similar outcome to boys in terms of risk of any offending.

Results:

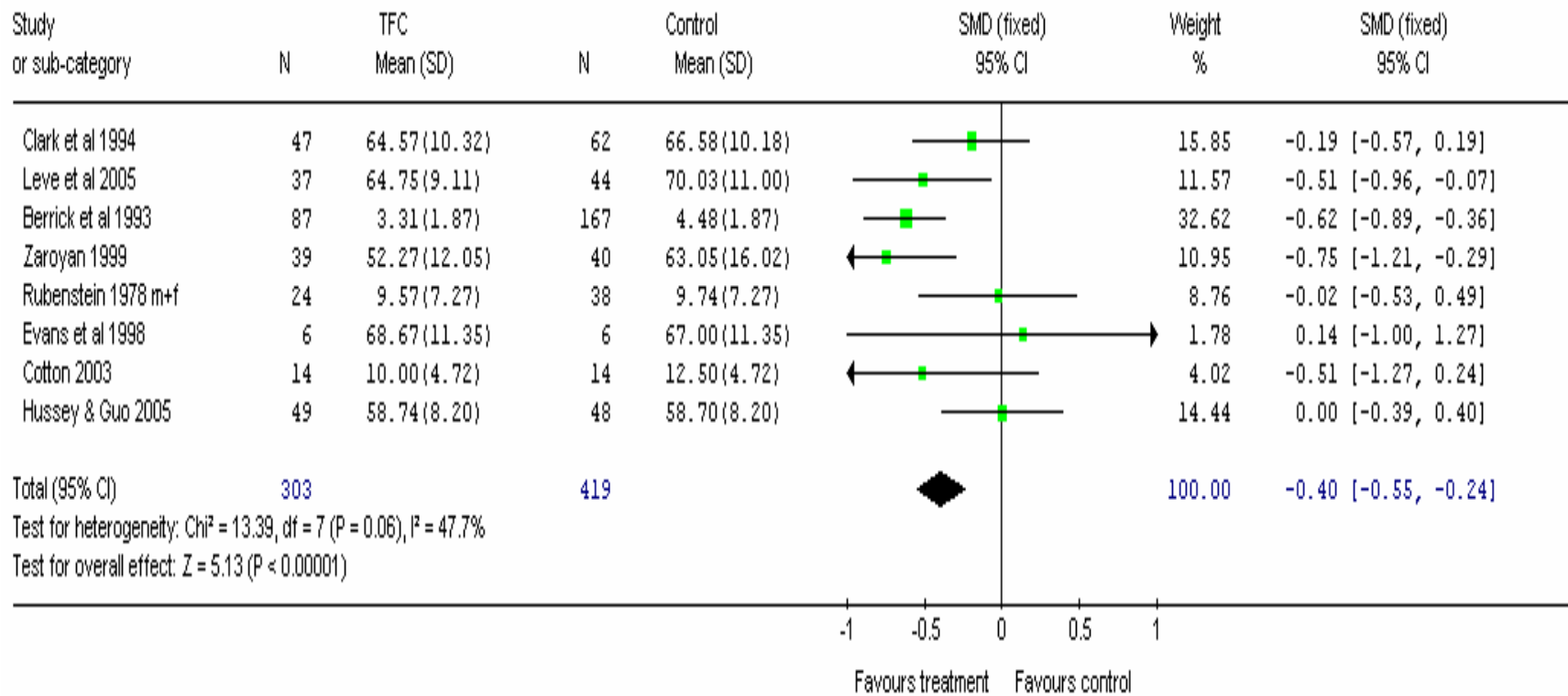
Externalising, internalising and overall behaviour problems



- **Externalising (anti-social, delinquent behaviour) as rated by caregiver:** Eight studies, two RCT, three NEG, three SGO. All mixed sex except Leve 2005, girls only and Rubenstein 1978, boys and girls grouped separately.
- Small to medium effect size (-0.40), statistically significant, a trend towards heterogeneity ($p=0.06$).
- Studies ordered by methodology, from top to bottom, RCT, NEG and SGO.



