Educational and Skills-Based Interventions for Preventing Relationship and Dating Violence in Adolescents and Young Adults

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Synopsis/Abstract

BACKGROUND

Educational and skills-based interventions are often used to prevent relationship and dating violence among young people.

OBJECTIVES

To assess the efficacy of educational and skills-based interventions designed to prevent relationship and dating violence in adolescents and young adults.

SEARCH METHODS

We searched the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, EMBASE, CINAHL, PsycINFO, six other databases and a trials register on 7 May 2012. We handsearched the references lists of key articles and two journals (Journal of Interpersonal Violence and Child Abuse and Neglect). We also contacted researchers in the field.

SELECTION CRITERIA

Randomised, cluster-randomised and quasi-randomised studies comparing an educational or skills-based intervention to prevent relationship or dating violence among adolescents and young adults with a control.

DATA COLLECTION AND ANALYSIS

Two review authors independently assessed study eligibility and risk of bias. For each study included in the meta-analysis, data were extracted independently by GF and one other review author (either CH, JN, SH or DS). We conducted meta-analyses for the following outcomes: episodes of relationship violence, behaviours, attitudes, knowledge and skills.

RESULTS

We included 38 studies (15,903 participants) in this review, 18 of which were cluster-randomised trials (11,995 participants) and two were quasi-randomised trials (399 participants). We included 33 studies in the meta-analyses. We included eight studies (3405 participants) in the meta-analysis assessing episodes of relationship violence. There was substantial heterogeneity ($I2 = 57\%$) for this outcome. The risk ratio was 0.77 (95% confidence interval (CI) 0.53 to 1.13). We included 22 studies (5256 participants) in the meta-analysis assessing attitudes towards relationship violence. The standardised mean difference (SMD) was 0.06 (95% CI -0.01 to 0.15). We included four studies (887 participants) in the meta-analysis assessing behaviour related to relationship violence; the SMD was -0.07 (95% CI -0.31 to 0.16). We included 10 studies (6206 participants) in the meta-analysis assessing knowledge related to relationship violence; the results showed an increase in knowledge in favour of the intervention (SMD 0.44, 95% CI 0.28 to 0.60) but there was substantial heterogeneity ($I2 = 52\%$). We included seven studies (1369 participants) in the meta-analysis assessing skills related to relationship violence. The SMD was 0.03 (95% CI -0.11 to 0.17). None of the included studies assessed physical health, psychosocial health or adverse outcomes. Subgroup analyses showed no statistically significant differences by intervention setting or type of participants. The quality of evidence for all outcomes included in our meta-analysis was moderate due to an unclear risk of selection and detection bias and a high risk of performance bias in most studies.

AUTHORS' CONCLUSIONS

Studies included in this review showed no evidence of effectiveness of interventions on episodes of relationship violence or on attitudes, behaviours and skills related to relationship violence. We found a small increase in knowledge but there was evidence of substantial heterogeneity among studies. Further studies with longer-term follow-up are required, and study authors should use standardised and validated measurement instruments to maximise comparability of results.

Plain language summary

INTERVENTIONS TO PREVENT RELATIONSHIP AND DATING VIOLENCE IN ADOLESCENTS AND YOUNG PEOPLE

Relationship and dating violence is a significant problem among adolescents and young adults. Relationship violence includes a range of violent behaviours, from verbal abuse to physical and sexual assault, and from threats to rape and murder. Currently there are many programmes in schools and universities and within community settings that aim to prevent relationship violence. It is important to establish whether these programmes work and whether they result in long-term reductions in relationship violence. This review looked at the results of 38 studies. The results showed no convincing evidence that the programmes decreased relationship violence, or that they improved participants' attitudes, behaviours and skills related to relationship violence. The results showed that participants' knowledge about relationships improved slightly following the programmes. These results should be interpreted with caution, as individual studies differed in the types of participants and interventions that they used and the ways in which changes were measured. None of the studies looked at the effect of the programmes on physical and mental health. Further studies, which follow participants for a longer period of time and which look at the relationship between attitudes, knowledge, behaviour, skills and the number of times relationship violence occurs, are required to improve our understanding of how well these programmes work.

1   Background

1.1   DESCRIPTION OF THE CONDITION

The term 'intimate partner violence' describes actual or threatened physical, sexual or psychological violence that occurs within a relationship or is perpetrated by a current or former partner or spouse (Saltzman 2002). Saltzman 2002 further defines the components of intimate partner violence as follows:

- physical violence is the intentional use of physical force with the potential for causing death, disability, injury or harm;
- sexual violence is divided into three categories:
    - the use of physical force to compel a person to engage in a sexual act against his or her will, whether or not the act is completed,
    - attempted or completed sex act involving a person who is unable to understand the nature or condition of the act, to decline participation, or to communicate unwillingness to engage in the sexual act, for example because of illness, disability, or the influence of alcohols or other drugs, or because of intimidation or pressure,
    - abusive sexual contact;
- threats of physical or sexual violence involves the use of words, gestures or weapons to communicate the intent to cause death, disability, injury or physical harm;
- psychological/emotional violence involves trauma to the victim caused by acts, threats of acts or coercive tactics.

Physical, sexual and verbal violence can be common responses to conflict within relationships and can have significant effects upon the mental, physical and social well-being of those involved. Although intimate partner violence is often unreported, prevalence within the adult population is estimated to be high, with prevalence rates varying between countries (WHO 2005). For example, one multi-country study conducted by the World Health Organization (WHO) found that between 3% and 54% of women report having experienced physical or sexual violence by an intimate partner in the previous year (WHO 2005). In addition, between 10% and 50% of

women report having experienced violence from partners or ex-partners at some point in their lives (Watts 2002).

Rates of relationship abuse vary according to age, sex and previous experience of violence (Foshee 1996; Foshee 1998; Archer 2000). The prevalence of relationship violence is higher in adolescents than in adults, with females aged 12 to 18 years having the highest victimisation rate (Home Office 1999; Wolfe 2003). This form of violence is called dating violence and perpetrators are most likely to be peers (Schewe 2006). Approximately 20% of young women have experienced violence from a dating partner (O'Keeffe 1986; Bergman 1992). Additionally, studies on relationship violence have found that first episodes of violence frequently occur in adolescence (Henton 1983). In younger dating samples, relatively higher proportions of aggression by women against men have been described, although results vary according to the measurement methods used and must, therefore, be interpreted with caution (Archer 2000).

Early experiences of dating violence are linked to poor health outcomes such as sexually transmitted infections (Campbell 2002; WHO 2005; Exner-Cortens 2013), teenage pregnancy (Campbell 2002), substance misuse (Roberts 2003; Tyler 2012), cancer, coronary heart disease, attempted suicide (WHO 2005; Exner-Cortens 2013), depression (Campbell 2002; Roberts 2003; Wolitzky-Taylor 2008), and symptoms of post-traumatic stress disorder (Campbell 2002; Wolitzky-Taylor 2008). Relationship violence during pregnancy is also associated with adverse maternal and neonatal health outcomes including preterm delivery (Campbell 2002), low birthweight (Murphy 2001; Campbell 2002), and foetal death (Campbell 2002). Moreover, adolescents who have experienced dating violence in the past are more likely to be perpetrators or victims of intimate partner violence as adults (Krug 2002; Loh 2006; Chiodo 2012).

1.2 DESCRIPTION OF THE INTERVENTION

This review focuses on educational and skills-based interventions targeted at young people aged 12 to 25 years. It includes primary preventive interventions, where participants may have never experienced or perpetrated relationship violence, and secondary prevention, where participants have experienced or perpetrated relationship violence in the past. This review focuses only upon interventions that actively provide the participants with knowledge and skills aimed at preventing initial or further relationship violence. It does not include 'screening programmes' that only offer referral to support agencies. We selected the age group 12 to 25 years to include both adolescents and young adults.

A number of environments can be used to deliver educational and skills-based interventions, including the community, and in particular, within schools and higher

education environments (Wolfe 1999). Because schools play an important role in the development of social behaviour, they provide an appropriate environment to target children and adolescents in the prevention of dating violence and subsequently other forms of relationship violence. Previous systematic reviews have focused on the effectiveness of general violence prevention programmes, such as those against aggression and bullying (Mytton 2006; Adi 2007; Park-Higgerson 2008). However, there is further potential to utilise schools and other settings in preventing relationship violence. Studies from the USA suggest that interventions delivered to college-based populations may have an effect on reducing incidences of sexual assault and possibly intimate partner violence (Luthra 2006). Programmes can also be delivered within home (Foshee 2012) and community (Wolfe 2003; Salazar 2006) settings to raise awareness about abuse, promote positive relationships, enable help-seeking and peer support, challenge discriminative viewpoints and encourage the development of protective skills (Wolfe 1999).

1.3 HOW THE INTERVENTION MIGHT WORK

Educational and skills-based programmes aiming to prevent or reduce dating and relationship violence may provide participants with the skills to communicate effectively; deal constructively with stress, disappointment and rejection; resolve conflicts and promote healthier relationships (Wolfe 1999). They may also provide young people with skills to protect themselves from the risk of relationship violence and to improve low self-esteem, which is linked to the likelihood of being a victim of relationship violence (Gidycz 2006).

1.4 WHY IT IS IMPORTANT TO DO THIS REVIEW

The high prevalence of relationship violence and the severity and duration of its health consequences render this area an important public health issue. To date, many review studies have focused either on intimate partner violence or domestic violence in adult populations (Ramsay 2009; Wood 2010), or on the prevention of sexual abuse (Zwi 2009), or general violence (Mytton 2006), in children. We have found only one systematic review of interventions to prevent dating and relationship violence in young people (Whitaker 2006). Whitaker 2006, which reviewed only primary prevention programmes, included non-randomised (e.g. pre- and postinterventions) as well as randomised studies, and summarised results narratively. Our review builds upon these findings by limiting included studies to randomised controlled trials (RCTs) and quasi-RCTs, including primary and secondary prevention programmes, and summarising results in a meta-analysis. Given that interventions to prevent relationship violence based in schools and universities are becoming increasingly widespread, this review is important for

strengthening the evidence base, providing a clearer idea of what works, and helping to inform future policy, practice and research in this area.

2   Objectives

To assess the efficacy of educational and skills-based interventions designed to prevent relationship and dating violence in adolescents and young adults.

3   Methods

3.1   CRITERIA FOR CONSIDERING STUDIES FOR THIS REVIEW

3.1.1   Types of studies

RCTs, cluster-RCTs and quasi-RCTs (in which participants were assigned to intervention or comparison/control groups according to date of birth, day of the week, simple alternation by order of enrolment or other similar methods). Quasi-RCTs were included for determining intervention effects because it was maintained that delivery of educational and skills-based interventions in schools and other settings was practice-based research and that there would be situations where individual randomisation would not be possible.

3.1.2   Types of participants

Adolescents aged 12 to 18 years and young adults aged 19 to 25 years in any setting. We included studies with a wider age range of participants if we could extract or obtain data for these age groups or if more than 80% of the participants included in the study were within the age range of 12 to 25 years.

3.1.3   Types of interventions

Any programme that was applied universally or to specifically targeted high-risk groups and actively provided adolescents or young adults with educational or skills-based interventions, or both, aimed at the prevention of dating or relationship violence. We included interventions delivered in any setting and of any duration. We compared all interventions with a control intervention including no intervention, placebo intervention (e.g. provision of first aid classes) or standard care.

3.1.3.1   Exclusions

1   Any intervention where the prevention of dating or relationship violence was not stated in the aims or objectives, or that involved a multiple intervention programme in which it was not possible to isolate the relative effects of the violence prevention component.

2   Interventions that only screened for the occurrence of dating or relationship violence and then referred to a support agency, unless the intervention actively provided an educational or skills-based component, or both, following screening.

3.1.4 Types of outcome measures

3.1.4.1 Primary outcomes

Primary outcome measures were:

- reduction in the number of episodes of relationship and dating violence experienced, as measured by self reports by victims or perpetrators or as reported by official (e.g. police) records;
- reduction in injuries resulting from relationship and dating violence experienced, as reported by victims or perpetrators of by official (e.g. police) records;
- self reported subjective improvement in mental well-being;
- adverse events (i.e. an increase in the number of episodes of relationship or dating violence, or both, reported).

Please see the Summary of findings table 1 for details of the primary outcomes. Outcomes measured did not form part of the criteria for inclusion of studies in the review. In other words, we included any study that met our inclusion criteria for type of intervention, study design and participants.

3.1.4.2 Secondary outcomes

We also considered a number of secondary outcomes that are closely associated with relationship or dating violence behaviour. These secondary outcomes can help to explain how the interventions might work. These were:

- improvements in behaviour or knowledge about relationship and dating violence (participant-reported);
- improvements in access to (or knowledge of) help or support services (participant-reported);
- attainment of protective skills (participant-reported);
- intervention-related factors: cost of the programme, time commitment required and acceptability of the programme (as measured by dropout rate).

3.1.4.3 Measurement scales

Since a variety of measurement scales are available to assess outcomes of educational and skills-based interventions, we only included data from studies in which a full description of the measurement scale and its scoring system was available. Where further evaluations of the reliability or validity of a measurement

scale existed in the literature, we drew upon these to help determine the suitability and applicability of the scale in relation to the given outcome.

3.1.4.4 Timing of outcome assessment

We divided all primary and secondary outcomes into short-term outcomes (outcomes assessed immediately following the intervention to six months following the intervention); medium-term outcomes (outcomes assessed between 6 and 12 months following the intervention) and long-term outcomes (outcomes assessed more than 12 months following the intervention).

3.2   SEARCH METHODS FOR IDENTIFICATION OF STUDIES

We considered both published and unpublished work to be eligible for inclusion in the review. The Cochrane Developmental, Psychosocial and Learning Difficulties Group (CDPLPG) Trials Search Co-ordinator advised on and carried out the search. There were no restrictions on language or date of publication. We planned to assess articles published in languages other than those spoken by the review authors using the assistance of translators.

3.2.1 Electronic searches

We searched the following electronic databases on 7 May 2012:

1   Cochrane Central Register of Controlled Trials (CENTRAL), Issue 4, 2012
2   Ovid MEDLINE, 1946 to April week 4 2012
3   EMBASE, 1980 to week 18 2012
4   CINAHL, 1937 to current
5   PsycINFO, 1967 to May week 1 2012
6   Sociological Abstracts, 1952 to current
7   Social Sciences Citation Index, 1970 to 4 May 2012
8   ERIC, 1966 to current
9   National Criminal Justice Reference Service Abstracts (www.ncjrs.gov/library.html)
10   metaRegister of Controlled Trials (mRCT) (www.controlled-trials.com/mrct/)
11   ZETOC, search limited to conference proceedings
12   WorldCat, search limited to theses/dissertations (www.worldcat.org/)

Details of search strategies used are in Appendix 1.

3.2.2 Searching other resources

In order to identify further relevant literature that was not obtained by searching the databases listed above, we carried out additional searches. We handsearched

reference lists of key articles included in the review and issues of the *Journal of Interpersonal Violence* and *Child Abuse and Neglect* published between 2005 and 2012. Finally, we contacted authors of key studies and asked them to share any published, unpublished and ongoing work relevant to the review.

3.3 DATA COLLECTION AND ANALYSIS

3.3.1 Selection of studies

Two review authors (GF and CH) independently screened the titles and abstracts of articles identified in the search against the inclusion criteria and decided which reports should be retrieved. We rejected articles at this stage if the title or abstract did not focus on prevention of relationship and dating violence in adolescents or young adults. If there was insufficient information in the title and abstract to make such decisions, we retrieved the full text. When the full text was not readily available or when we needed further clarification to establish eligibility for our review, we contacted the authors by email. If this was unsuccessful, we contacted host universities in the case of doctoral theses, requested interlibrary loans and sought the help of the Cochrane Group Trials Search Co-ordinator and a local librarian. We reviewed selection decisions and resolved disagreements by consultation with a third review author. If disagreements were not resolved in conjunction with the third review author, we consulted the CDPLPG editor. We documented the principal reason for exclusion of each study that seemed initially to meet our inclusion criteria but on closer inspection did not in the Characteristics of included studies table.

3.3.2 Data extraction and management

GF developed the data extraction forms, performed the first round of data extraction from all included studies and entered results into Review Manager 5 (RevMan 2011). We conducted a second round of data extraction in order to ensure the accuracy of data extraction. This was carried out by dividing all included studies between the remaining authors (CH, SH, JN, DS), each of whom independently extracted data for their allocated studies and compared their results with those extracted by GF. Each included study, therefore, had data extracted by GF and one other review author. We resolved disagreements by a further review of the studies in question. We extracted data concerning population, age, control group, baseline characteristics, intervention characteristics, duration, compliance and outcome measures and have presented this in the Characteristics of included studies table. We requested the specific data relevant to age groups included in the review from authors of trials where there was a wide spread of ages among participants.

3.3.3 Assessment of risk of bias in included studies

One review author (GF) assessed the risk of bias in each study using The Cochrane Collaboration's 'Risk of bias' tool (Higgins 2011), with each of the other review

authors (CH, SH, JN, DS) independently conducting a 'Risk of bias' assessment and comparing their results to those of the first review author (GF). There were no disagreements. For each of the six domains listed below, we described what was reported to have happened in the study and gave a judgement of low, high or unclear risk of bias.