Review: Treatment Fostercare
 Comparison: 02 TFC vs. Control
 Outcome: 06 Externalising behaviour, caregiver rated, all studies

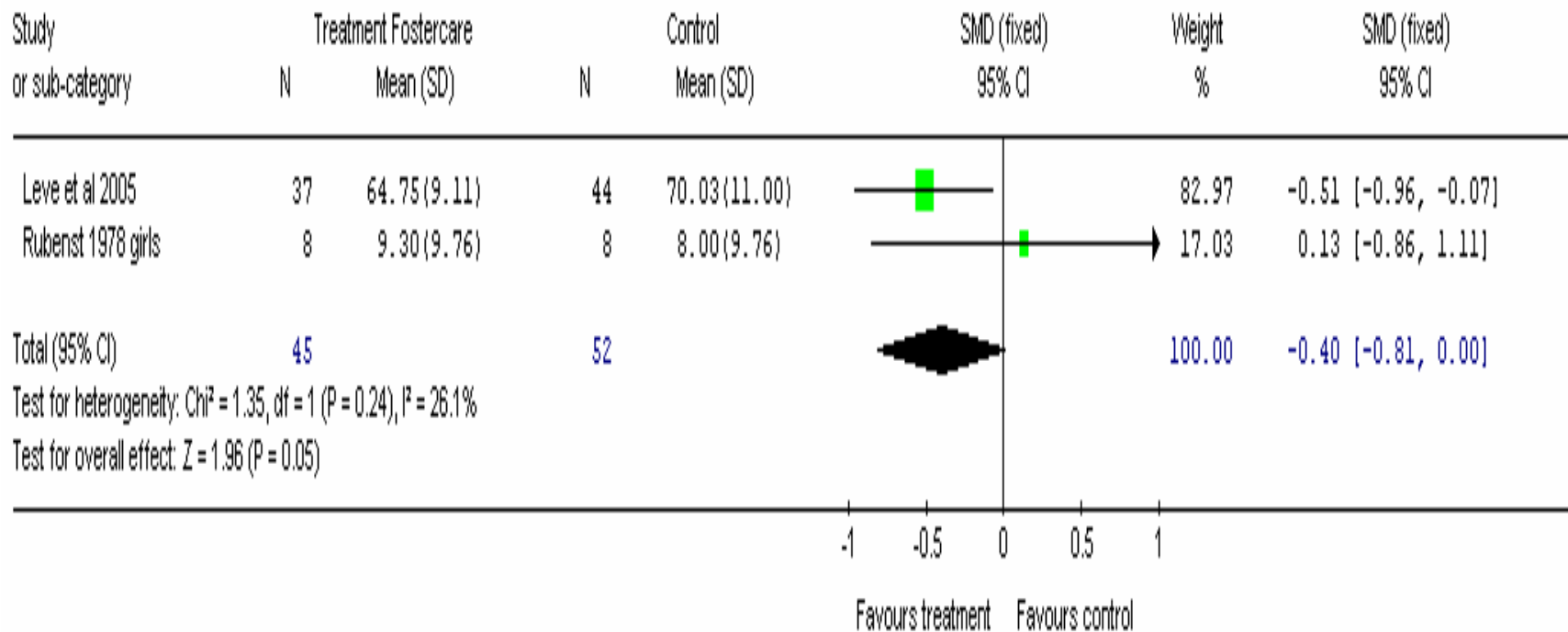




- A moderator analysis found a trend towards significance in differences in effect size due to methodology ($\text{Chi}^2 = 5.47$, $\text{df} 2$, $p=0.06$); NEG's largest effects (Berrick, Zaroyan, Rubenstein; -0.55), RCT's (Clark, Leve; -0.33) and SGO's near nil effects (Evans, Cotton, Hussey; -0.09).
- Girls only: Small to medium effect size, effect size (-0.40), statistically significant ($p=0.05$).
- Similarity between girls and overall results (mostly mixed sex studies) suggests similar results for girls and boys.



Review: Treatment Fostercare
 Comparison: 02 TFC vs. Control
 Outcome: 27 Externalising behaviour, caregiver rated, girls only