3.3.4 Sequence generation

- Description: the method used to generate the allocation sequence should be described in sufficient detail to enable assessment of whether it should have produced comparable groups.
- Review authors' judgement: was the allocation sequence adequately generated?

3.3.5 Allocation concealment

- Description: the method used to conceal the allocation sequence should be described in sufficient detail to determine whether intervention allocations could have been foreseen in advance of, or during, enrolment.
- Review authors' judgement: was the allocation adequately concealed?

As inadequate allocation concealment can introduce bias into the study results, we performed sensitivity analyses and excluded studies from meta-analysis where no allocation concealment was used or if there was uncertainty about allocation concealment. Quasi-RCTs may introduce bias, as the method of allocation to the different groups is not sufficiently rigorous to ensure allocation concealment. We conducted sensitivity analyses to assess the impact of including quasi-RCT studies.

3.3.6 Blinding

- Description: any measures used to blind study participants and assessors from knowledge of which intervention a participant was allocated to should be described.
- Review authors' judgement: was knowledge of the allocated intervention adequately prevented during the study?

3.3.7 Incomplete outcome data

- Description: the completeness (including attrition and exclusions from analysis) of outcome data for each main outcome should be reported.
- Review authors' judgement: were complete data for each outcome reported, and, if not, were adequate reasons for incomplete outcome data provided?

3.3.8 Selective outcome reporting

- Description: the possibility of selective outcome reporting should be examined.

- Review authors' judgement: were the reports of the study free of suggestion of selective outcome reporting?

3.3.9 Measures of treatment effect

We used risk ratios (RR) to summarise dichotomous data due to ease of interpretation. We reported continuous data as mean differences (MD) where the same scale was used for measurement and standardised mean differences (SMD) where different scales were used to measure the same outcome.

3.3.10 Unit of analysis issues

For the cluster-RCTs included in this review, we followed the guidance on statistical methods for such trials outlined in the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2011, Section 16.3). We planned to use a summary measure of effect from an analysis that adequately accounted for the cluster design. If this was not available, we planned to extract or calculate appropriate measures of effect as for a parallel group trial and adjust the standard errors (SE) to account for the effect of clustering. We used an intraclass correlation coefficient (ICC) to describe the relative variability in outcomes within and between clusters. Among our included cluster-RCTs, only one used an ICC (Wolfe 2009). The ICC used in this study was 0.02, which we felt was insufficiently conservative based on meta-analyses of other similar subjects. Thus, for our analyses, we adopted a higher ICC of 0.15, based on two similar reviews: first, a review of school-based programmes to prevent violence that used ICC values of 0.1 and 0.2 (Mytton 2006) and second, a meta-analysis of multi-component preventive interventions for children at risk of antisocial behaviour (CPPRG 1999), which used an ICC value of 0.15. We used the ICC to calculate a design effect for each cluster-RCT. In the meta-analyses, we calculated SMD effect sizes. These were weighted using the generic inverse variance function, and we used random-effects assumptions.

Several studies identified for inclusion in the review had multiple intervention groups. In these cases, to avoid double counting and creating unit-of-analysis errors, we made single pair-wise comparisons. In other words, we combined all relevant intervention groups (i.e. educational and skills-based interventions aiming to prevent relationship or dating violence) into a single group, and all relevant control groups into a single group. We then made comparisons between the combined intervention group and the combined control group. For dichotomous outcomes, we summed the sample sizes and number of outcomes across groups. For continuous outcomes, we combined means and standard deviations (SD) (Higgins 2011, Section 16.5.4). If this would have limited the investigation of potential sources of heterogeneity, we planned to compare each intervention group separately against a proportion of the common control group such that no double-counting of individuals in the common control group occurred. We carried out these analyses using Review Manager 5 (RevMan 2011).

3.3.11 Dealing with missing data

If significant quantities of participant data were missing and the review authors agreed that a study's conclusions were compromised as a result, we contacted trial authors and asked them to supply missing data (e.g. on subgroup means and SDs, numbers of participants). If we received no reply or if missing data were not available, we excluded studies from the final analysis. We also asked trial authors for ICC values. For each study included in our review, we report the dropout rate (calculated as the number of participants included in the final analysis as a proportion of those who began the intervention) in the 'Risk of bias' table.

We considered conducting an intention-to-treat analysis of all randomised participants using imputed values for the missing data but maintained that the size of the missing data was too problematic to impute values. Instead, we excluded participants for whom no outcome data were available (Higgins 2011). This re-introduces bias previously removed by the randomisation process. We discuss the extent to which the results and conclusions of the review are altered by the missing data.

3.3.12 Assessment of heterogeneity

In order to investigate the extent of variation between studies, we assessed the distribution of relevant participant (e.g. age, gender) and trial (e.g. randomisation, assessor blinding, attrition rate, and type and duration of intervention) factors. We assessed statistical heterogeneity using the I^2 statistic, which describes the proportion of variation in point estimates that is due to heterogeneity rather than sampling error (Higgins 2011). We considered an I2 value of greater than 50% to represent substantial heterogeneity (Higgins 2011). We also used the Chi^2 test of homogeneity to determine the strength of evidence for genuine heterogeneity.

3.3.13 Assessment of reporting biases

For the meta-analyses involving 10 or more studies, we produced funnel plots (estimating differences in treatment effects against their SE) to assess the presence of possible publication bias. We assessed these visually, followed by exploratory analyses to investigate possible causes, for example comparison of fixed-effect and random-effects estimates. While funnel plot asymmetry may indicate publication bias, this is not inevitably the case, and we consider possible explanations for any asymmetry found in the Discussion section (Egger 1997).

3.3.14 Data synthesis

To make best use of the data, we combined studies in meta-analysis across all settings and irrespective of duration or intensity. These aspects were explored in subgroup analysis and no differential effect was found. Where there was substantial heterogeneity, we computed pooled estimates only for those trials that could be

analysed together and for which the necessary statistical data were available. In our protocol we agreed that if substantial heterogeneity was indicated (i.e. greater than 50%), we would exclude studies from meta-analysis and report results narratively. However, for two of our outcomes we went ahead with meta-analysis despite heterogeneity being greater than 50%. This decision was based on a number of reasons: firstly, a pooled result was still deemed to be useful despite high heterogeneity, particularly for the main outcome of episodes of relationship and dating violence; secondly, much of the heterogeneity was due to one or two small, outlying studies; and thirdly, heterogeneity was only marginally above our threshold (57% for episodes of relationship and dating violence and 52% for knowledge of relationship and dating violence). We describe our reasons in more detail under Effects of interventions>Primary outcomes>Episodes of relationship and dating violence and Effects of interventions>Secondary outcomes>Knowledge of relationship and dating violence. We discuss the implications of conducting meta-analyses on studies with a high degree of heterogeneity in the Discussion.

We conducted analyses according to outcome (e.g. episodes of relationship and dating violence, attitudes towards dating and relationship violence, skills associated with dating and relationship violence). Within each outcome, we created subgroups according to the measurement instrument used to assess the outcome. We adjusted scales where necessary so that high scores across all scales would signify either an improvement or deterioration.

We carried out data synthesis using Review Manager 5 (RevMan 2011). As per our protocol, we used a random-effects model where there was no severe funnel plot asymmetry. Random-effects analysis assumes that the treatment effect differs between studies, while fixed-effect analysis assumes that the studies are estimating the same underlying treatment effect. Given that we were examining educational and skills-based interventions for preventing relationship and dating violence in both adolescents and young adults, it was likely that the review would be combining data from trials with differences in design, population and interventions, thus resulting in different effects. This made the use of a random-effects analysis more appropriate. However, where studies had similar interventions measuring the same outcomes, we used a fixed-effect analysis. Where there was significant funnel plot asymmetry, we used both fixed-effect and random-effects models and reported the degree of agreement between the results of the two models. We calculated overall effects using the inverse variance method (Higgins 2011). For dichotomous outcomes, we calculated an overall RR. We calculated MDs for continuous outcomes and similar comparisons and outcome measures and SMDs for continuous outcomes measured with similar, but not identical, instruments across studies. For ease of interpretation, where possible, we expressed results as a RR (or odds ratios (OR)) and included 95% confidence intervals (CI). We described studies in which the

combining of data in a meta-analysis was inappropriate due to substantial heterogeneity (as defined above) individually.

3.3.15 Subgroup analysis and investigation of heterogeneity

We explored the reasons for any evidence of heterogeneity among studies that we included. Irrespective of the degree of heterogeneity found, we carried out subgroup analyses for intervention setting (i.e. school, university or community settings), the target audience (i.e. general population or high-risk population), the timing of outcome assessment, and the duration of the intervention. We planned to conduct subgroup analyses for age and gender but these could not be carried out for reasons explained in the Effects of interventions section (under 'Subgroup analyses').

3.3.16 Sensitivity analysis

We conducted sensitivity analyses to assess the extent to which results were sensitive to the analysis being restricted to only those studies judged to be at a low risk of bias. We ran sensitivity analyses in which the analyses were restricted to the following:

1   studies with a low risk of selection bias (as determined by the quality of the random sequence generation);
2   studies with a low risk of assessment bias (as determined by the quality of blinding of assessors);
3   studies with a low risk of attrition bias (as determined by the completeness of the data).

4 Results

4.1 DESCRIPTION OF STUDIES

4.1.1 Results of the search

The literature search identified 22,184 articles. Of these, 95 appeared to meet our inclusion criteria based on titles and abstracts. For these 95 articles, we sought to obtain the full text to establish eligibility for our review. Correspondence with authors yielded an additional three eligible studies that had not been identified by our search strategy. Of the 98 articles identified, full texts were unavailable for 17 articles despite the use of all the methods listed in the Selection of studies section. The Characteristics of studies awaiting classification table lists the missing studies. For nine of these (Bernardo 1994, Brown 2002, Chrappa 1991, Holcomb 1993, Lawson 2006, Murphy 1997, Northam 1997, Sanchez 2011, Walther 1986) no email or postal details for authors could be found. Of the remaining eight studies for whom authors' contact details were found, five responded but did not have a copy of their study available (Bond 1995, Deiter 1994, Heimerdinger 2006, Hill 1995, Layman-Guadalupe 1996) and three (Abrams 1992, Avina 2005, Halvorson 2007) did not reply. A more detailed evaluation of the full text of the remaining 80 articles revealed 41 articles (representing 38 studies, details listed in the Characteristics of included studies table) that were eligible for inclusion in our review and 40 that were excluded (with reasons provided in the Characteristics of excluded studies table). Of the 38 studies included in our review, 33 were included in the meta-analysis. Figure 1 shows a study flow diagram.

4.1.2 Included studies

4.1.2.1 Types of study

Of the 38 studies included, 18 were RCTs, 18 were cluster-RCTs and two were quasi-RCTs.

4.1.2.2 Settings

With the exception of one study conducted in the Republic of Korea (Yom 2005), all included studies were carried out in the USA. The majority of studies were conducted in educational settings (25 in universities, 10 in high schools). Three

studies were conducted in community settings: Florsheim 2011 studied young pregnant women and their partners attending health clinics, Salazar 2006 studied adjudicated youth in a prison and courtroom setting, and Wolfe 2003 studied teenagers with a history of maltreatment recruited from community centres.

4.1.2.3 Participants

Most interventions were aimed at general audiences rather than targeted at individuals at high risk of experiencing or committing relationship violence. Five studies targeted high-risk individuals such as adjudicated adolescent males (Salazar 2006), individuals or couples known to be at high risk of dating aggression (Schewe 1996; Stephens 2009; Woodin 2010), and individuals with a history of maltreatment and therefore at risk of relationship violence (Wolfe 2003).

4.1.2.4 Interventions

Interventions were predominantly educational, although five provided an additional component on self defence (Wolfe 2003; Gidycz 2006; Orchowski 2008; Wolfe 2009; Florsheim 2011) and one provided a component on communication skills (Macgowan 1997). The duration of interventions ranged from a single, 50-minute session to 18 sessions delivered over four months (Wolfe 2003). In the majority of studies, the control group received either no intervention or standard care, or were 'wait list controls' (i.e. receiving the intervention after completion of data collection). A number of studies provided the control groups with placebo interventions, which generally took the same format as the intervention but with different and unrelated content, such as presentations, videos or plays on career development (Davis 1997), multi-cultural issues (Lanier 1998), sexually transmitted infections (Pinzone 1998), stress management (Saberi 1999) and other similar issues (Yom 2005). One study showed the control group an episode of a situation comedy television programme (Kuffel 2002).

4.1.2.5 Outcomes

Of the outcomes we listed, the included studies reported one primary outcome (episodes of relationship or dating violence) and three secondary outcomes (improvements in behaviour or knowledge, improvement in access, and attainment of protective skills). Included studies did not report injuries, mental well-being, adverse events and intervention-related factors.

Seventeen studies reported episodes of relationship or dating violence. Of these, eight used the Sexual Experiences Survey (SES), five used the Revised Conflict Tactics Scale (CTS) and the remaining four used other scales. Eight studies had sufficient data to be included in the meta-analysis.

Of our secondary outcomes, the majority of studies included in our review assessed improvements in behaviour, knowledge and skills related to dating and relationship

violence. Several studies included measures of changes in attitudes, and we included this outcome in our results even though we did not stated it separately in our predefined outcomes because we had assumed this to be a subcomponent of behaviour and knowledge. Sixteen studies assessed attitude changes; the scale used most frequently was the Rape Myth Acceptance Scale (RMAS) (Burt 1980) and variations thereof (a shortened or modified form of the RMAS; Illinois Rape Myth Acceptance; Rape Myth Scale). Other scales used to assess attitudes included the Rape Empathy Scale, the Date Rape Attitudes Survey, the Relationship Expectations Scale and the General Attitudes Towards Rape scale. Six studies assessed behaviour change, of which three used the Dating Behaviour Survey to measure outcomes. Twelve studies assessed the change in knowledge following the intervention. Many studies used their own measurement tools, often using multiple-choice questions, to assess participants' knowledge. Finally, seven studies assessed improved skills to prevent relationship and dating violence, of which five used the Sexual Communication Survey (SCS) to measure changes in participants' ability to communicate effectively with dating partners.

Individual studies measured outcomes at different timepoints. Thirty studies assessed short-term outcomes (0-6 months following intervention); four studies assessed medium-term outcomes (6-12 months following intervention); and four studies assessed long-term outcomes (more than 12 months following intervention). Because such a significant majority of studies assessed short-term outcomes, we analysed all studies together and conducted subgroup analyses to assess whether effects differed when medium-term, long-term, or both, were excluded from the analyses. If a study had multiple follow-up points, we chose the longest duration of follow-up.

The Characteristics of included studies table summarises details of each included study.

4.1.3 Excluded studies

We excluded 40 studies because they did not meet our inclusion criteria:

- not an RCT, cluster-RCT or quasi-RCT (16 studies: Hanson 1993; Jensen 1993a; Frazier 1994; Kilian 1996; Krajewski 1996; Michener 1997; Echols 1998; Proto-Campise 1998; Weisz 2001; Sanchez-Cesareo 2002; Baumann 2004; Wolf 2004; Rothman 2006; De Gannes 2009; Foubert 2010; Wolfe 2012);
- no intervention (observational or descriptive study) (10 studies: Holcomb 1993a; Gidycz 1995; Callahan 2003; Hendy 2003; Jaycox 2006; Gidycz 2007; Gidycz 2008a; Gidycz 2008b; Foshee 2009; Foshee 2011);
- review of other studies or preliminary reports (five studies: Indermaur 1998; Foshee 2000; Pittman 2000; Foshee 2007; Jouriles 2009);

- participants not aged 12 to 25 years (four studies: Carpentier 2006; Taylor 2010; Testa 2010; Foshee 2012);
- not addressing dating violence (two studies: Edwards 2000; Melendez 2003);
- no control group (two studies: Lavoie 1995; Lonsway 2000);
- measurement instrument not adequately described (one study: Gray 1990).

We summarise the details of all excluded studies in the Characteristics of excluded studies table.

4.2 RISK OF BIAS IN INCLUDED STUDIES

We summarise the risk of bias for each study in the Characteristics of excluded studies table. We have presented authors' assessments of the six domains of bias as a percentage across all included studies in Figure 2 and by each individual study in Figure 3. These figures show that for the majority of studies, the risk of selection bias (due to inadequate random sequence generation or allocation concealment) is unclear, the risk of attrition and reporting bias is low, and the risk of performance bias (due to inadequate blinding of participants and personnel) is high.

4.2.1 Allocation (selection bias)

4.2.1.1 Random sequence generation

All included studies were RCTs (18 studies), cluster-RCTs (18 studies) or quasi-RCTs (two studies). Eight studies indicated how the random sequence was generated: by computer in three studies (Andersen 1992; Pacifici 2001; Miller 2012), by drawing lots in two studies (Forst 1993; Boulter 1997), by alternation in two studies (Davis 1997; Bradley 2009) and by coin toss in one study (Wolfe 2009). We classed all of these studies except Davis 1997 and Bradley 2009 as being at low risk of selection bias. We deemed Davis 1997 and Bradley 2009 to be at high risk of selection bias as both used an unconcealed alternation sequence in which it would have been possible for the authors to choose which of the individuals or classes to allocate to the first group. Andersen 1992 used a computer-generated table of random numbers to determine the assignment of the first athletic organisation to intervention or control. Following this, we selected the remaining two athletic organisations based on their size in order to keep total numbers in experimental and control groups similar. This introduces a high risk of selection bias. All other studies gave no further details other than that individuals or clusters were "randomly" assigned to groups, and we classed the risk of bias in these studies as unclear. Five studies matched clusters or individuals before randomisation (Macgowan 1997; Foshee 1998; Bradley 2009; Wolfe 2009; Gidycz 2011). In summary:

- six studies had low risk of bias;

- 29 studies had unclear risk of bias;
- three studies had high risk of bias.