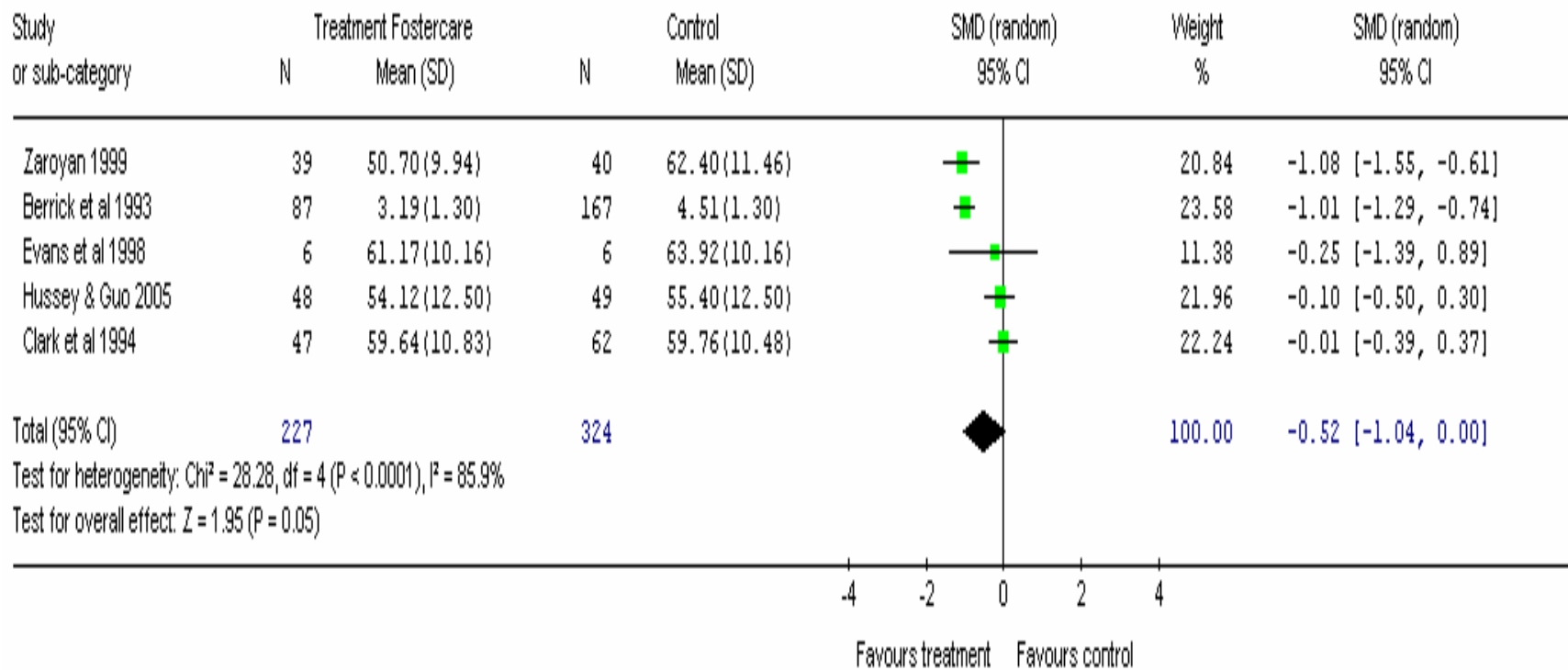




- **Internalising behaviour (anxiety, depression) as rated by caregiver:** Five studies, one RCT, two NEG, two SGO. All mixed sex.
- Medium effect size (-0.52), statistically significant, heterogenous.
- When segregated by study methodology, NEG's most effective (-1.03), SGO's ineffective (-0.14). The one RCT, Clark, obtained a near nil effect (-0.01).



Review: Treatment Fostercare
 Comparison: 02 TFC vs. Control
 Outcome: 21 Internalising behaviour, caregiver rated, all studies

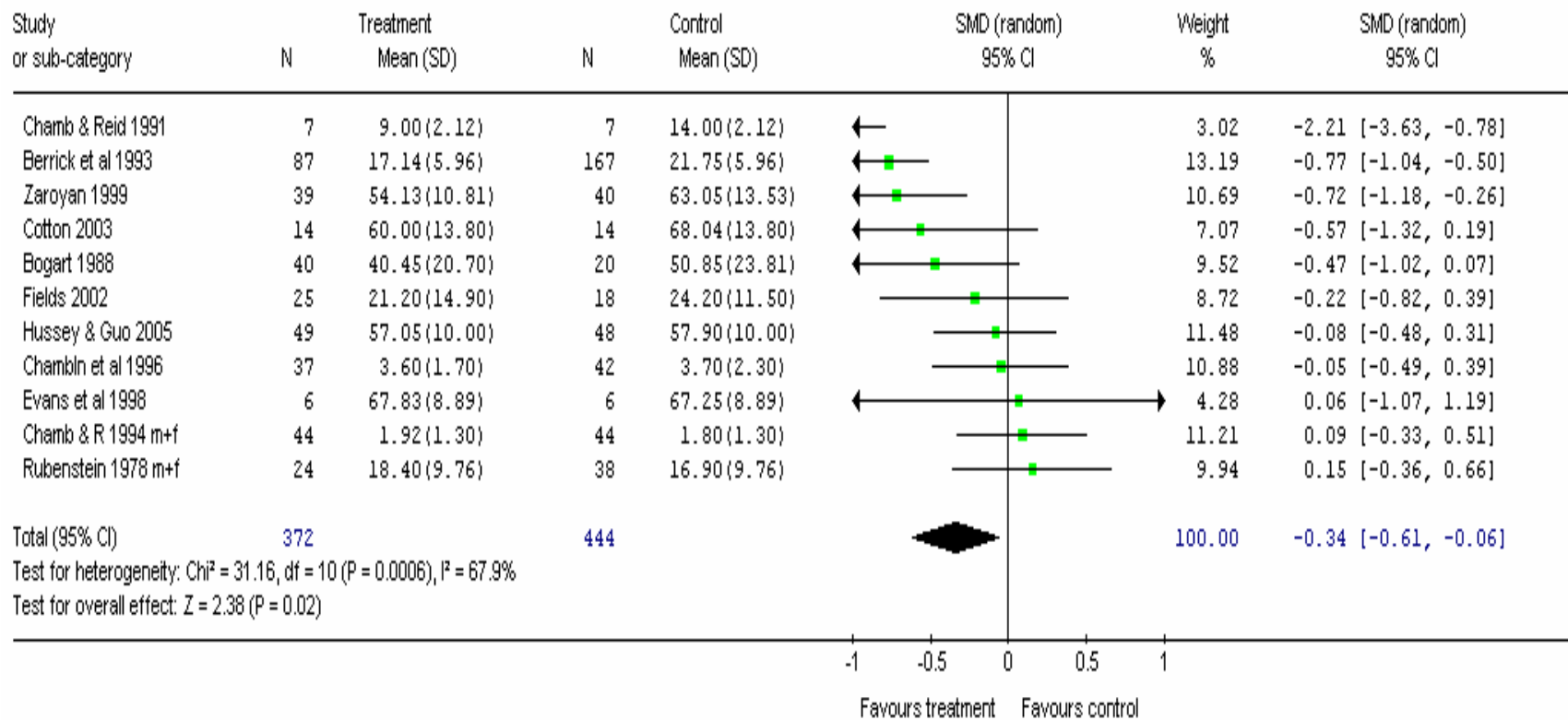




- **Overall behaviour problems as rated by caregiver:** 12 studies, 3 RCT, 5 NEG, 4 SGO.
- “Overall behaviour problems” includes measures of externalising, internalising and delinquent behaviours together with other problems such as hyperactivity, or social difficulties.
- *Overall, small to medium effect size (-0.34), statistically significant.*
- Results significantly heterogenous suggesting that a factor or factors unknown are influencing the outcomes. I^2 statistic indicates that approximately 70% of the variation in the study results is due to heterogeneity rather than sampling error.



Review: Treatment Fostercare
 Comparison: 02 TFC vs. Control
 Outcome: 01 Overall behaviour problems, caregiver rated, all studies