4.2.1.2 Allocation concealment

No studies provided information on allocation concealment. We classed studies that used alternation (Davis 1997; Bradley 2009) or coin toss (Wolfe 2009) as being at high risk of bias. We classed Salazar 2006, which used sealed envelopes, and Forst 1993, which used the drawing of lots, as being at low risk of bias as neither participants nor investigators would have been able to foresee allocation. For all other studies, we classed bias as unclear. In summary:

- two studies had low risk of bias;
- 33 studies had unclear risk of bias;
- three studies had high risk of bias.

4.2.2 Blinding (performance bias and detection bias)

4.2.2.1 Blinding of participants and personnel (performance bias)

The nature of the interventions evaluated in these trials made blinding of participants and personnel delivering the interventions virtually impossible. Interventions were delivered by study authors, established teaching staff in the institutions being studied or members of a third-party organisation specialising in the delivery of such interventions (e.g. Miller 1999). Most studies provided training (to varying degrees) for the personnel delivering the interventions. Of these, some described ways of minimising the potential for performance bias, such as providing personnel with a script or detailed guidance to follow. However, only six studies (Davis 1997; Gidycz 2001; Wolfe 2003; Jaycox 2006; Orchowski 2008; Gidycz 2011) described monitoring performance objectively through methods such as observation or recording the interventions being delivered to ensure adherence to the study protocol. If any form of monitoring adherence to the study protocol was mentioned, the we classed the study as being at low risk of performance bias. We deemed all other studies to be at high risk. In summary:

- six studies had low risk of bias;
- no studies had unclear risk of bias;
- 32 studies had high risk of bias.

4.2.2.2 Blinding of outcome assessment (detection bias)

None of the included studies specified whether outcome assessors were blinded. With one exception, we classed all studies as being at unclear risk of bias. The exception was Florsheim 2011, where part of the outcome was assessed subjectively through coding of discussions with participants. We felt that a lack of mention of assessor blinding rendered results highly susceptible to detection bias. In summary:

- no studies had low risk of bias;
- 37 studies had unclear risk of bias;
- one study had high risk of bias.

4.2.3 Incomplete outcome data (attrition bias)

Attrition rate varied greatly, ranging from 0% to 70%. We report attrition rates for individual studies in the 'Risk of bias' tables. We found the highest loss to follow-up in studies evaluating long-term outcomes. We classed the risk of bias as low if attrition was low, moderate but equal across both study arms, moderate for long-term follow-up or if the reasons were unlikely to be related to the outcome being assessed. We classed six studies as being at high risk of attrition bias due to high rates of loss to follow-up or significantly different rates of attrition between the intervention and control groups. Lanier 1998 provided no information on attrition bias. In summary:

- 30 studies had low risk of bias;
- one study had unclear risk of bias;
- six studies had high risk of bias.

4.2.4 Selective reporting (reporting bias)

Although most studies reported all their outcomes fully (providing number of events or percentages for dichotomous outcomes and number of participants, means and SDs for continuous outcomes), a number of studies provided summary statistics only (e.g. stating that the differences between groups was "significant" without providing data, or presenting F, t-test or P values only). These were considered to be incomplete reports of the results. We contacted the authors of these studies to request further information but we received only a few replies and none provided additional data. Therefore, we classed these studies as being at high risk of reporting bias. In summary:

- 33 studies had low risk of bias;
- no studies had unclear risk of bias;
- five studies had high risk of bias.

4.2.5 Other potential sources of bias

We assessed the risk of publication bias by drawing funnel plots for the two meta-analyses involving 10 or more studies: attitudes towards relationship violence (Figure 4) and knowledge of relationship violence (Figure 5). We found no significant asymmetry and we therefore assume that there is no significant publication bias in the studies included in our meta-analysis. Based on the results of the funnel plots, we compared results of fixed-effect and random-effects models only for attitudes towards relationship violence, which displayed moderate heterogeneity.

We present results of both models in the Effects of interventions section (under 'Attitudes towards relationship and dating violence').

4.3   EFFECTS OF INTERVENTIONS

The objective of this review was to assess the efficacy of educational and skills-based interventions designed to prevent relationship and dating violence in adolescents and young adults. We included 38 studies in the review, of which we included 33 in the meta-analyses. We excluded five studies from the meta-analyses: Andersen 1992 was excluded because results were analysed using non-parametric (Mann-Whitney U) analyses; Foshee 1998 did not report the number of participants in each arm or any tests of significance; Shultz 2000 did not report the number of participants in each group; and Holcomb 2002 and Woodin 2010 reported F-statistics, which could not be used to extract evidence of effect as the statistic was not associated to a direct comparison of the intervention under study (and therefore not equivalent to a t-test).

Where a study used more than one scale to measure a particular outcome, we included the scale that was most widely used across other studies and the most validated, such as the RMAS (Burt 1980) and the SES (Koss 1982). If a study measured more than one outcome (e.g. episodes of dating violence and change in attitudes towards dating violence), we included all outcomes but ensured each outcome was included in a separate meta-analysis. If studies had more than one follow-up period, we selected the longest period of follow-up (up to one year) for inclusion in our meta-analysis.

We applied an ICC value of 0.15 to results of all cluster-RCTs with the exception of Wolfe 2009, in which the authors had already accounted for the effect of clustering using two-level hierarchical models. In three studies, the number of participants in each study arm was not presented but we considered it was reasonable to make the following assumptions.

- Bradley 2009 described an even split of their 196 participants into two groups. We interpreted this as meaning there were 98 participants in each arm.
- Lanier 1998 stated that the 436 students were assigned to groups "in approximately equal numbers". For our calculations, we assumed there were 218 participants in each group.
- Macgowan 1997 reported 440 students in total but did not provide the number of students in each class. Based on the size of classes in other studies included in this review, we assumed the mean number of students per class to be 30.

We describe the effects of the interventions on the outcomes reported below. Table 1 summarises the outcomes that we planned to assess, the outcomes reported in included studies and the outcomes used in this review.

4.3.1 Primary outcomes

4.3.1.1 Episodes of relationship and dating violence

Seventeen studies measured episodes of relationship and dating violence. We conducted analysis as two separate meta-analyses: one of categorical data and one of continuous data.

The analysis of categorical data included eight studies (3405 participants), of which seven used the SES. The remaining study assessed the number of students experiencing physical dating violence only (Wolfe 2009). Within this analysis, there was evidence of substantial heterogeneity (I2 = 57%). The high Chi2 statistic (16.35; degrees of freedom = 7) and low P value (0.02) provide further evidence of variation of effect estimates beyond chance. Despite this, we felt it important to conduct a meta-analysis because episodes of relationship and dating violence was our most important outcome, because this was the only outcome for which all included studies except one used the same measurement scale and because the I2 value of 57% was only marginally above our originally defined threshold of 50%. Indeed, the level of heterogeneity between studies, as shown by the forest plot, suggests that pooling results is unlikely to be problematic and that much of the heterogeneity may be the influence of two outlying studies (Stephens 2009; Gidycz 2011). Using a random-effects model, the RR was 0.77 (95% CI 0.53 to 1.13). The RR suggests a 23% reduction in the episodes of relationship violence experienced by participants receiving the intervention, but the CI does not exclude the possibility that the interventions had no effect or were associated with an increase in episodes of violence experienced. (See Analysis 1.1.)

The second analysis for this outcome was conducted on the five studies (3171 participants) that assessed the occurrence of relationship and dating violence using continuous scoring systems such as the Interpersonal Violence Scale (IPV), the Revised CTS2 and the Conflict in Adolescent Dating Relationships Inventory (CADRI). Foubert 2000 used the SES but presented results as mean scores and was therefore included in this second analysis rather than the first analysis. Within this second analysis, there was no heterogeneity (I2 = 0%) and a fixed-effect model was used. The SMD was -0.05 (95% CI -0.19 to 0.09). Although the point estimate suggests a mean 0.05-point reduction in relationship violence experienced by those exposed to the interventions, the CI includes the possibility of the intervention having no effect or even increasing participants' experiences of violence as compared to the control group. (See Analysis 1.2.)

4.3.1.2 Episodes of physical injury

None of the included studies reported episodes of physical injury.

4.3.1.3 Improved mental well-being

None of the included studies reported improved mental well-being.

4.3.1.4 Adverse events

None of the included studies reported adverse events.

4.3.2 Secondary outcomes

4.3.2.1 Attitudes towards relationship and dating violence

The meta-analysis for attitudes towards relationship and dating violence included 22 studies. Thirteen of these studies used the RMAS to measure outcomes and nine used other scales. A total of 5256 participants were included. There was evidence of moderate heterogeneity (I^2 = 48%). Using a fixed-effect model, the SMD was 0.06 (95% CI -0.03 to 0.15). Because of the moderate level of heterogeneity, a random-effects model was also conducted, which produced an SMD of 0.08 (95% CI -0.06 to 0.22). Point estimates from both the random-effects and fixed-effect models suggest slightly improved (i.e. less accepting) attitudes towards relationship violence in participants receiving the intervention. However, CIs from both models include the possibility of the interventions having no effect or even worsening participants' attitudes towards relationship violence. (See Analysis 1.3.)

4.3.2.2 Behaviour in relationship and dating violence

We included four studies (887 participants) in the meta-analysis for behaviour in relationships and dating violence. Three studies used the Dating Behaviour Survey and one study used the Behavioural Intent to Rape Survey. There was no heterogeneity (I^2 = 0%) and, therefore, we used a fixed-effect model. The SMD was -0.07 (95% CI -0.31 to 0.16). The point estimate of -0.07 suggests a slight deterioration in behaviour towards relationship violence among those exposed to the intervention. However, the CI cannot rule out the possibility of the intervention having no effect or having a beneficial effect on behaviours. (See Analysis 1.4.)

4.3.2.3 Knowledge of relationship and dating violence

We included 10 studies (6206 participants) in the meta-analysis for knowledge of relationship and dating violence. Each study used different scales to measure participants' knowledge. Salazar 2006 measured students' knowledge using the Seventh Grade Inventory of Knowledge and Attitudes. The authors did not state the direction of the scoring in their scale. The other nine studies included in the meta-analysis of knowledge change had scales in which a higher score indicated better knowledge, and we assumed this rule to apply to the Inventory used by Salazar 2006. The I2 of 52% for this outcome suggests that there may be substantial

heterogeneity. The high Chi2 statistic (18.81; degrees of freedom 9) and low P value (0.03) provide further evidence of variation of effect estimates beyond chance. This heterogeneity is likely to be the result of the differences in scales used to assess knowledge (nine different scales used in 10 studies). As with our first outcome measure, we proceeded with meta-analysis despite the I2 value of 52% being above our threshold. We present results here and discuss the implications of the high level of heterogeneity in the Discussion. Using a random-effects model, the SMD was 0.44 (95% CI 0.28 to 0.60), suggesting a mean increase in knowledge of 0.44 as assessed by these scales. (See Analysis 1.5.)

4.3.2.4 Skills related to relationship and dating violence

We included seven studies (1369 participants) in the meta-analysis for skills related to relationship and dating violence. Of these, five used the SCS to assess outcomes, one (Wolfe 2003) used the Adolescent Interpersonal Competence Questionnaire and one (Foubert 1998) used the Behavioural Intent to Rape Survey. All of these scales assessed respondents' abilities to communicate effectively. The I2 was low at 0%, with a Chi2 statistic of 5.26 (degrees of freedom 6) and a non-significant P value (0.51). Although the I2 suggests low heterogeneity, care must be taken when assessing Chi2 tests on a meta-analysis of a small number of studies, as the test has low power. A non-significant result should, therefore, not be interpreted as evidence of no heterogeneity (Higgins 2011). Using a fixed-effect model, the SMD was 0.03 (95% CI -0.11 to 0.17). The point estimate suggests slight improvement in skills following exposure to the intervention but the CI does not exclude the possibility of the intervention having no effect or causing a deterioration in skills. (See Analysis 1.6.)

4.3.3 Subgroup analyses

The meta-analysis for each outcome was re-run to assess whether there was any effect of the delivery setting or type of audience (general or high-risk). Tests for subgroup differences used random-effects models due to the risk of false-positive results when comparing subgroups in a fixed-effect model (Higgins 2011). We summarise subgroup differences in Table 2. For delivery setting, there was a statistically significant difference in subgroups when university-based interventions were compared with community- and school-based interventions for the outcome of knowledge of relationship violence (Chi2 6.27, P value = 0.01; see Analysis 2.1). For all other outcomes, we found no significant differences when analyses were conducted separately for the three possible intervention settings. For audience type, we found significant subgroup differences between interventions aimed at general audiences and those aimed at high-risk audiences in the episodes of relationship violence experienced (Analysis 2.2) and attitudes towards relationship violence (Analysis 2.3). The decision to conduct subgroup analyses by audience type was made post-hoc upon finding that a number of included studies targeted their interventions specifically at individuals deemed to be at high risk of experiencing

relationship violence, and who might differ systematically from general (lower risk) audiences. To assess whether the timing of outcome assessment affected results, we conducted subgroup analyses in which studies assessing medium-term outcomes, long-term outcomes or both were excluded. Exclusion of these studies made no significant difference to pooled results across any of the outcomes.

To assess whether the duration of the intervention affected results, we ran two subgroup analyses. In the first subgroup analysis for duration of intervention, we categorised studies into three groups according to total contact time (≥1 hour; 1-5 hours; ≥5 hours). In the second subgroup analysis for duration of intervention, we categorised studies into three groups according to total number of sessions (1 session; 2-5 sessions; >5 sessions). For the first, 13 studies were excluded from subgroup analysis as the duration of each session was unclear. For the second, 5 studies were excluded from subgroup analysis as the total number of sessions was unclear. We found no significant differences for any of the outcomes when analyses were conducted separately for each category of total contact time or total number of sessions.

We did not carry out the remaining planned subgroup analyses for the following reasons:

- age: participant age was directly correlated with the delivery setting, we did not feel it was necessary to re-run subgroup analyses by age;
- gender: a number of studies included only males (Andersen 1992; Schewe 1996; Boulter 1997; Davis 1997; Foubert 1997; Foubert 1998; Foubert 2000; Salazar 2006; Stephens 2009; Miller 2012) or only females (Breitenbecher 1998; Gidycz 2001; Gidycz 2006; Orchowski 2008; Senn 2011). However, we were unable to run a subgroup analysis by gender as there were insufficient studies that presented results by gender for any given outcome.

4.3.4 Sensitivity analyses

As assessment bias and attrition bias was deemed to be low in the majority of studies (37 and 30 studies, respectively), we did not run sensitivity analyses to assess the extent to which results were sensitive to the analysis being restricted to only those studies judged to be at a low risk of bias in these areas. Selection bias, as assessed by random sequence generation, was considered to be low in only six studies. Limiting the analysis to those studies at low risk of selection bias made no significant difference to the pooled result for the episodes of relationship violence experienced, attitudes towards relationship violence or behaviour towards relationship violence. In the analysis of knowledge about relationship violence, only one study was at low risk of selection bias (Miller 2012). The individual results of Miller 2012 showed an SMD of -0.01 (95% CI -0.40 to 0.38), compatible with either an increase or decrease in knowledge for the intervention group, compared to the

pooled result of 0.43 (95% CI 0.25 to 0.61), which suggested an increase in knowledge for the intervention group. We conducted sensitivity analyses to assess the impact of including quasi-RCTs, which are at high risk of allocation bias. Excluding quasi-RCTs from the analysis made no significant difference to the pooled result for any of the outcomes assessed.

4.3.5 Studies not included in meta-analysis

Five studies included in our review did not contribute to the meta-analysis. In these studies only summary statistics (such as F-tests not equivalent to t-tests), non-parametric tests, or lack of information on the numbers of participants, means and SDs in each group were available. One study excluded from the meta-analysis was the 'Safe Dates' study by Foshee et al (Foshee 1998). This was a large cluster-RCT involving 1886 students aged 11 to 17 years from 14 schools in North Carolina, USA. The intervention group received 10 sessions, each lasting 45 minutes, addressing dating violence at school, as well as community workshops within emergency departments and social services. Follow-up was conducted one month, one year and four years following the intervention (Foshee 1998). At one month, there was 25% less psychological abuse perpetration (P value < 0.05); 60% less physical violence perpetration (P value < 0.05) and 60% less sexual violence perpetration (P value < 0.10). At one year, there was no significant difference in behaviour. At four years, there was a significant reduction in the perpetration of physical (P value < 0.02) and sexual (P value = 0.04) dating violence, and less victimisation of physical (P value < 0.05) and sexual (P value = 0.01) dating violence. A four-year booster intervention made no further improvements to the original intervention. The fact that results of this important study could not be included in our meta-analysis (due to insufficient raw data provided in results) is a significant limitation of our results.