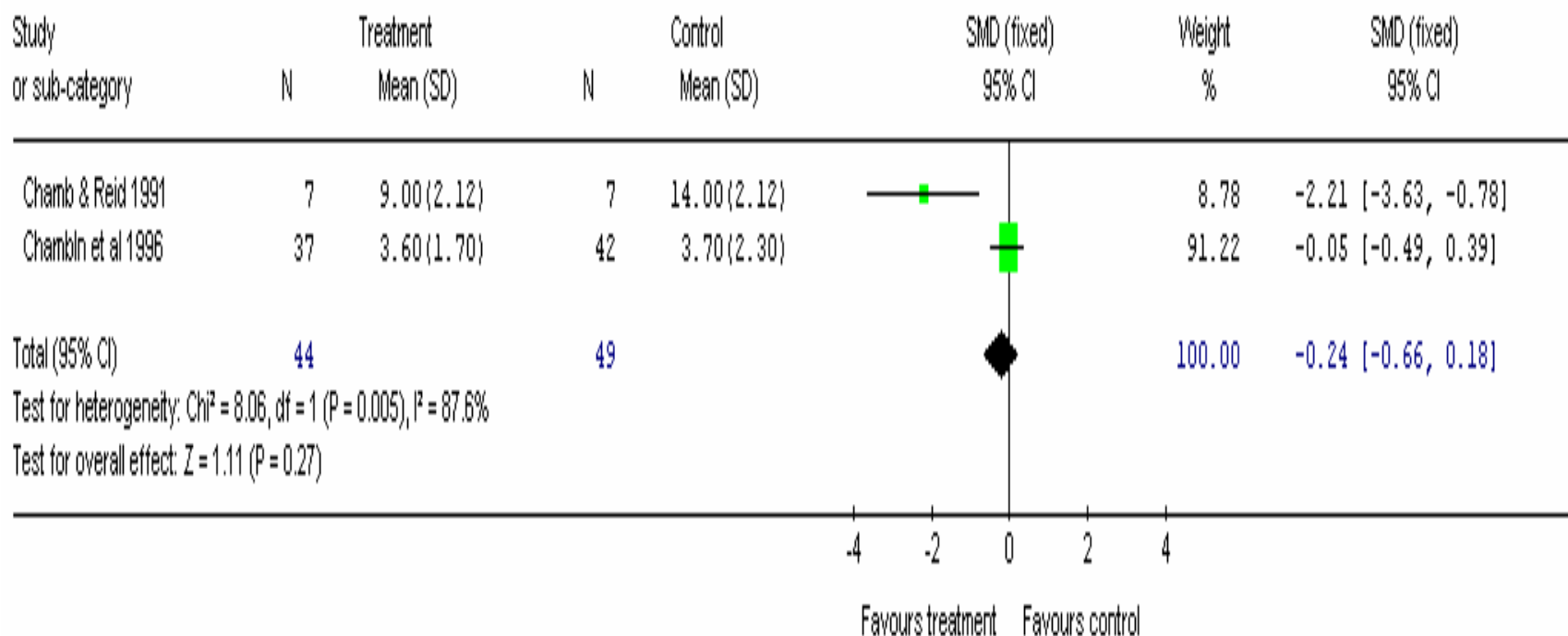




- Moderator analysis for the effect of methodology found a significant difference in the average effect size across different study methodologies ($\text{Chi}^2 = 9.31$, $\text{df } 2$, $p=0.01$), with NEG's having the largest effect (-0.55), RCT's (-0.24) and SGO's near nil effects (-0.06). However two of these groups are themselves heterogenous (RCT, NEG) so methodology cannot be the only moderator at work.
- Statistical techniques were used to ascertain that the above findings were due to the NEG studies having significantly larger effects than both the RCT and SGO studies.

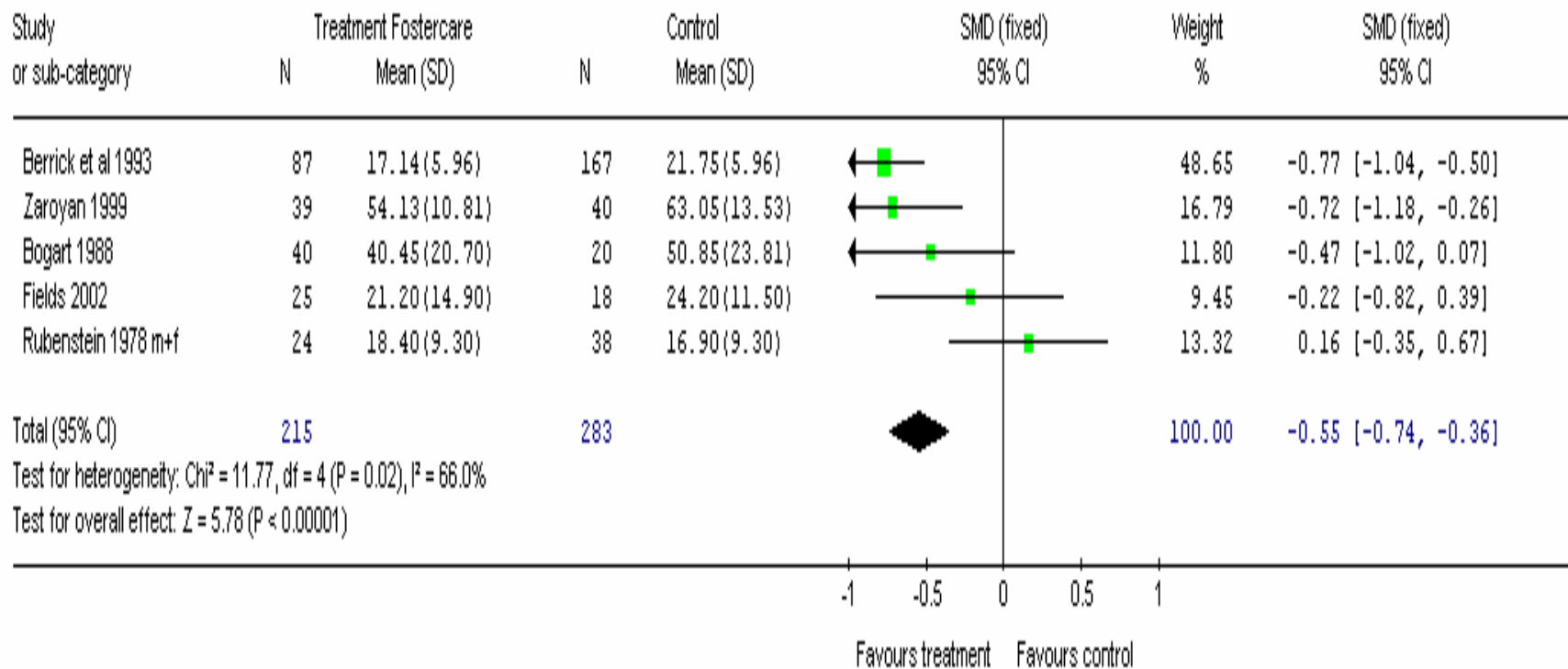


Review: Treatment Fostercare
Comparison: 02 TFC vs. Control
Outcome: 02 Overall behaviour problems, caregiver rated, RCTs only



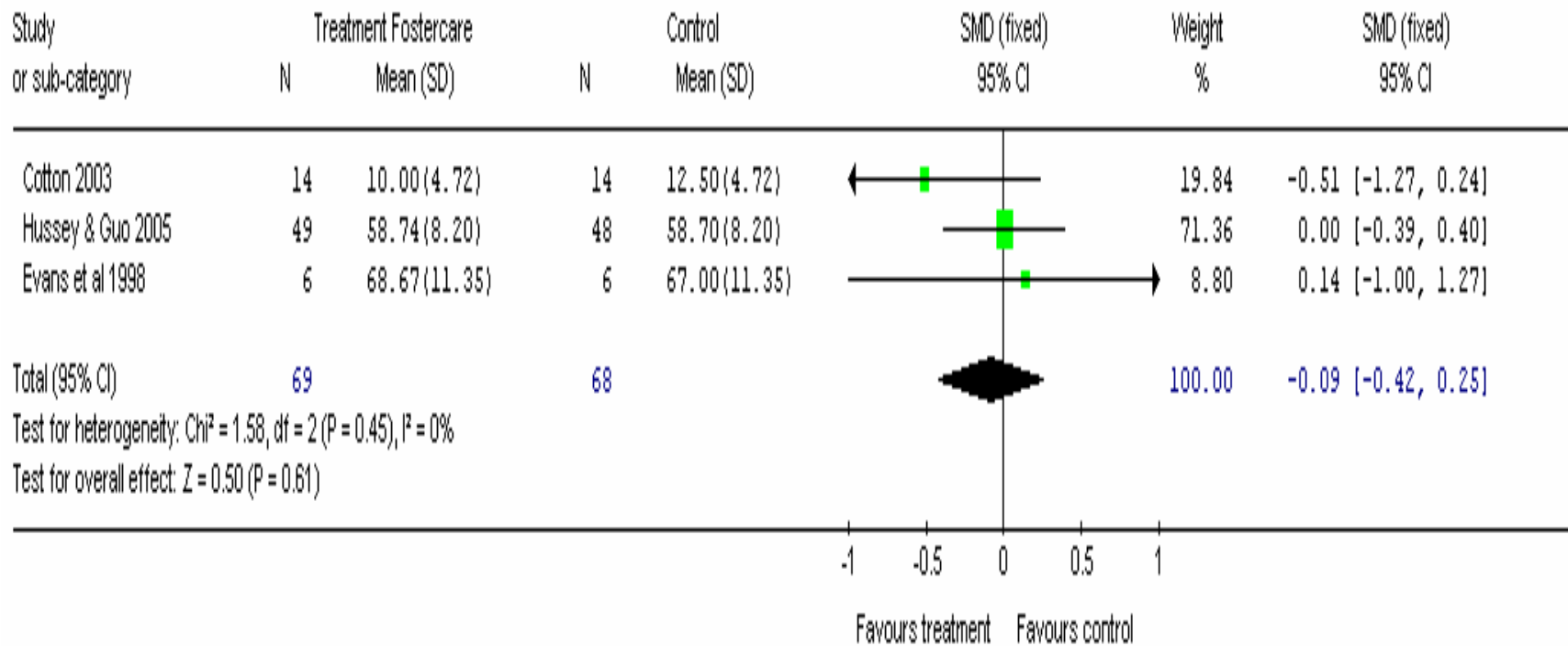


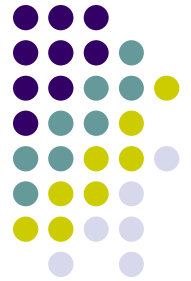
Review: Treatment Fostercare
 Comparison: 02 TFC vs. Control
 Outcome: 24 Overall Behaviour Problems, caregiver rated, non-equivalent control group





Review: Treatment Fostercare
 Comparison: 02 TFC vs. Control
 Outcome: 26 Externalising behaviour, caregiver rated, SGO's only