We excluded four other studies from our meta-analyses. Andersen 1992 was a cluster-RCT in which athletic organisations at a university received a prevention programme aimed at increasing awareness of acquaintance rape and creating a safer college experience. There was a statistically significant greater increase in scores in one intervention group compared to control (U = 196.5, z = -3.06, P value < 0.05), but no statistically significant difference in scores between a second intervention group compared to control (U = 117, z = -0.87, P value > 0.05). Holcomb 2002 was a cluster-RCT of freshman athletes who received a gender date rape prevention programme consisting of case scenarios and discussions lasting 50 minutes. Following the prevention programme, the intervention group showed significantly more disapproving attitudes towards date rape than the control group (F(1,35) = 47.089, P value = 0.0001). Shultz 2000 was a small RCT of university students who participated in an interactive drama programme on the topic of date rape. Results showed statistically significant differences in post-test scores between the control (mean 74.25) and intervention groups (means 83.18 and 81.73 for pre-tested and unpre-tested groups, respectively) (P value < 0.0002), suggesting that the

programme successfully improved students' attitudes. Woodin 2010 was an RCT involving 50 university dating couples who reported at least one episode of physical aggression in their current relationship. Couples attended an interview and received motivational feedback individually as well as in couples. There was a significant overall reduction in physical aggression perpetration (effect size d = 0.58, P value < 0.05) among participants in the intervention group, and the intervention group also reduced physical aggression at a significantly greater rate than participants in the control group (d = 0.56, P value < 0.05).

5   Discussion

5.1   SUMMARY OF MAIN RESULTS

The effectiveness of interventions to prevent relationship and dating violence can be quantified by a number of different outcomes. We assessed the effectiveness of these interventions as measured by changes in the number of episodes of relationship violence, changes in behaviours, attitudes and knowledge, and protective skills attained. For all outcomes apart from knowledge change, our meta-analyses show no evidence of a statistically significant effect. In the meta-analysis for knowledge of relationship violence, interventions appeared to have a beneficial effect. However, there was substantial heterogeneity ($I^2 = 57\%$) between these studies, which is likely to be due to the variation between studies. Furthermore, when we excluded the studies at moderate or high risk of selection bias, only one study remained, which showed no evidence of an effect of the intervention on knowledge. Overall, therefore, this review has found no evidence of an effect of interventions on the outcomes reported.

The outcomes addressed by the studies included in our review can be categorised into two groups: direct measures, which we included as our primary outcomes, and proxy measures, which we included as our secondary outcomes. Examples of direct measures include the number of episodes of relationship violence and the physical and psychosocial health outcomes occurring as a direct consequence of violence. Importantly, health outcomes, which constituted two of our primary outcomes, were not assessed by any of the studies included in our review. The noticeable absence of health outcomes, especially when the associations between violence and health have been extensively documented, is an important finding in itself. We regard the lack of findings on these outcomes as a significant gap in the existing literature rather than a poor choice of indicators on our part. Assessing the frequency of dating and relationship violence is another direct measure. This outcome is challenging to measure for a number of reasons. The stigma associated with relationship violence in some settings may lead to fear of disclosing or reporting episodes of violence. In other situations, violent behaviour may be long-standing such that it has become the 'norm', with victims blaming themselves for the violent behaviour of their partner and not seeking support. Peer pressure or the fear of retaliation may prevent victims

from seeking help, and especially among adolescents, there may be poor knowledge about support services available. When cases are reported, information may not be available to researchers due to the non-disclosure of personal and sensitive information by officials. Finally, large studies with long follow-up periods are required in order to capture all events reliably.

Besides direct measures of effect, there are also proxy measures such as changes in attitudes, behaviour, knowledge and skills. These differ from direct measures in that they are important contributors to violence but require translation into action in order for a reduction in violence to occur. For example, even if attitudes towards relationship violence are improved and knowledge is increased, participants may not necessarily be able to apply this new information when faced with real-life incidents. Further research is required to assess whether (and how) changes in these proxy measures translate into reduced rates of relationship violence.

The aim of our review was to provide a comprehensive and unbiased summary of the existing evidence on interventions to prevent dating and relationship violence in adolescents and young adults. However, our results should be interpreted with caution for two main reasons. First, the studies included in our review varied greatly on several aspects. Participants ranged from general (low-risk) high school and university students to individuals with risk factors for experiencing or perpetrating relationship violence, such as a history of exposure to violence (Wolfe 2003) or adjudication (Salazar 2006). Our subgroup analyses comparing general to high-risk audiences revealed mixed results. Interventions appeared to be more effective at reducing the episodes of relationship violence experienced in high-risk audiences: the RR was not statistically significant in general audiences, but indicated a small but statistically significant reduction in risk in high-risk audiences. However, when assessing changes in attitudes, the SMD was not statistically significant for general audiences, and favoured the control group in high-risk audiences. Notably, for both outcomes, the high-risk 'subgroup' consisted of a single study. It is possible therefore that there were factors other than the type of participants that made these particular studies differ from others, and their results may not be generalisable to all studies with high-risk audiences.

Other studies targeted pregnant women, in whom exposure to relationship violence poses additional risks to their own health and that of the foetus. Furthermore, the focus was on couples rather than individuals in two studies (Woodin 2010; Florsheim 2011). The relationship violence experienced by these couples, particularly the pregnant adolescent women and their co-habiting parenting partners participating in the study by Florsheim 2011, may differ from the violence experienced by individuals who are not in an established relationship. For example, the latter group might experience violence in the context of dating and include cases of acquaintance rape. In more established relationships, partner violence may be of

a more long-standing nature. The differences between 'dating violence' and 'relationship violence' require further research, especially as there may be important implications for prevention efforts. Finally, the adjudicated youth included in Salazar 2006 represent a group with complex social histories and backgrounds, which may affect their engagement with interventions. On a related note, there is an established link between alcohol and drug use and likelihood of dating or relationship violence. This was not explicitly controlled for within the studies and, while the focus of the review was on universal delivery of educational and skills-based interventions, drug and alcohol use is likely to have a negative impact on outcomes and this was not adequately described in the studies. While it can be argued that outcomes were still attainable even where drugs and alcohol are indicated, caution is still needed in interpreting the results.

Other variation between studies interventions arose in delivery settings, types of outcomes assessed, duration of the intervention, and duration of follow-up. The subgroup analysis by intervention setting was significant only for one outcome (knowledge of relationship violence) in one setting (university vs. school and community). Given that for the remaining 17 subgroup and outcome combinations the results were non-significant, we feel that the single significant outcome has arisen by chance. Intervention duration ranged between single 50-minute sessions (Bradley 2009; Holcomb 2002; Schewe 1996; Stephens 2009) to 21 75-minute sessions (Wolfe 2009). Subgroup analyses showed no significant differences in effect by total contact hours or total number of sessions. The duration of follow-up varied greatly. The majority of studies assessed outcomes immediately following the intervention, with a further assessment between 1 and 12 months later. In order to determine more reliably whether interventions are effective and if so, whether their effects are long lasting and reduce the incidence of relationship violence in later adulthood, longer follow-up is required.

The second reason for interpreting our results with caution relates to methodological aspects of our review. Individual studies used a wide range of measurement scales to assess outcomes. We presented our results as SMDs, which assumes that each of the assessment measures can be standardised and has comparable SDs. This method also renders the translation of results into a quantifiable improvement or deterioration in outcomes challenging. For example, it is difficult to define what a 0.03-point improvement in the combined skills score means in practice and what level of statistically significant change is clinically significant. Combining results in a meta-analysis requires a number of methodological decisions to be made. We have tried to be as transparent as possible by detailing our methods and providing rationales for excluding any studies from meta-analyses.

5.2 OVERALL COMPLETENESS AND APPLICABILITY OF EVIDENCE

All of the studies included in this review came from high-income countries. With the exception of Yom 2005, all studies were conducted in North America. There are a number of possible reasons for this. First, the term 'dating' may be less frequently used outside of North America. However, our search strategy included the term 'relationship' and other synonyms, which should have identified a broader range of titles. Second, the concept of dating itself may be less common outside of North America. In some lower-income countries marriage occurs at a younger age, so that if violence in a relationship occurs it is more likely to be classed as intimate partner violence rather than dating or relationship violence. Finally, it is possible that relationship violence is less commonly reported and less researched in other cultures.

With the exception of the Safe Dates study (Foshee 1998), which followed participants up to four years post-intervention, Wolfe 2009, which followed participants for 2.5 years post-intervention, and Florsheim 2011, which followed participants up to 18 months post-intervention, most studies followed participants up to a maximum of 12 months. A few studies only conducted immediate post-test assessment. There is, therefore, little evidence on the long-term effectiveness of these interventions. As described above, the majority of studies assessed changes in proxy measures such as attitudes and knowledge, rather than episodes of violence and behavioural change. Further studies are required to explore the interaction between knowledge and attitudes on the one hand, and behaviour, skills and episodes of relationship violence on the other hand.

5.3 QUALITY OF THE EVIDENCE

The quality of most studies in this review was limited by unclear methods of random sequence generation, allocation concealment and assessor blinding, as illustrated in the 'Risk of bias' graph (Figure 2) and 'Risk of bias' summary (Figure 3). While questionnaire scores (as used by most studies) may be less affected by lack of assessor blinding than other outcomes, we felt that the fact that none of the studies raised this point as a consideration was a significant shortcoming. Blinding of personnel delivering the interventions was not possible. However, some studies implemented ways of minimising the effects of this by providing training sessions for staff, scripts and monitoring a selection of sessions to ensure adherence to the study protocol. Studies not implementing these activities were considered to be at high risk of performance bias. We downgraded the evidence from 'high' to 'moderate' for all outcomes in our Summary of findings table 1.

Another significant concern was the cluster or quasi-cluster randomisation methods used in 19 of the included studies. Participants were randomised by schools or classes to decrease the risk of cross-contamination and for practicality. Only one study used an ICC to account for the effect of clustering, though the ICC used was low compared to ICCs of other similar studies. The results of the cluster-RCTs included in this reviews are, therefore, likely to overestimate the effects of the interventions. Finally, many included studies had small numbers of participants (Andersen 1992; Forst 1993; Schewe 1996; Boulter 1997; Davis 1997; Miller 1999; Shultz 2000; Yom 2005; Salazar 2006; and Woodin 2010 had fewer than 100 participants each) and short periods of follow-up (maximum follow-up periods were two weeks or less in Andersen 1992; Forst 1993; Schewe 1996; Avery-Leaf 1997; Macgowan 1997; Foubert 1998; Lanier 1998; Pinzone 1998; Miller 1999; Saberi 1999; Pacifici 2001; Holcomb 2002; Yom 2005; Bradley 2009), which is likely to affect their quality adversely by decreasing their statistical power and increasing the risk of type I and type II errors.

5.4 POTENTIAL BIASES IN THE REVIEW PROCESS

Although a large number of articles were initially identified by our search strategy, it is still possible that some relevant studies were missed. Correspondence with authors yielded three further eligible studies that had not been identified by our search strategy. Many authors that we contacted did not reply and it is possible that further relevant studies could have been missed. Two review authors (GF and CH) independently screened titles and abstracts, which minimised the potential for bias in selecting studies for inclusion.

Eighteen studies that appeared by title or abstract to meet our eligibility criteria could not be assessed because full texts were not available. These studies have therefore been listed as 'awaiting classification'. Some of the missing studies are doctoral theses, which we were unable to retrieve despite requesting interlibrary loans, contacting authors and corresponding with universities where the doctoral title was awarded. Other studies were published in journals that we were unable to access. We do not know whether these studies are eligible for inclusion in our review and, if so, how they would have affected our results. Funnel plots for the outcomes that included 10 or more studies showed no evidence of publication bias (Figure 4 and Figure 5). However, it is possible that the studies that we were unable to retrieve are in themselves the result of a publication bias that exists in the general literature; in other words, it may be that the very reason we found these studies difficult to access is that they are studies with inconclusive or negative findings that are less likely to be published or more difficult to retrieve (Scargle 2000). It is possible that the failure to include these studies overestimated the effect sizes of interventions and introduced bias into this review (Higgins 2011).

As outlined in the Methods section, we conducted single pair-wise comparisons to avoid double-counting and unit of analysis issues. In some cases, this may have diluted the effect of interventions, for example in studies where high-risk and low-risk participants, or those with and those without a history of sexual victimisation were combined into single groups. Combining all outcome assessments up to 12 months into one outcome in our analysis may also have had an effect on our results. For example, it is possible that the effectiveness of interventions was greatest immediately following the intervention, with the effects gradually wearing off with time. However, the substantial differences in outcome assessments made it difficult to assess the effects separately. There was an insufficient number of studies to perform a separate analysis of outcomes assessed between 6 and 12 months as we had planned.

The ICC of 0.15 that we used to adjust for the effect of clustering is likely to lead to conservative estimates of effect. However, we felt this to be the most appropriate ICC based on a review of ICCs used in meta-analyses of similar topics. It would have been preferable if individual studies had ascertained their own ICCs, or if different ICCs were available depending on whether randomisation occurred at class or school level. An insufficient quantity of examples of ICCs was found to enable us to conduct ICC sensitivity analyses.

The decision to include quasi-RCTs in our review was based on an assumption that this could be a common method of allocating participants to groups for logistic reasons, particularly in the case of cluster-RCTs. The inclusion of quasi-RCTs may have introduced bias into our results as they are at high risk of allocation bias. However, sensitivity analyses showed that including these studies made no significant difference to overall pooled results.

We included studies where more than 80% of the sample was within the age range of 12 to 25 years in anticipation that some community-based studies may target a wider range of age groups. The only studies that included participants higher than our stated age range were those set in universities, which captured a number of mature students (Forst 1993; Anderson 1998; Stephens 2009). The percentage of students outside of the age range in these studies was very low. Only one included study had participants younger than our age range (Miller 1999): students were aged 10 to 14 years, with a mean of 12.8 years and the majority were aged 13 years. It is unlikely that these small numbers would have influenced our results. Furthermore, subgroup analyses showed no significant differences in effect by intervention setting. As participant age is directly correlated with setting, we feel that there is little risk of the inclusion of these studies impacting our results.

Non-RCT studies on the topic of relationship and dating violence and those that were excluded from our review were not systematically reviewed.

5.5 AGREEMENTS AND DISAGREEMENTS WITH OTHER STUDIES OR REVIEWS

Whitaker et al conducted a systematic review of primary prevention programmes for the perpetration of partner violence (Whitaker 2006). The authors found that nine of the 11 included studies reported at least one positive intervention effect for knowledge, attitude or behaviour and concluded that such prevention programmes are promising. This finding differs from the lack of evidence of an effect found in our review. However, the review by Whitaker et al included observational (non-randomised) trials, which may have influenced results. Results were summarised narratively, rather than by means of a meta-analysis. To our knowledge, no other systematic reviews on this topic have been conducted.

6 Authors' conclusions

6.1 IMPLICATIONS FOR PRACTICE

There is currently a wide range of interventions based in educational and community settings aimed at the prevention of dating and relationship violence in adolescents and young adults. The studies included in this review showed no evidence that these interventions reduce episodes of violence or improve attitudes, behaviours and skills related to relationship violence. There was evidence of a small increase in knowledge but this result must be interpreted with caution due to high heterogeneity among studies. Most studies had methodological shortcomings, which may have led to overestimation of their effects, especially when cluster randomisation was used. Importantly, our results show no evidence of effect, rather than evidence of no effect. Therefore, current interventions should not necessarily be stopped, but rather further research and more methodologically sound studies should be conducted.

6.2 IMPLICATIONS FOR RESEARCH

Further evidence is required to assess the effectiveness of interventions to prevent dating and relationship violence. The current evidence is predominantly focused on assessing changes in attitudes and knowledge. Research into the effects of interventions on incidence of relationship or dating violence, and exploration of the relationship between attitudes and knowledge and skills, behaviour and episodes of violence are needed. It is possible that in order to reduce the occurrence of relationship violence effectively, a number of interventions across both educational and community settings as well as within homes and families is required. Exploring these themes will require larger RCTs with longer follow-up periods. Researchers should consider using existing reliable and validated scales such as the RMAS (Burt 1980) or the Revised CTS (Straus 1996). New measurement scales developed by authors have often not been adequately validated, and the use of multiple different scales renders the comparison of results from different studies difficult.

Although RCTs are preferable to cluster-RCTs, in practice it is often more feasible to conduct the latter. In this case, authors should adjust results using an ICC to avoid overestimating the effect of the interventions. We identified ICCs from a number of meta-analyses on similar topics by searching CENTRAL. However, a wider and more systematic search would be helpful in ascertaining the range of ICCs used across cluster-RCTs and establishing the most appropriate ICC figure to use.

With one exception, all studies were conducted in North America. Interventions addressing relationship violence are likely to be highly culturally sensitive and it is important to understand what types of interventions are effective in different settings. Further studies are, therefore, required from high-, middle- and low-income countries in Europe, Asia, Africa and Australasia.

7   Acknowledgements

8   Contributions of authors

All review authors contributed to the development of the protocol. Trial selection was performed by GF and CH. Data extraction and assessment of the risk of bias was performed by GF, CH, SH, JN and DS. GF wrote the discussion and conclusions with input from the other authors.

9 Declarations of interest

Gracia LT Fellmeth - none known.
Joanna Nurse - none known.
Catherine Heffernan - none known.
Shakiba Habibula - none known.
Dinesh Sethi - none known.