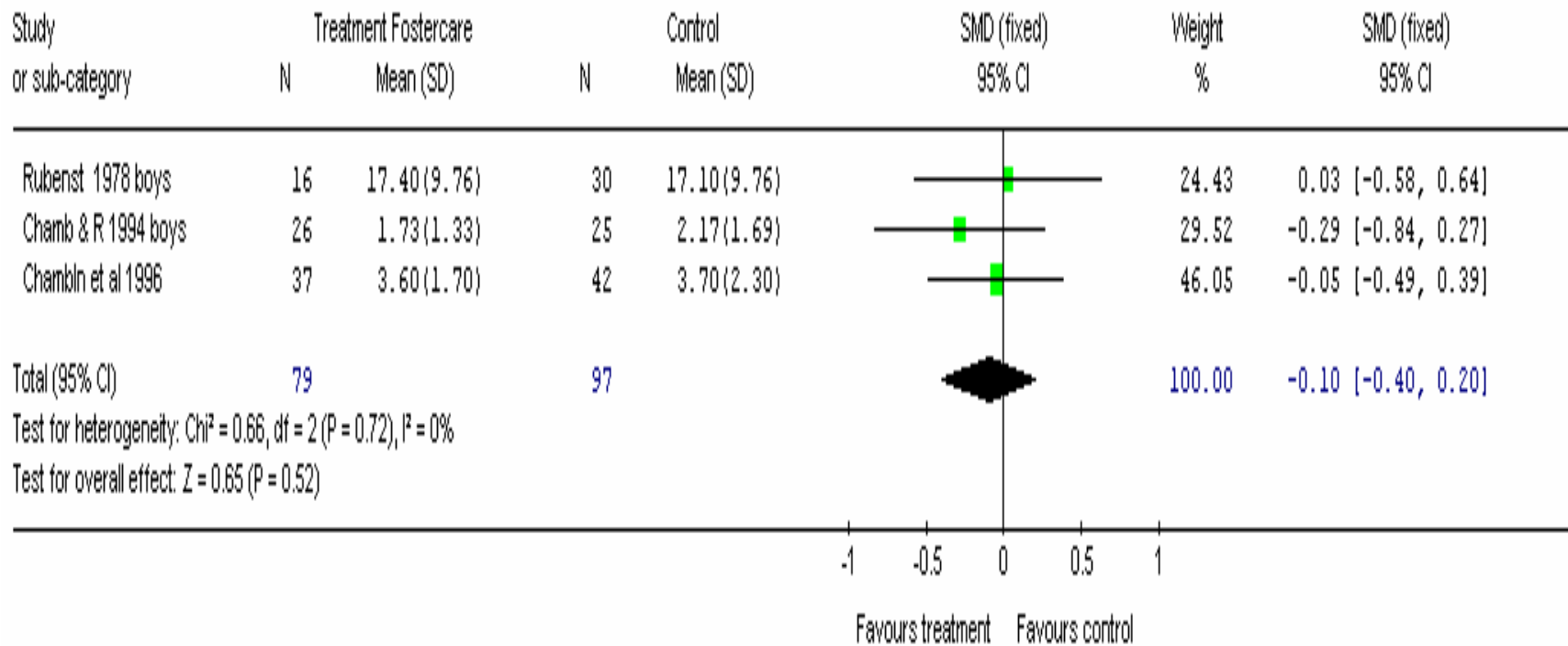




- When results for boys and girls are compared boys obtain a small, non-significant effect and girls obtain a significantly deleterious outcome – “they get worse” (compared to controls). This was a significant difference between boys and girls ($\text{Chi}^2 = 7.11$, $\text{df } 2$, $p=0.01$).
- Another analysis found a significant difference between those three studies which used the Parent Daily Report (PDR) and the four studies which used the Child Behaviour Checklist (CBCL). The former obtained a small to nil effect (-0.07) on average, whereas the latter obtained a medium effect (-0.56).

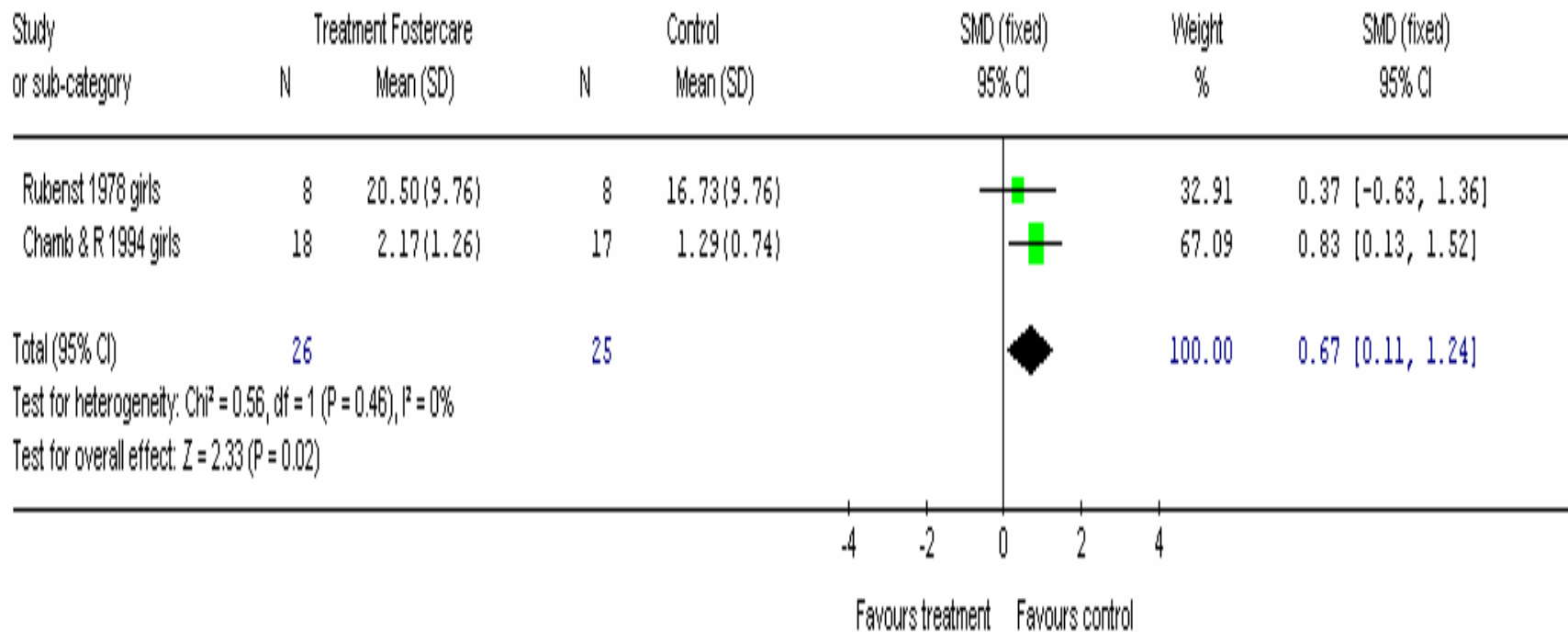


Review: Treatment Fostercare
 Comparison: 02 TFC vs. Control
 Outcome: 35 Overall behaviour problems, caregiver rated, boys only





Review: Treatment Fostercare
 Comparison: 02 TFC vs. Control
 Outcome: 33 Overall behaviour problems, caregiver rated, girls only



Results: Summary of externalising, internalising and overall behaviour problems



- Overall, TFC programmes have a small to medium, statistically significant effect in remediating externalising, internalising and overall behaviour problems.
- However this effect was heterogenous indicating that moderating factors are likely to be affecting study outcomes.
- In Overall behaviour problems there were significant differences in the results when grouped by methodology (RCT, NEG & SGO) and outcome measure (PDR, CBCL); in both cases there was significant or near significant within group or “unexplained” variability.



- In other words there are other factors at work, over and above methodology or measure, which are affecting the study outcomes.
- Across all three domains of outcome there was a tendency for NEG studies to obtain the best results and SGO's to obtain near-nil results. This is contrary to expectation; SGO's are usually assumed to be prone to exaggerating outcomes as they lack a control group.
- The SGO's in this meta-analysis represent a group of studies which are getting poor results, why ?



- Girls obtain poorer results than boys in three of the five analyses where they could be directly compared, two of these differences being significant (rate of criminal referrals, overall behaviour problems). In the two remaining analyses girls obtained results similar to, but not better than, boys (risk of criminal referral, externalising behaviour).



Overall Summary

- Treatment fostercare was found to be significantly and moderately effective in the remediation of emotional and behavioural problems in two of three domains surveyed; care related outcomes and externalising, internalising and overall behavioural problems. Significant effects were found in all of the seven constituent subdomains.
- Treatment fostercare was only found to be only weakly effective in the remediation of crime and delinquent behaviour; only two of the six subdomains obtained a significant effect.
- Outcomes for girls were often poorer than for boys, often to a statistically significant degree.



- Outcomes in the Overall behaviour problem domain were significantly variable. It is likely that methodology, the specific measures used (i.e. PDR vs. CBCL) together with other unknown factors all impact. Possibly, “Overall behaviour problems” is not a coherent construct.
- Single group outcome studies appear to perform poorly. Does this reflect an association between simpler studies, fewer resources and less expertise ?
- In any case the existence of a significant proportion of studies with poor and sometimes deleterious outcomes suggests that TFC is a complex intervention susceptible to implementation or other difficulties and more effective with some groups than with others.