10 Differences between protocol and review

We planned to conduct meta-analyses if heterogeneity between studies had an I^2 statistic of 50% or less. This was based on the *Cochrane Handbook for Systematic Reviews of Interventions* guidance, which categorises an I^2 value of greater than 50% as suggestive of substantial heterogeneity. However, following data extraction, we found that our outcomes of episodes of relationship violence and knowledge of relationship violence had I^2 values of 57% and 52%, respectively. We decided to continue with our meta-analyses and present results as these were important outcomes and because the values were both very close to the cut-off of 50%. We included these findings in our results but advise caution in their interpretation.

As stated in our protocol, we planned to conduct ICC analyses. However, only one included study reported using an ICC (Wolfe 2009) and, given this was 0.02, we maintained that this was insufficiently conservative based on meta-analysis of other similar subjects. For our analyses, we adopted an ICC of 0.15 based on two similar reviews: first, a review of school-based programmes to prevent violence, which used ICC values of 0.1 and 0.2 (Mytton 2006) and second, a meta-analysis of multi-component preventive interventions for children at risk of antisocial behaviour (CPPRG 1999), which used an ICC value of 0.15.

11 Characteristics of studies

11.1 CHARACTERISTICS OF INCLUDED STUDIES

Andersen 1992

Methods	Cluster-RCT. 3 athletic organisations were randomly assigned to intervention 1, intervention 2 or a control group using a computer-generated table of random numbers
Participants	91 male college athletes (mean age 19.4 years) at the University of Wisconsin-Platteville, USA
Interventions	Intervention 1: an acquaintance rape prevention programme facilitated by a group of male student volunteers. The aim of the programme was to create an awareness of acquaintance rape, provide opportunities to challenge rape myths and work towards a safer college experience. The intervention was delivered as a single session (duration unclear). 15 students Intervention 2: as intervention A but at different times. 35 students Control: wait list control. 41 students
Outcomes	Change in attitudes towards sex, dating, sexual aggression and rape, as measured by a modified Survey of Sexual and Dating Attitudes. Participants' general reactions to the programme were also measured using a Program Evaluation questionnaire
Follow-up	1 week post-intervention
Notes	-

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	High risk	Computer-generated table of random numbers used. Athletic organisations labelled 1, 2 and 3. First of these numbers to appear on computer-generated list was assigned to intervention 1. Other 2 athletic organisations assigned according to their size (with view to keeping total numbers in intervention and control groups similar)
Allocation concealment (selection bias)	Unclear risk	Not stated

Incomplete outcome data (attrition bias)	Low risk	Attrition: intervention 1 27% (4/15); intervention 2 17% (6/35); control group 37% (15/41). Attrition due to not fully completing surveys, reasons for which unlikely to be related to outcome
Selective reporting (reporting bias)	High risk	All outcomes reported but incompletely: only states whether difference was "statistically significant" or not alongside U, z and P values. Cannot be included in meta-analysis
Blinding of participants and personnel (performance bias)	High risk	Blinding not possible. No mention of monitoring of intervention delivery
Blinding of outcome assessment (detection bias)	Unclear risk	Not stated

Anderson 1998

Methods	Cluster-RCT. Classes randomly assigned to 1 of 2 interventions or control group
Participants	215 undergraduates (aged 18-42 years, mean 20 years; 143 female, 72 male) enrolled in psychology course at a university, USA
Interventions	Intervention 1: interactive mock talk show, including panel discussion of issues surrounding alleged case of acquaintance rape. 70 students Intervention 2: structured video interaction involving video on acquaintance rape and class discussion. 68 students Each intervention was delivered as a single 1-hour session. Control: no intervention. 77 students
Outcomes	Rape supportive attitudes as measured by Rape Myth Acceptance Scale and modified Attitudes Toward Rape scale
Follow-up	Immediate and 7 weeks post-intervention
Notes	-

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Each course section "randomly assigned" to treatment or control
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias)	Low risk	Attrition: intervention 1 22% (15/68); intervention 2 17% (12/70); control 35% (27/77). Attrition roughly equal in all groups. Reasons unlikely to be related to outcomes
Selective reporting (reporting bias)	Low risk	All outcomes reported in full (number of participants, means and SDs provided)
Blinding of participants and personnel	High risk	Blinding not possible. Personnel delivering interventions received training and were asked to follow detailed manual

(performance bias)	or script but no mention of monitoring this
Blinding of outcome assessment (detection bias)	Unclear risk Not stated

Avery-Leaf 1997

Methods	Cluster-RCT. Health classes in a high school were randomly assigned to intervention or control. No further information on random sequence generation provided
Participants	193 (106 male, 87 female; mean age 16.5 years) high school students taking health classes in autumn 1994. New York, USA
Interventions	Intervention: dating violence prevention curriculum covering equity in dating relationships, challenging of societal attitudes towards violence, communication skills and support resources for victims of aggression. Delivered by health teachers who had participated in 8-hour training session 1 week prior to implementation of programme. The intervention was delivered as five sessions (duration unclear). 102 students Control: no intervention. 91 students
Outcomes	Changes in attitudes regarding dating aggression as measured using the Modified Conflict Tactics Scale, the Justification of Interpersonal Violence questionnaire, the Justification of Dating Jealousy and Violence scale and the Social Desirability scale
Follow-up	2 weeks following intervention
Notes	-

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	"Half of the health classes were randomly assigned to the control condition and half to the treatment condition"
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias)	Low risk	1 less participant included in analysis (n = 192) compared to total number at outset (n = 193). Low drop-out; unlikely to affect results
Selective reporting (reporting bias)	Low risk	Means for all outcomes reported. Number of participants deduced from within text. Figures in brackets assumed to be SD
Blinding of participants and personnel (performance bias)	High risk	Blinding not possible. Teachers delivering the intervention were given training by study author but this was designed to "increase the teachers' knowledge about dating violence" rather than help them adhere to study protocol
Blinding of outcome assessment (detection	Unclear risk	Not stated

bias)

Boulter 1997

Methods	Cluster-RCT. 8 fraternities and halls of residence assigned to treatment or wait list control by "random draw"
Participants	55 fraternity members and residents of male residential halls within a large rural university, USA. Males only. Aged 19-25 years, mean 20.77 years
Interventions	Intervention: acquaintance rape prevention programme consisting of discussion and video on acquaintance rape and the law. Delivered by female doctoral student of counselling psychology and sexual educators from campus peer education programme. The intervention was delivered as a single 1-hour session. 23 students Control: 'wait list control' (i.e. received the intervention after completion of data collection). 32 students
Outcomes	Knowledge/acceptance of rape myths, as measured by a modified version of the Rape Myth Acceptance Scale and a modified version of the Acceptance of Sexually Coercive Strategies Scale
Follow-up	6 and 10 weeks post-test
Notes	-

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Assignment to groups occurred by "a random drawing"
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias)	High risk	High attrition rates (due to participants not completing all 3 phases of study): intervention 70% (53/76); control 68% (67/99)
Selective reporting (reporting bias)	Low risk	All outcomes reported in full (number of participants, means, SDs)
Blinding of participants and personnel (performance bias)	High risk	Blinding not possible. Facilitators of intervention programme had extensive experience in presentations on topic of sexuality, but no mention made of how uniformity of delivery was assessed
Blinding of outcome assessment (detection bias)	Unclear risk	Not stated

Bradley 2009

Methods	Quasi-cluster-RCT. Classes were assigned to condition such that every other class of each size category (i.e. > 100 students, > 35 students, < 35

	students) who agreed to participate received the prevention programme
Participants	309 undergraduate university students (113 male, 196 female; aged 19-21 years; mean 23.2 years), USA
Interventions	Intervention: Mixed Gender Sexual Assault Prevention Program. Video presentation delivered by author and 2 female undergraduate peer educators following a scripted manual. The intervention was delivered as a single 50-minute session. 177 students Control: no intervention. 132 students
Outcomes	Knowledge of assault-related information, risky dating behaviours and consumer satisfaction as measured by Sexual Assault Awareness Survey, Dating Behaviour Survey, Sexual Communication Survey, Rape Myth Acceptance Scale, Acceptance of Interpersonal Violence, Adversarial Sexual Beliefs Scale, Adjective Checklist, Rape Outcome Expectancy Scale, Program Information Quiz and Consumer Satisfaction Survey
Follow-up	Immediate and 2 weeks post-test
Notes	-

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	High risk	Allocation by alternation
Allocation concealment (selection bias)	High risk	Not stated but alternation suggests that participants or investigators or both could foresee assignments
Incomplete outcome data (attrition bias)	Low risk	Low attrition. Females: analysis range from n = 168 to n = 193 from initial n = 196 (maximum attrition rate of 14%). Males: analysis range from n = 110 to n = 111 from initial n = 113 (maximum attrition rate of 2%). Attrition unlikely to affect or be related to outcomes
Selective reporting (reporting bias)	Low risk	All outcomes reported in full (number of participants, means and SDs provided)
Blinding of participants and personnel (performance bias)	High risk	Blinding not possible. Personnel delivering the intervention were trained and asked to memorise presentation, but no mention of how adherence to protocol was subsequently ascertained
Blinding of outcome assessment (detection bias)	Unclear risk	Not stated

Breitenbecher 1998

Methods	Cluster-RCT. Sign-up sheets (accommodating up to 25 women each) randomly designated as treatment or control sessions
Participants	406 women (73% aged 18-19 years) taking psychology classes in a

	university, USA
Interventions	Intervention: sexual assault risk-reduction programme involving information on sexual assault, discussion of rape myths, video and a risk reduction strategy information sheet. Unclear who delivered the programme. The intervention was delivered as a single session (duration unclear). 211 students Control: no intervention. 195 students
Outcomes	Incidence of sexual victimisation, dating behaviours, sexual miscommunication and sexual assault awareness as measured by Sexual Experiences Survey, Dating Behaviour Survey, Sexual Communication Survey and the Sexual Assault Awareness Survey
Follow-up	9 weeks post-test
Notes	-

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Groups were "randomly designated" as treatment or control
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias)	Low risk	Low attrition rates. Intervention group: 0% (0/211); control group 1% (1/195). Unlikely to affect results
Selective reporting (reporting bias)	Low risk	All outcomes reported. Means and SDs provided. Number of participants can be derived from description of statistical tests conducted
Blinding of participants and personnel (performance bias)	High risk	Blinding not possible. No statement of any measures taken to minimise variation in delivery of intervention
Blinding of outcome assessment (detection bias)	Unclear risk	Not stated

Davis 1997

Methods	Quasi-RCT. Participants assigned to intervention groups or control by being given colour-coded folder (prearranged and alternating as A-B-C-A-B-C etc.) in order of their arrival to the workshop area
Participants	87 college fraternity members at a large Midwestern university, USA. Males only. Aged 18-23 years; mean 19.63 years
Interventions	Intervention 1: traditional educational intervention (consisting of factual information, video and discussion about date rape). 29 students Intervention 2: socialisation-focused intervention (discussion of gender role conflict and sex role socialisation). 29 students Each intervention was delivered as a single 90-minute session. Control: video on job hunting and discussion on career development. 29 students

	All delivered by graduate students
Outcomes	Knowledge and belief in rape myths as measured by Gender Role Conflict Scale I, Rape Myth Acceptance Scale, Attitudes Towards Women Scale, Comprehension of Consent/Coercion Measure, Socially Desirable Response Set 5, Counselor Rating Form and Behaviour Indicator Questions
Follow-up	Immediate and 6 weeks post-intervention
Notes	-

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	High risk	Assignment by alternation using folders prearranged in alternating order and given to students in order of arrival to the workshop
Allocation concealment (selection bias)	High risk	High risk of participants and investigators being able to foresee assignment and causing selection bias
Incomplete outcome data (attrition bias)	Low risk	Attrition: 2.2% (3/90). Very small numbers, unlikely to have an effect on outcome
Selective reporting (reporting bias)	Low risk	All outcome measures reported in full (number of participants, means and SDs provided for each measurement scale used)
Blinding of participants and personnel (performance bias)	Low risk	Blinding not possible but independent observers watched the presentations with written copies of the interventions to assess adherence to the objectives and protocol
Blinding of outcome assessment (detection bias)	Unclear risk	Not stated

Fay 2006

Methods	Cluster-RCT. Of the total of 6 'Freshman 101' classes, 3 were "randomly chosen" to receive the intervention programme and 3 received no intervention
Participants	154 (67 male, 85 female, 2 gender unknown; aged 15-16 years) first year high school students in USA
Interventions	Intervention: role play, discussion and videos covering assertive behaviour, sexual pressure, dating expectations and rape myths. Delivered as part of freshman 101 curriculum (3-week programme on conflict resolution, sexuality and career development). Delivered by 1st author and female psychology undergraduate who had received training. The intervention was delivered as two 1-hour sessions on 2 consecutive days. 76 students Control: no intervention. 78 students
Outcomes	Knowledge and attitudes towards dating violence as assessed by the Rape Myths Acceptance Scale and the Attitudes Towards Dating Violence scale
Follow-up	1 week, 5 months and 7 months post-intervention

Notes	-

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Classes "randomly chosen" to receive intervention or control
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias)	Low risk	Initial number of participants assigned to groups unclear. Analysis included "useable pretest and initial post-test data available for 154 students" (76 in intervention group; 78 in control group). Given each class had maximum of 30 students and 3 classes assigned to each arm, maximum attrition rates would be 16% (14/90) in intervention group and 13% (12/90) in control group. Low attrition rate that is equal in both arms, therefore unlikely to cause bias
Selective reporting (reporting bias)	Low risk	All outcomes reported fully (number of participants, means and SDs provided)
Blinding of participants and personnel (performance bias)	High risk	Blinding not possible. Study author delivered intervention with trained facilitator. No information on whether or how delivery was monitored to ensure adherence to protocol, therefore high risk of bias
Blinding of outcome assessment (detection bias)	Unclear risk	Not stated

Florsheim 2011

Methods	RCT. Couples randomly assigned to intervention or control conditions. Couples were recruited through medical clinics and schools
Participants	105 pregnant adolescent women (aged 14-18 years; mean 16.1 years) and their co-parenting partner (aged 14-24 years; mean 18.3 years)
Interventions	Intervention: Young Parenthood Program: couples-focused prevention programme consisting of individual and couple interviews covering communication skills, managing pregnancy, decreasing hostility and preventing intimate partner violence. Based in various community locations or couples' homes, or both. Delivered by counsellors (5 graduate students in clinical psychology) using a detailed manual as reference. Intervention carried out in 3rd trimester of pregnancy. The intervention was delivered over 10 months (number of sessions and duration of each session unclear). 53 couples. Control: 'treatment as usual' which consisted of prenatal services and psychosocial services including vocational counseling and parenting classes. 52 couples
Outcomes	Interpersonal violence experienced, as measured by responses to questions

	and follow-up probes during interviews
Follow-up	2-3 months and 18 months following childbirth
Notes	-

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Couples were "randomly assigned" to intervention or control
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias)	Low risk	Of 105 couples recruited: 5 miscarried or gave child up for adoption, 6 declined treatment and 10 could not be located for follow-up. Attrition at 2-3 months' follow-up: intervention group 13% (7/53); control group 17% (9/52). Attrition at 18 months' follow-up: intervention group 17% (9/53); control group 19% (10/52). Low rates with similar rates in each arm, therefore unlikely to cause bias
Selective reporting (reporting bias)	Low risk	All outcomes reported fully (number of participants, means and SDs provided)
Blinding of participants and personnel (performance bias)	High risk	Blinding not possible but counsellors given manual to adhere to and weekly supervision sessions. However, no objective measure of whether programme guidelines were adhered to in practice, therefore high risk of performance bias
Blinding of outcome assessment (detection bias)	High risk	Interpersonal violence was assessed through discussion in semi-structured interviews. Non-blinding of assessors and subjective element to scoring introduce high risk of bias

Forst 1993

Methods	RCT. Participants randomly allocated to 1 of 2 intervention groups or control by drawing pieces of paper marked A, B or C from a bowl
Participants	52 undergraduate university students (aged 19-44 years, mean 23.9 years, SD 5.83; 33 males, 21 females) in criminal justice and psychology classes at Florida Atlantic University, USA
Interventions	Intervention - workshop A: a didactic, lecture-based acquaintance rape prevention programme including video. 16 students Intervention - workshop B: an experiential, interactive discussion of acquaintance rape including interactive theatre performance. 17 students Both interventions were delivered as a single 1-hour session and were delivered by the study author, a policewoman and a representative from the county sexual assault programme Control: no intervention. 19 students
Outcomes	Acceptance of rape myths, as measured by the Rape Myth Acceptance

		Scale and Adversarial Sexual Beliefs Scale
Follow-up		Immediate post-test and 2-week follow-up
Notes		-

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Random allocation by drawing lots
Allocation concealment (selection bias)	Low risk	Drawing lots from a bowl meant that neither participants nor investigators were able to foresee assignments, therefore low risk of selection bias
Incomplete outcome data (attrition bias)	Low risk	Attrition: 2% (1/55). Low rate unlikely to affect results
Selective reporting (reporting bias)	Low risk	All outcomes fully reported (number of participants, means and SDs provided)
Blinding of participants and personnel (performance bias)	High risk	Blinding not possible. Personnel delivering intervention received some training and a facilitators' guide but no mention of how adherence to study protocol was ascertained, therefore high risk of bias
Blinding of outcome assessment (detection bias)	Unclear risk	Not stated

Foshee 1998

Methods	Cluster-RCT. 14 schools were stratified by grade and matched by size randomly allocated to intervention or control
Participants	1886 8th and 9th graders from 14 schools in a rural county of North Carolina, USA. Aged 11-17 years, mean 13.8 years. 48.9% male; 51.1% female
Interventions	Intervention: Safe Dates: school and community activities to prevent dating violence. School activities were delivered by 16 teachers who had received 20 hours of training. Community activities were delivered in emergency departments, by school counsellors, social services and police. Foshee 2004 added a booster intervention (consisting of newsletter and personal contact from health educator by telephone) to a randomly selected half of the original participants. The intervention was delivered as ten 45-minute sessions. 7 schools Control: exposed to community activities only. 7 schools
Outcomes	Episodes of dating violence experienced; psychological abuse experienced. Measured using Psychological Abuse Victimisation Scale; Non-Sexual Violence Victimisation Scale; Sexual Violence Victimisation Scale and Violence in Current Relationship
Follow-up	1 month (Foshee 1998), 1 year (Foshee 2000), and 4 years (Foshee 2004)

		post-intervention
Notes		-

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Schools "randomly assigned" to either treatment or control
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias)	Low risk	Attrition at 1-month follow-up 10% (186/1886); at 1-year follow-up 15% (283/1886). Unclear distribution of participants lost to follow-up in each arm, but low overall rates suggest low risk of attrition bias
Selective reporting (reporting bias)	Low risk	All outcomes reported. Means and number of schools reported but no SDs
Blinding of participants and personnel (performance bias)	High risk	Blinding not possible. No mention of how adherence to study protocol was ascertained, therefore high risk of performance bias
Blinding of outcome assessment (detection bias)	Unclear risk	Not stated

Foubert 1997

Methods	Cluster-RCT. The methods state that fraternity classes were "assigned" to experimental or control conditions but does not state whether this assignment was random. However, 2 subsequent studies carried out by the same author testing the same intervention in different settings (Foubert 1998 and Foubert 2000) use random allocation, we have presumed this study to be a cluster-RCT
Participants	114 fraternity members (male only; mean age 18.8 years (intervention group), 18.7 years (control group) at a university, USA
Interventions	Intervention: rape prevention peer education programme including lecture and video. Delivered by 4 male peer educators who followed a prepared script. The intervention was delivered as a single 1-hour session. 76 students Control: no intervention. 38 students
Outcomes	Belief in rape myths as measured by the Rape Myth Acceptance Scale
Follow-up	2 months post-test
Notes	-

Risk of bias table

Bias	Authors'	Support for judgement

Bias	judgement	
Random sequence generation (selection bias)	Unclear risk	Not stated
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias)	High risk	Attrition: intervention group 41% (31/76); control group 16% (6/38). Much higher rate of attrition in intervention arm than in control arm. Reasons for attrition not provided. High risk of attrition bias
Selective reporting (reporting bias)	Low risk	All outcomes reported fully (number of participants, means and SDs provided)
Blinding of participants and personnel (performance bias)	High risk	Blinding not possible. Personnel delivering the intervention were trained and asked to follow script but no mention of objective ascertainment of adherence to study protocol, creating high risk of performance bias
Blinding of outcome assessment (detection bias)	Unclear risk	Not stated

Foubert 1998

Methods	Cluster-RCT. 6 fraternities randomly assigned to 1 of 2 treatment groups (1 pre-tested and 1 unpre-tested) or control
Participants	155 fraternity members (males only; mean age 19.9 years, SD 1.3) from a university, USA
Interventions	Intervention: rape prevention peer education programme including lecture and video. Delivered by 4 male peer educators who followed a prepared script. The intervention was delivered as a single 1-hour session. 109 students Control: no intervention. 46 students
Outcomes	Rape myth acceptance and behavioural intent to rape, as measured by Rape Myth Acceptance Scale and Behavioural Intent to Rape Scale
Follow-up	Immediate post-test
Notes	-

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Groups "randomly assigned"
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias)	Low risk	Attrition: pre-tested intervention group 3% (2/59); unpre-tested intervention group 0% (0/50); control group 0%

		(0/49). Low rates unlikely to affect outcomes
Selective reporting (reporting bias)	Low risk	All outcomes reported fully (number of participants, means and SDs provided)
Blinding of participants and personnel (performance bias)	High risk	Blinding not possible. Facilitators were asked to follow a script but no mention of objective ascertainment of adherence to study protocol
Blinding of outcome assessment (detection bias)	Unclear risk	Not stated

Foubert 2000

Methods	Cluster-RCT. 8 fraternities were randomly allocated to intervention (n = 4) or control (n = 4)
Participants	217 fraternity members (male only; mean age 20.33 years, SD 1.23) at a university, USA
Interventions	Intervention: rape prevention peer education programme including lecture and video. Delivered by 4 male peer educators who followed a prepared script. The intervention was delivered as a single 1-hour session. 109 students Control: no intervention. 108 students
Outcomes	Episodes of dating violence and change in knowledge about dating violence, as measured by the Rape Myth Acceptance Scale, Behavioural Intent to Rape Scale, and the Sexual Experiences Survey
Follow-up	Intervention: immediate and 7 months post-test. Control: 7 months post-test
Notes	-

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Groups "randomly assigned" to intervention or control
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias)	Low risk	Attrition: intervention group 36% (39/109); control group 31% (33/108). Attrition rates similar in both arms and unlikely to be caused by attrition bias
Selective reporting (reporting bias)	Low risk	All outcomes reported (number of participants, means and SDs provided)
Blinding of participants and personnel (performance bias)	High risk	Blinding not possible. No mention of training of peer-educators or monitoring of adherence to study protocol
Blinding of outcome assessment (detection bias)	Unclear risk	Not stated

Gidycz 2001

Methods	RCT. Participants randomly assigned to the intervention or control
Participants	762 female introductory psychology students (aged 18-21 years) at 2 universities, USA
Interventions	Intervention: Ohio University's Sexual Assault Risk Reduction Project: a multi-media, interactive programme including presentation, videos, role play and discussion. The intervention was delivered as a single 3-hour session by graduate students who had received training. 395 students Control: no intervention. 357 students
Outcomes	Episodes of sexual victimisation, dating behaviours, sexual communication and rape empathy as measured by the Rape Empathy Scale, Dating Behaviour Survey, Sexual Communication Survey and Sexual Experiences Survey
Follow-up	2 and 6 months post-intervention
Notes	-

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Individuals were "randomly assigned"
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias)	Low risk	Attrition at 2-month follow-up very low: 2% (10/762). Attrition at 6-month follow-up: 30% (230/762). This is slightly high but acceptable for 6 months post-intervention
Selective reporting (reporting bias)	Low risk	All outcomes reported fully (n and % for categorical scales; number of participants, means and SDs for continuous scales)
Blinding of participants and personnel (performance bias)	Low risk	Blinding not possible but fidelity to treatment protocol monitored by videotaping 20% of sessions, thereby minimising variability in delivery of intervention as much as possible
Blinding of outcome assessment (detection bias)	Unclear risk	Not stated

Gidycz 2006

Methods	RCT. Participants randomly allocated to treatment or control condition
Participants	500 college women (88% aged 18-19 years) from the psychology department in a Midwestern university, USA
Interventions	Intervention: sexual assault risk reduction programme including videos,

	discussion, a skills-based physical self-defence session 1 week after the video/discussion session, and a booster session 3 months after the initial programme. The intervention was delivered by a female graduate student researchers who had received training from the project leader. The intervention was delivered over 7 hours in 3 sessions. 234 students Control: no intervention. 266 students
Outcomes	Rate of sexual victimisation, assertive communication skills, feeling of self-efficacy, and protective behaviours acquired as measured by Sexual Experiences Survey, Self-efficacy Scale, Self-protection Against Rape Scale, Sexual Communication Survey and the Ohio University Sexual Assault Risk Reduction Program Knowledge Measure
Follow-up	3 and 6 months following intervention
Notes	-

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Participants were "randomly assigned"
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias)	Low risk	Attrition at 3 months: 19% (94/500). Attrition at 6 months: 30% (150/500). Reasonable rates for 3 and 6 months. Loss to follow-up unlikely to be associated with outcome
Selective reporting (reporting bias)	Low risk	All outcomes reported, mostly in full (means and SDs for continuous scales; n and % for categorical scales) with summary statistics
Blinding of participants and personnel (performance bias)	High risk	Blinding not possible. Not clear how much training facilitators received in order to minimise differences in delivery of intervention
Blinding of outcome assessment (detection bias)	Unclear risk	Not stated

Gidycz 2011

Methods	Cluster-RCT. 6 halls of residence matched by size (2 small, 2 medium, 2 large) and 1 of each pair randomly assigned to treatment or control
Participants	635 students (98% aged 18-19 years; males only) in 1st year dormitories in a Midwestern university, USA
Interventions	Intervention: prevention programme consisting of discussions of social norms, bystander intervention, "opportunity to vent", and presentation to peers, lasting 1.5 hours. Delivery by 4 undergraduate students and 2 doctoral psychology student facilitators who had received 20-25 hours of didactic learning, practiced using role plays and been given the study protocol. 4 months after the initial intervention, a booster session of 1 hour

	was given. 3 halls of residence Control: no intervention. 3 halls of residence
Outcomes	Perpetration of sexual aggression, rape myth acceptance, attitudes towards women, bystander intervention and understanding of consent as measured by the Illinois Rape Myth Acceptance Scale, Hypergender Ideology Scale, Social Norms Measure, Sexual Social Norms Inventory and Sexual Experiences Survey
Follow-up	4 and 7 months post-intervention
Notes	-

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Halls "randomly assigned"
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias)	Low risk	Attrition at 4 months: 17% (106/635). Attrition at 7 months: 22% (141/635). Reasonable rates for 4 and 7 month follow-up
Selective reporting (reporting bias)	High risk	Results not fully reported. For rape myth acceptance, only states that measures "did not vary over time as a function of group" with no further information. For other outcomes only summary statistics were provided
Blinding of participants and personnel (performance bias)	Low risk	Blinding not possible, but facilitators received training and were supervised by study authors. 25% of interventions were watched and evaluated by research assistant to ensure consistent delivery
Blinding of outcome assessment (detection bias)	Unclear risk	Not stated

Holcomb 2002

Methods	Cluster-RCT. Classes randomly assigned to intervention or control
Participants	141 freshman athletes (65.9% men, 34.1% women; mean age 18.1 years) enrolled in health education class at a university, USA
Interventions	Intervention: mixed gender date rape prevention programme consisting of case scenarios and discussions. Delivered by 2 women health education instructors who had a script, training protocol and the research design protocol to hand. The intervention was delivered as a single 50-minute session. 56 students Control: no intervention. 85 students
Outcomes	Attitudes towards date rape, as measured by the Date Rape Attitudes Survey

Follow-up	Post-test "after presentation" (presumably immediately after but unclear)
Notes	-

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Course sections assigned "randomly"
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias)	Low risk	Not directly stated but analyses conducted on n = 141 implying no loss to follow-up
Selective reporting (reporting bias)	Low risk	Number of participants and means reported with summary statistics. No SD/SE reported
Blinding of participants and personnel (performance bias)	High risk	Blinding not possible. Some effort made to ensure intervention delivery remained the same through training of staff but no mention of how adherence to guidelines was monitored
Blinding of outcome assessment (detection bias)	Unclear risk	Not stated

Jaycox 2006

Methods	Cluster-RCT. Within schools, 'tracks' and classes were randomly allocated to receive the intervention or control
Participants	2464 9th grade students (mean age 14.41 years; 48% male, 52% female) from 10 high schools consisting of predominantly (> 80%) Latino students, USA
Interventions	Intervention: 'Break the Cycle: Ending Violence' programme consisting of lecture, role play, videos and exercises covering domestic violence and the law. Delivered by bilingual, bicultural attorneys. The intervention was delivered in 3 sessions (duration unclear) over 3 consecutive days with a follow-up session 6 months later. The intervention was implemented on 3 separate cohorts over 3 school years. 1232 students Control: standard health curriculum. 1232 students
Outcomes	Episodes of victimisation and dating violence, knowledge and norms regarding dating violence, and propensity to seek help as measured by several scales developed by the authors to assess knowledge and help-seeking behaviours. Also used Revised Conflict Tactics Scale
Follow-up	Immediate and 6 months post-test
Notes	-

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Classes "randomly allocated"
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias)	Low risk	Initially 3800 students assigned to intervention or control. Exclusions due to non-consent from students or their parents (or both) and non-completion of post-test surveys. Similar rates in each arm. Overall attrition: 33% (1260/3800). Reasonable for 6-month follow-up
Selective reporting (reporting bias)	Low risk	All outcomes reported in full (number of participants, means and SDs)
Blinding of participants and personnel (performance bias)	Low risk	Blinding not possible but 10% of classes were observed by an expert to assess fidelity to the intervention protocol, thereby minimising variability in delivery of intervention as much as possible
Blinding of outcome assessment (detection bias)	Unclear risk	Not stated

Kuffel 2002

Methods	RCT. Participants were randomly assigned to 1 of 2 treatment groups or control
Participants	Initially 143 students invited. 123 undergraduate students participated (45 male, 78 female; ages not stated) at a large state university, USA
Interventions	Intervention 1: prevention programme consisting of a video entitled "Choices" followed by a facilitated discussion. Female-only presenters. 47 students Intervention 2: prevention programme consisting of a video entitled "Choices" followed by a facilitated discussion. Male-female co-presenters. 28 students The presenters were Master's-level psychology graduate students. Each intervention was delivered as a single session (duration unclear) Control: students watched an episode of the situation comedy television programme, "Friends". 48 students
Outcomes	Attitudes toward dating aggression as measured by Relationship Expectations Scale, Scenarios for Identifying Abuse, and the Revised Conflict Tactics Scale
Follow-up	Immediate and 4-6 weeks post-test
Notes	-

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Participants "randomly assigned"
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias)	Low risk	Attrition rate at 4-6 weeks: 14% (20/143). Reasonable rate
Selective reporting (reporting bias)	Low risk	Number of participants and means provided but no SD/SE. Summary statistics provided
Blinding of participants and personnel (performance bias)	High risk	Blinding not possible. No mention of any training or monitoring of facilitators
Blinding of outcome assessment (detection bias)	Unclear risk	Not stated

Lanier 1998

Methods	RCT. Participants randomly allocated to treatment and control in "approximately equal numbers"
Participants	615 initially invited. 436 first-year students participated (98.3% aged 17-19 years; no information on sex distribution) at an elite, private university, USA
Interventions	Intervention: students watched a play with 6 scenes following script entitled "Scruples" depicting date rape. The intervention was delivered as a single 1-hour session. 218 students (estimated) Control: students watched a play addressing multi-cultural issues. 218 students (estimated)
Outcomes	Attitudes towards date rape as measured by College Date Rape Attitude Survey
Follow-up	Immediate post-test
Notes	-

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Participants "randomly assigned"
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias)	Unclear risk	Unclear; no information provided
Selective reporting (reporting	Low risk	Outcome reported, though only mean score (no

bias)		SD) and summary statistics reported
Blinding of participants and personnel (performance bias)	High risk	Blinding not possible. Unclear who delivered intervention or what training and monitoring they received
Blinding of outcome assessment (detection bias)	Unclear risk	Not stated

Macgowan 1997

Methods	Cluster-RCT. Classes matched and randomised to intervention or control
Participants	802 middle school students enrolled, 440 were included in analysis (aged 11-16 years, mean 12.6 years, SD 1.1; 193 males, 247 females) from a school in Miami, USA (62 students with learning difficulties and 300 students who did not complete minimum of 19/21 questions on survey were excluded)
Interventions	Intervention: discussion on recognising dating violence, characteristics of strong and weak relationships, and problem-solving and communication skills. 5 sessions lasting 1 hour each over the course of 5 days. Delivered by facilitators who had received 3 hours of training by author of curriculum. Facilitators also had a checklist of each day's materials to be covered to hand. 241 students Control: wait list control. 199 students
Outcomes	Knowledge about dating violence, as measured by a questionnaire (developed by authors) based on the curriculum
Follow-up	2 days post-test
Notes	-

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Not stated
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias)	High risk	After excluding students with learning difficulties (n = 62) and those who did not complete minimum of 19/21 questions on survey (n = 300), only 440 of 802 eligible students included in analysis (45% attrition). This is high, especially for immediate follow-up. Also may reduce generalisability of results
Selective reporting (reporting bias)	Low risk	Outcomes reported fully (means, numbers participating and summary statistics)
Blinding of participants and personnel	High risk	Blinding not possible. Although facilitators were trained to minimise differences in delivery of intervention, no mention of how this was monitored

(performance bias)

Blinding of outcome assessment (detection bias)	Unclear risk	Not stated

Miller 1999

Methods	RCT. Students randomly allocated to treatment or control using random number generator
Participants	90 students enrolled, 41 were included in analysis (aged 10-14 years, mean 12.8 years, SD 1.0, majority aged 13 years; 12 males, 29 females) from grades 6-9 at public middle schools in Miami Dade County, USA. Students came from 2 schools representing diverse populations
Interventions	Intervention: teen dating violence intervention and prevention (Teen VIP). Group discussed domestic violence and community resources available, and received psycho-educational sessions exploring the ideas of violence, equality, self esteem, dating violence and anger management. The intervention was delivered over 5 days (duration unclear). 20 students Control: group discussed domestic violence and community resources available but using a person-centred approach. 21 students The study targeted students with a history of exposure to domestic violence or involvement in an abusive relationship. Delivered by National Council of Jewish Women
Outcomes	Healthy functioning, equalitarian/non-controlling/non-abusive dating relationships as measured by Behaviour Assessment System for Children, Justification of Verbal and Coercive Tactics Scale, Adolescent Coping Orientation for Problem Experiences and Attitudes Toward Relationships and Achievement Scale
Follow-up	1 week post-test
Notes	-

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Random number generator used to allocate students
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias)	High risk	High attrition rate: 55% (50/91). This was due to students not completing the intervention programme (minimum 50% of 5-week intervention) or not completing the questionnaires. It is unclear whether attrition was evenly distributed within the 2 arms
Selective reporting	Low risk	All outcomes reported fully (number of participants, means and

(reporting bias)		SDs)
Blinding of participants and personnel (performance bias)	High risk	Blinding not possible. No mention of whether counsellors delivering the intervention received guidance or monitoring
Blinding of outcome assessment (detection bias)	Unclear risk	Not stated

Miller 2012

Methods	Cluster-RCT. High schools allocated to intervention or control by computer generated random allocation schedule
Participants	2006 male student athletes (data on age distribution not provided) from grades 9-12 from 16 high schools, USA
Interventions	Intervention: "Coaching Boys into Men" sessions that cover respect and prevention of dating violence. Delivered by the athletes' usual athletic coaches who had received 1 hour of training. Sessions lasted 10-15 minutes and occurred weekly over a period of 12 weeks (total number of sessions unclear. 1008 students Control: no intervention. 998 students
Outcomes	Abuse perpetration, knowledge and recognition of abusive behaviour, gender equitable attitudes, and intentions to intervene as measured by Recognition of Abusive Behaviour questionnaire, Gender Equitable Norms Scale and Intentions to Intervene
Follow-up	12 weeks post-intervention
Notes	-

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer-generated random sequence allocation
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias)	High risk	Attrition in intervention group: 16% (161/1008). Attrition in control group: 4.7% (47/998). Reasonable rates overall but worrying that intervention group attrition 3 times higher than control, suggesting possibility of bias
Selective reporting (reporting bias)	Low risk	All outcomes reported fully (number of participants, means and SDs)
Blinding of participants and personnel (performance bias)	High risk	Blinding not possible. Coaches received 1 hour of training but no mention of whether their interventions were monitored

Blinding of outcome assessment (detection bias)	Unclear risk	Not stated

Orchowski 2008

Methods	RCT. Students randomly allocated to intervention or control
Participants	300 female undergraduate students (91.7% aged 18-19 years) at a Midwestern university, USA
Interventions	Intervention: part 1: didactic/interactive course and video; part 2: self defence course lasting 2 hours, delivered 2 weeks after part 1; part 3: booster revision course lasting 1 hour, delivered 2 months after part 1. Delivered by female graduate students. 157 students Control: Peer-based vaccine preventable disease education and awareness program. 143 students
Outcomes	Incidence of sexual assault, recognition of risky dating situations, knowledge of resources available, and self efficacy in responding to threatening dating situations, as measured by Sexual Experiences Survey, Dating Self-Protection Against Rape Scale, Sexual Communication Survey, Self-efficacy Scale, Rape Attribution Scale and a multiple choice test of knowledge
Follow-up	2 and 4 months post-test
Notes	-

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Study used "random assignment"
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias)	Low risk	Attrition rate at 2 months: 12% (36/300). Attrition rate at 4 months: 54% (163/300). Reasonable rate for 2 and 4 months
Selective reporting (reporting bias)	Low risk	All outcomes reported fully (number of participants, means and SDs for continuous scales; n and % for categorical scales)
Blinding of participants and personnel (performance bias)	Low risk	Blinding not possible, but facilitators received training and were supervised to ensure they adhered to study protocol
Blinding of outcome assessment (detection bias)	Unclear risk	Not stated

Pacifici 2001

Methods	Cluster-RCT. Classes randomised to intervention or control

Participants	458 10th grade high school students (mean age 15.8 years, SD 0.6; 48% male, 52% female) from 23 classes in 2 high schools in Pacific Northwest region, USA
Interventions	Intervention: instruction, video and interactive video depicting a virtual date, presented in four 50-minute sessions over a period of 10 days. Delivery by experienced health education teachers who had received a guide and 2-hour orientation session. 239 students Control: no intervention. 219 students
Outcomes	Knowledge and attitudes towards dating violence as measured by Sexual Attitude Survey, Rape Myth Acceptance Subscale, Adversarial Sexual Beliefs and Sex Role Stereotyping
Follow-up	Immediate post-test
Notes	-

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Random number sequence generated by computer
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias)	Low risk	Attrition rate: 16% (89/547)
Selective reporting (reporting bias)	Low risk	All outcomes reported fully (number of participants, means and SDs)
Blinding of participants and personnel (performance bias)	High risk	Blinding not possible. Teachers delivering intervention received training and detailed guidance but were not monitored
Blinding of outcome assessment (detection bias)	Unclear risk	Not stated

Pinzone 1998

Methods	RCT. Participants randomly assigned to intervention or control
Participants	152 undergraduate introductory psychology students (72% aged 18-20 years, 28% aged > 21 years; 59 males, 93 females) from 2 universities in the Midwest, USA
Interventions	Intervention: information of statistics, how to be safe, discussion of cases of rape and rape myth acceptance worksheets delivered by graduate psychology student facilitators. The duration of the intervention is unclear. 76 students Control: received a sexually transmitted disease prevention programme. 75 students
Outcomes	Attitudes towards rape as measured by Rape Myth Acceptance Scale, Rape

		Empathy Scale, Attitudes Toward Women Scale and Acquaintance Rape Scenarios
Follow-up		1 week post-test
Notes		-

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Participants were "randomly assigned"
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias)	Low risk	Attrition rate: 10% (15/152). Unlikely to have affected results
Selective reporting (reporting bias)	Low risk	All outcomes reported fully (number of participants, means and SDs)
Blinding of participants and personnel (performance bias)	High risk	Blinding not possible. Facilitators received some training but no mention of any monitoring to ensure adherence to protocol
Blinding of outcome assessment (detection bias)	Unclear risk	Not stated

Saberi 1999

Methods	Cluster-RCT. Classes were randomly assigned to 1 of 4 treatment groups
Participants	178 first-year undergraduate students (78 men, 88 women; aged 18-25 years, mean 18.5 years) from 15 "Survival Course" classes at a large Southwestern university, USA
Interventions	Intervention 1: watched a drama performance depicting vignettes of acquaintance rape and rape myths and followed by an interactive discussion between students, facilitators and actors. 44 students Intervention 2: watched a video recording of the drama performance followed by facilitated discussion. 48 students Intervention 3: received a didactic lecture using a feminist framework to discuss rape. 35 students Each intervention was delivered as a single session (duration unclear) Control: received a lecture on stress management. 38 students Interventions were delivered by Master's students of counselling psychology and social work who had received training on how to deliver the interventions
Outcomes	Attitudes towards acquaintance rape as measured by Attitudes Towards Women Scale, Rape Myth Acceptance Scale and Rape Empathy Scale
Follow-up	2-4 days post-intervention
Notes	-

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Classes were "randomly assigned"
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias)	Low risk	Initial sample: 178 students (from 15 classes). 12 students were eliminated because they were statistical outliers who gave non-serious responses. Low attrition rate that is unlikely to be related to outcomes
Selective reporting (reporting bias)	Low risk	All outcome measures reported in full (number of participants, means and SDs given)
Blinding of participants and personnel (performance bias)	High risk	Blinding not possible. Facilitators received training and an outline to follow but no mention how adherence to outline and standardisation of delivery was monitored
Blinding of outcome assessment (detection bias)	Unclear risk	Not stated

Salazar 2006

Methods	RCT. Individuals randomly allocated to intervention or control
Participants	47 adjudicated adolescent males (mostly of African-American origin) recruited from the Juvenile and Justice Courthouse, De Kalb County, Georgia, USA. These individuals may be at higher risk of violence. Ages not provided. From schools grades 7-12, mean grade 8.83, SD 1.41 (secondary prevention)
Interventions	Intervention: interpersonal violence prevention programme consisting of 5 parts. First, a presentation, film and discussion (2 hours); second, attendance at court to witness the Principles of Batterers' Intervention Program (2 hours); third and fourth, attendance at 2 classed for men working in the 6-month Batterers' Program (30 minutes and 2 hours) and fifth, a review class. 21 students Control: no intervention. 16 students
Outcomes	Knowledge of interpersonal violence as measured by Inventory of Knowledge and Attitudes, Inventory of Beliefs about Wife Beating (subscale) and Revised Conflict Tactic Scale (modified)
Follow-up	Immediate and 3 months post-test
Notes	-

Risk of bias table

Bias	Authors' judgement	Support for judgement

Random sequence generation (selection bias)	Unclear risk	Not stated
Allocation concealment (selection bias)	Low risk	Sealed envelopes used
Incomplete outcome data (attrition bias)	Low risk	Attrition rate: 21% (10/47). Reasonable
Selective reporting (reporting bias)	High risk	Incomplete reporting of outcomes. Summary statistics given but no absolute numbers
Blinding of participants and personnel (performance bias)	High risk	Blinding not possible. No mention of any measures taken to train or monitor facilitators
Blinding of outcome assessment (detection bias)	Unclear risk	Not stated

Schewe 1996

Methods	RCT. Participants randomly allocated to 1 of 2 interventions or control
Participants	74 male undergraduates (aged 18-33 years, mean 19.7 years) at a Midwestern university, USA who scored ≥ 15 on the Attraction to Sexual Aggression Scale (i.e. high-risk population)
Interventions	Intervention 1: 50-minute video presentation and behavioural exercises targeting poor victim empathy and problematic rape outcome expectancies. 22 students Intervention 2: 50 minute video presentation and behavioural exercises targeting commonly held false beliefs that promote or condone coercive sexual behaviour. 26 students Control: no intervention. 26 students
Outcomes	Attitudes and beliefs around dating and relationship violence, as measured by the Acceptance of Interpersonal Violence Scale, Adversarial Sexual Beliefs Scale, Rape Myth Acceptance Scale, Affective Adjective Checklist, and Rape Conformity Assessment
Follow-up	Immediate post-test
Notes	-

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Participants "randomly assigned"
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias)	Low risk	No loss to follow-up
Selective reporting (reporting bias)	Low risk	All outcomes reported fully (number of participants, means and SDs)

Blinding of participants and personnel (performance bias)	High risk	Blinding not possible. No mention of whether people delivering interventions received training or were monitored to assess adherence to study protocol
Blinding of outcome assessment (detection bias)	Unclear risk	Not stated

Senn 2011

Methods	RCT. Participants randomly allocated to 1 of 2 intervention groups or control
Participants	244 female first year undergraduate students (aged 17-25 years, mean 18.89 years, SD 1.62) at a university, USA
Interventions	Intervention 1: Assess, Acknowledge, Act (AAA) sexual assault resistance programme, consisting of 3 x 3-hour sessions. 67 students Intervention 2: enhanced version of the AAA which added a 3-hour sexuality and relationships unit before the basic AAA. 50 students Sessions were delivered by 2 female graduate students who had been "extensively trained" Control: no intervention. 127 students
Outcomes	Incidence of sexual assault, improved risk detection and action, knowledge of self defence strategies and self defence self efficacy, as measured by Perception of Risk Scale, Risk Prevention Survey, Self-Defense Self-Efficacy, a qualitative measure, Sexual Experiences Survey (revised), Fear of Rape Scale and Sexual Assertiveness Scale
Follow-up	1 week, 3 months and 6 months post-test
Notes	-

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Participants "randomly assigned"
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias)	Low risk	Low attrition rate: 12% (30/244)
Selective reporting (reporting bias)	Low risk	All outcomes reported. Most outcomes reported fully (n and % provided for Sexual Experiences Survey). For some outcomes only summary statistics provided
Blinding of participants and personnel (performance bias)	High risk	Blinding not possible. Uniformity of intervention delivery attempted through extensive training of facilitators. Monitoring of facilitators was carried out by self reported adherence to protocols, but no objective measure used
Blinding of outcome assessment (detection	Unclear risk	Not stated

bias)

Shultz 2000

Methods	RCT. Participants randomly allocated to intervention or control
Participants	60 undergraduate students (aged 18-22 years, mean 19.55 years; 25 males, 35 females) at a Midwestern university, USA
Interventions	Intervention: "Campus Rape Prevention", an interactive drama programme. No further details of programme content included. 30 students The duration of the intervention was unclear Control: no intervention. 30 students
Outcomes	Awareness of risks of date rape and behavioural intent, as measured by the College Date Rape Attitude and Behavior Survey (modified) and the Rape Myth Acceptance Scale
Follow-up	Immediate post-test
Notes	-

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Students "randomly" assigned
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias)	Low risk	Not directly reported, but analyses conducted on 56 people suggesting a low attrition rate of 7% (4/60)
Selective reporting (reporting bias)	High risk	All outcomes reported though only means and summary statistics provided. No numbers of participants or SD/SE
Blinding of participants and personnel (performance bias)	High risk	Blinding not possible. No information provided on who delivered the interactive programme or any training they had received
Blinding of outcome assessment (detection bias)	Unclear risk	Not stated

Stephens 2009

Methods	RCT. Participants randomly allocated to treatment or control
Participants	146 undergraduate males (aged 18-29 years, mean 19.3 years, SD 1.8) at a Northwestern university, USA
Interventions	Intervention: rape prevention programme consisting of video presentation and answering questions. The intervention was delivered as a single 50-minute session. 27 students Control: watched the video but did not answer questions afterwards. 38

	students
Outcomes	Attitudes towards, and knowledge of, date rape as measured by the Sexual Experiences Survey (modified), Rape Myth Scale, Rape Myth Acceptance Scale, Rape Empathy Scale, Sex-Related Alcohol Expectancies Scale and Elaboration Likelihood Model
Follow-up	11 days and 5 weeks post-test
Notes	-

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Participants "randomised" into groups
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias)	High risk	High rate of attrition. Attrition at 11 days' follow-up: 43% (63/146). Attrition at 5 weeks' follow-up: 56% (81/146). Unclear whether loss to follow-up was similar in 2 arms
Selective reporting (reporting bias)	Low risk	All outcomes reported fully (number of participants, means and SDs)
Blinding of participants and personnel (performance bias)	High risk	Blinding not possible. No mention on training for personnel delivering intervention or monitoring to ensure adherence to protocol
Blinding of outcome assessment (detection bias)	Unclear risk	Not stated

Wolfe 2003

Methods	RCT. Random assignment of participants to intervention or control modified to reflect 2:1 (intervention:control) ratio
Participants	191 teenagers (aged 14-16 years, mean 15.18 years, SD 1.09; approximately 50% males and 50% females) with history of child maltreatment recruited from Child Protection Services in Canada who may be at higher risk of violence (Secondary prevention)
Interventions	Intervention: Youth Relationships Project focusing on increasing knowledge and awareness of dating violence, skills development and social action to prevent dating violence. Delivered in 18 sessions (duration unclear) over 4 months by social workers and community professionals who had received 10 hours of training over 2 days. 96 students Control: no intervention. 62 students
Outcomes	Rates of abuse experienced and perpetrated and attitudes towards dating violence as measured using the Conflict in Adolescent Dating Relationships Inventory, Trauma Symptoms Checklist and Adolescent Interpersonal Competence Questionnaire

Follow-up	Follow-up bi-monthly after completing the intervention. Mean follow-up duration was 16 months (with mean of 4.7 follow-up assessments in total per person)
Notes	-

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Study had a "random" design
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias)	Low risk	Attrition rate: 17% (33/191). Unlikely to affect results
Selective reporting (reporting bias)	Low risk	All outcomes reported fully (n and % for categorical scales; number of participants, means and SDs for continuous scales)
Blinding of participants and personnel (performance bias)	Low risk	Blinding not possible, but performance bias minimised by training of staff delivering interventions, use of a detailed manual, and audiotaping and reviewing of sessions to assess adherence to protocol
Blinding of outcome assessment (detection bias)	Unclear risk	Not stated

Wolfe 2009

Methods	Cluster-RCT. Schools stratified by size (≥ 500 vs. < 500) and location (urban vs. rural) and randomly assigned to intervention or control
Participants	1722 9th grade students (aged 14-15 years; 52.8% girls, 47.2% boys) from 20 public schools, Canada
Interventions	Intervention: "Fourth R: Skills for Youth Relationships", incorporating personal safety and injury prevention, healthy growth and sexuality, and substance use and abuse. Sessions were integrated with core health lessons. A total of 21 75-minute lessons were delivered by normal health teachers who had received 6 hours of additional training. 968 students Control: taught on the same topics but without the teachers having received any training or programme materials. 754 students
Outcomes	Self reported physical dating violence, attitudes towards dating violence and negotiation skills, as measured by the Conflict in Adolescent Dating Relationships Inventory
Follow-up	2.5 years post-intervention
Notes	-

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Random sequence generated by tossing a coin
Allocation concealment (selection bias)	High risk	Coin toss allows investigators and participants to see their allocation
Incomplete outcome data (attrition bias)	Low risk	No loss to follow-up (all 1722 students assigned to groups were included in analysis)
Selective reporting (reporting bias)	Low risk	All outcomes reported fully (n and %)
Blinding of participants and personnel (performance bias)	High risk	Blinding not possible. Teachers delivering intervention received some additional training. No mention of monitoring to assess adherence to protocol
Blinding of outcome assessment (detection bias)	Unclear risk	Not stated

Wolford 1993

Methods	RCT. Students randomly selected to participate in study as well as being randomly allocated to 1 of 3 intervention groups or control
Participants	132 1st year undergraduate students (45.5% male, 54.4% female; ages not stated) at an urban university, USA
Interventions	Intervention 1: received a lecture programme. 27 students Intervention 2: received a video programme. 36 students Intervention 3: received a role play programme. 32 students Each intervention was delivered as a single session (duration unclear) Control: received no intervention. 37 students
Outcomes	Attitudes towards rape as measured by the General Attitudes Toward Rape Scale
Follow-up	Immediate and 3-4 months post-test
Notes	-

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Participants "randomly assigned"
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias)	Unclear risk	Attrition rate not reported

Selective reporting (reporting bias)	Low risk	Outcomes reported fully (number of participants, means and SDs)
Blinding of participants and personnel (performance bias)	High risk	Blinding not possible. Facilitators were experienced in delivering these types of interventions but there is no mention of how adherence to protocol was monitored
Blinding of outcome assessment (detection bias)	Unclear risk	Not stated

Woodin 2010

Methods	RCT. Couples allocated randomly to treatment or control
Participants	50 college dating couples (aged 18-26 years, female mean 19.64 years (SD 1.26), male mean 20.28 years (SD 1.42)) who had reported at least 1 act of male to female physical aggression in their current relationship (who may be at higher risk of violence) at a state university in New York, USA (secondary prevention)
Interventions	Intervention: 2-hour screening interview followed by 45 minutes of motivational feedback (targeting physical aggression and its risk factors) to individuals and 15 minutes of motivational feedback to couples. The feedback was provided by advanced graduate students in clinical psychology with 20 hours of training who followed a manual. 25 couples Control: minimal, non-motivational feedback after their screening interview. 25 couples
Outcomes	Rate of partner aggression, as measured by the Conflict Tactics Scale 2, AUDIT, Justification of Verbal/Coercive Tactics Scale, Attitudes About Aggression in Dating Situations, Dyadic Adjustment Scale, Investment Model Scale and Beck Depression and Anxiety Inventories
Follow-up	3, 6 and 9 months post-test
Notes	-

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Couples were "randomly assigned"
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias)	Low risk	Low attrition rates: 88% of couples completed 3 months' follow-up; 90% completed 6 months' follow-up; and 62% completed 9 months' follow-up
Selective reporting (reporting bias)	High risk	Summary statistics reported (β, SE and t-values) but no absolute values
Blinding of participants	High risk	Blinding not possible. Training given to facilitators and

and personnel (performance bias)	manual, but as intervention is heavily driven by facilitator and no mention of monitoring to ensure adherence to protocol, performance bias is possible
Blinding of outcome assessment (detection bias)	Unclear risk	Not stated

Yom 2005

Methods	RCT. Students randomly assigned to intervention or control group
Participants	79 first year middle school students from a rural boys' middle school in Kwangwon Province, Republic of Korea (information on ages not provided but Korean middle schools start at age 12-13 years)
Interventions	Intervention: interactive CD-ROM including graphics, animations, cartoons, video and quiz with feedback on the subject of preventing sexual violence. The CD-ROM was used in a classroom with a teacher. The intervention was delivered as a single 1-hour session. 39 students Control: no intervention. 40 students
Outcomes	Attitudes towards sexual violence and knowledge as measured by the Knowledge and Attitudes of Sexual Violence Questionnaire developed by the authors
Follow-up	8 days post-test
Notes	-

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Students were "randomised"
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias)	Low risk	No loss to follow-up
Selective reporting (reporting bias)	Low risk	All outcomes reported (means, SD, F, P values)
Blinding of participants and personnel (performance bias)	High risk	Not blinded. No mention of how teachers' adherence to study protocol was monitored
Blinding of outcome assessment (detection bias)	Unclear risk	Not stated

Footnotes

RCT: randomised controlled trial; SD: standard deviation; SE: standard error. Blinding of participants and personnel was not possible in any studies. Studies in which personnel delivering the intervention received guidance (e.g. a script or manual to follow) *and* adherence to the guidance was monitored (e.g. through an

independent person watching or recording a sample of sessions) were classified as having a low risk of bias. All other studies were classified as having a high risk of bias.

11.2 CHARACTERISTICS OF EXCLUDED STUDIES

Baumann 2004

Reason for exclusion	Not randomised. Allocation done by class mix and size. "Students were assigned by class in blocks to participate in either the experimental or control group"

Callahan 2003

Reason for exclusion	Descriptive only; no intervention

Carpentier 2006

Reason for exclusion	Intervention aimed at children aged 5-12 years

De Gannes 2009

Reason for exclusion	Not randomised

Echols 1998

Reason for exclusion	Not randomised

Edwards 2000

Reason for exclusion	Subject is domestic violence, not dating violence

Foshee 2000

Reason for exclusion	Preliminary baseline descriptive data and report only (no results)

Foshee 2007

Reason for exclusion	Review of other studies that are already included

Foshee 2009

Reason for exclusion	No intervention

Foshee 2011

Reason for exclusion	No intervention

Foshee 2012

Reason for exclusion	Although overall aim is to prevent dating abuse in teenagers, intervention is targeted at their carers

Foubert 2010

Reason for exclusion	Not randomised. Participants were those whose instructors required them to take the Women's Program (and controls were randomly selected)

Frazier 1994

Reason for exclusion	Not randomised

Gidycz 1995

Reason for exclusion	No intervention

Gidycz 2007

Reason for exclusion	No intervention

Gidycz 2008a

Reason for exclusion	No intervention

Gidycz 2008b

Reason for exclusion	No intervention

Gray 1990

Reason for exclusion	Questionnaire used to assess outcomes was developed by authors and the validity and reliability have not been tested. Only little information on how questions were written is provided. Also, unclear age distribution of participants: 44% aged 17 to 21 years, and 56% aged > 22 years. Unable to ascertain whether this study meets our inclusion criteria of > 80% of participants aged < 25 years. Authors contacted but no response received

Hanson 1993

Reason for exclusion	Not randomised

Hendy 2003

Reason for exclusion	No intervention

Holcomb 1993a

Reason for exclusion	Descriptive; no intervention

Indermaur 1998

Reason for exclusion	Review of other studies

Jaycox 2006b

Reason for exclusion	Descriptive only

Jensen 1993a

Reason for exclusion	Not randomised

Jouriles 2009

Reason for exclusion	Descriptive review of the literature

Kilian 1996

Reason for exclusion	Not randomised

Krajewski 1996

Reason for exclusion	2 schools participating in study were not randomly allocated to treatment or control. School A was assigned to the experimental group because it had "one teacher who could consistently teach all four health education classes" (p. 100)

Lavoie 1995

Reason for exclusion	No control group

Lonsway 2000

Reason for exclusion	The 'intervention' group analysed consisted of mix of students who had received intervention and those who had not

Melendez 2003

Reason for exclusion	Focus on safe sex (prevention of sexually transmitted infections), not dating violence

Michener 1997

Reason for exclusion	Not randomised

Pittman 2000

Reason for exclusion	Review of other studies

Proto-Campise 1998

Reason for exclusion	Allocation to intervention and control not randomised. "Availability sample"

Rothman 2006

Reason for exclusion	Not randomised

Sanchez-Cesareo 2002

Reason for exclusion	Not randomised

Taylor 2010

Reason for exclusion	Participants did not meet our age criteria (aged 11-13 years)

Testa 2010

Reason for exclusion	Intervention delivered to mothers of participants

Weisz 2001

Reason for exclusion	Not randomised

Wolf 2004

Reason for exclusion	Non-randomised qualitative study

Wolfe 2012

Reason for exclusion	Convenience subsample of Wolfe 2009

11.3 CHARACTERISTICS OF STUDIES AWAITING CLASSIFICATION

Abrams 1992

Methods	Unknown: full text not available
Participants	
Interventions	
Outcomes	
Notes	

Avina 2005

Methods	Unknown: full text not available
Participants	
Interventions	
Outcomes	
Notes	

Bernardo 1994

Methods	Unknown: full text not available
Participants	
Interventions	
Outcomes	
Notes	

Bond 1995

Methods	Unknown: full text not available
Participants	
Interventions	
Outcomes	
Notes	

Brown 2002

Methods	Unknown: full text not available
Participants	
Interventions	
Outcomes	
Notes	

Chrappa 1991

Methods	Unknown: full text not available
Participants	
Interventions	
Outcomes	
Notes	

Deiter 1994

Methods	Unknown: full text not available
Participants	
Interventions	
Outcomes	
Notes	

Halvorson 2007

Methods	Unknown: full text not available
Participants	
Interventions	
Outcomes	
Notes	

Heimerdinger 2006

Methods	Unknown: full text not available
Participants	
Interventions	
Outcomes	
Notes	

Hill 1995

Methods	Unknown: full text not available
Participants	
Interventions	
Outcomes	
Notes	

Holcomb 1993

Methods	Unknown: full text not available
Participants	
Interventions	
Outcomes	
Notes	

Lawson 2006

Methods	Unknown: full text not available
Participants	
Interventions	
Outcomes	
Notes	

Layman-Guadalupe 1996

Methods	Unknown: full text not available
Participants	
Interventions	
Outcomes	
Notes	

Murphy 1997

Methods	Unknown: full text not available
Participants	
Interventions	
Outcomes	
Notes	

Northam 1997

Methods	"Modified random assignment of participants..."
Participants	180 male students (mean age 20 years) belonging either to ROTC (Reserve Officers' Training Corps) programme or campus dormitory at a large Midwestern university
Interventions	Rape prevention programme consisting of statistics, a film entitled "Campus Rape", and a discussion, lasting 1 hour in total. Delivered by 2 undergraduate students (1 male and 1 female) in the School of Social Work who had received training in presenting and facilitating the programme
Outcomes	Attitudes towards rape as measured by Adversarial Sexual Beliefs Scale, Sex Role Stereotyping Scale, Rape Myth Acceptance Scale and Sexual Experiences Survey
Notes	

Sanchez 2011

Methods	Unknown: full text not available
Participants	
Interventions	
Outcomes	
Notes	

Walther 1986

Methods	Cluster-RCT. Classes matched by geographic and grade variables, and then randomly allocated to intervention or control
Participants	81 male students (ages unclear) at private, urban parochial high schools,

	USA
Interventions	The intervention group watched a film on wife abuse ("Battered Women"). The control group watched a neutral control film about ageing
Outcomes	Attitudes towards wife abuse as measured by Wife Abuse Survey
Notes	

The intervention group watched a film on wife abuse ("Battered Women").
The control group watched a neutral control film about ageing

12 Summary of findings tables

12.1 1 SUMMARY OF FINDINGS

Educational and skills-based interventions compared with control for the prevention of relationship and dating violence in adolescents and young adults

Patient or population: adolescents and young adults (aged 12-25 years)
Settings: any community or educational setting
Intervention: educational and skills-based interventions to prevent relationship and dating violence
Comparison: control intervention

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of Participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	Control group	Intervention group				
Episodes of relationship violence (events) (0-12 months)	164 per 1000[1]	133 per 1000[2] (105 to 167)	RR 0.81 (0.64 to 1.02)	3405 (8)	⊕⊕⊕ ⊖ Moderate[3]	
Physical health	See comments	See comments	Not estimable	None	Not estimable	No studies reported physical health outcomes
Psychosocial health	See comments	See comments	Not estimable	None	Not estimable	No studies reported psychosocial health outcomes
Attitudes towards relationship violence (0-12 months) (higher score = less accepting of dating violence)	The mean attitudes score (measured by RMAS 19) ranged across control	The mean attitudes score in the intervention groups was on average **0.12 higher** (95% CI -0.02 to 0.27)		5256 (22)	⊕⊕⊕⊕ Moderate[5]	

	groups from 37 to 52[4]				
Behaviour in relationship violence (0-12 months) (higher score = more positive behaviour)	The mean behaviour score (measured by DBS) ranged across control groups from 38 to 51[6]	The mean behaviour score in the intervention groups was **0.07 lower** (95% CI -0.31 to 0.16)	**887** (4)	⊕⊕⊕ Moderate[7]	
Knowledge of relationship violence (0-12 months) (higher score = better knowledge)	The mean knowledge score (as measured by a variety of scales) ranged across control groups from 0 to 37	The mean knowledge score in the intervention groups was **0.43 higher** (95% CI 0.25 to 0.61)	**6206** (10)	⊕⊕⊕ ⊖ Moderate[8]	
Skills related to relationship violence (0-12 months) (higher score = better skills)	The mean skills score (as measured by SCS) ranged across control groups from 34 to 43[9]	The mean skills score in the intervention groups was **0.03 higher** (95% CI -0.11 to 0.17)	**1369** (7)	⊕⊕⊕ Moderate[10]	

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
ACR: assumed control risk; CI: confidence interval; DBS: Dating Behaviour Survey; RMAS: Rape Myth Acceptance Scale; RR: risk ratio; SCS: Sexual Communication Survey; SMD: standardised mean difference.

GRADE Working Group grades of evidence
High quality: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very low quality: We are very uncertain about the estimate.

Footnotes

1. Based on average risk in control groups of 8 studies included in this analysis.

*2. Corresponding intervention risk (per 1000) = 1000 * ACR * RR.*

3. Majority of studies at risk of bias. Also a high degree of heterogeneity. Quality of evidence downgraded by 1 level. The confidence interval crosses no difference and is compatible with either an increase or a decrease in episodes of dating and relationship violence.

4. Based on scores in 8 studies using the RMAS 19 scale.

5. Majority of studies at risk of bias. Quality of evidence downgraded by 1 level. The confidence interval crosses no difference and is compatible with either an increase or a decrease in acceptance of dating and relationship violence.

6. Based on scores in 3 studies using the DBS scale.

7. Majority of studies at risk of bias. Quality of evidence downgraded by 1 level. The confidence interval crosses no difference and is compatible with either an increase or a decrease in positive behaviour.

8. Majority of studies at risk of bias. Also a high degree of heterogeneity. Quality of evidence downgraded by 1 level.

9. Based on scores in 6 studies using SCS scale.

10. Majority of studies at risk of bias. Quality of evidence downgraded by 1 level. The confidence interval crosses no difference and is compatible with either an increase or a decrease in skills.

13 Additional tables

1 COMPARISON OF PLANNED AND INCLUDED OUTCOMES

Planned outcomes	Outcomes reported in included studies	Outcomes included in review
Primary		
Episodes of relationship or dating violence	YES	YES
Physical health	NO	NO
Psychosocial health	NO	NO
Adverse events	NO	NO
Secondary		
Improvement in behaviour or knowledge, or both	YES	YES[1]
Improvement in access to/knowledge of support services	NO	NO
Improvement in skills	YES	YES
Cost of programme	NO	NO
Time commitment of programme	NO	NO
Acceptability of programme	NO	NO

Footnotes

1. 'Improvement in behaviour and/or knowledge' was assessed in our review as three separate outcomes: behaviour, knowledge and attitudes.

Outcomes	Setting Chi^2 (P value)			Audience Chi^2 (P value)
	Community[1]	School[2]	University[3]	General vs. high risk
Episodes of relationship violence (events)	N/A[4]	0.02 (0.90)	0.02 (0.90)	4.89 (0.03)
Episodes of relationship violence (scores)	0.55 (0.46)	0.21 (0.65)	0.20 (0.66)	0.10 (0.75)
Attitudes towards relationship violence	N/A[4]	0.11 (0.74)	0.11 (0.74)	9.36 (0.002)
Behaviour towards relationship violence	N/A[4]	N/A[5]	N/A[6]	N/A[7]
Knowledge of relationship violence	1.23 (0.27)	0.88 (0.35)	6.27 (0.001)	1.01 (0.31)
Skills related to relationship violence	1.00 (0.32)	N/A[5]	1.00 (0.32)	1.00 (0.32)

Footnotes

N/A: not available.

1. Comparison of community-based interventions vs. school-based and university-based interventions.

2. Comparison of school-based interventions vs. community-based and university-based interventions.

3. Comparison of university-based interventions vs. school-based and community-based interventions.

4. There were no community-based studies to exclude from the original analysis for this outcome.

5. There were no school-based studies to exclude from the original analysis for this outcome.

6. There were no university-based studies to exclude from the original analysis for this outcome.

7. There were no high-risk audience studies to exclude from the original analysis for this outcome.

14 References to studies

14.1 INCLUDED STUDIES

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15.2   CLASSIFICATION PENDING REFERENCES

Wolfe DA, Crooks C, Chiodo D, Hughes R, Ellis W. Observations of adolescent peer resistance skills following a classroom-based healthy relationship program: a post-intervention comparison. Preventive Science 2012;13:196-205.

16 Data and analyses

1 Educational and skills-based interventions for preventing relationship and dating violence in adolescents and young adults

| Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
1.1 Episodes of relationship violence (events)	8	3405	Risk Ratio (IV, Random, 95% CI)	0.77 [0.53, 1.13]
1.2 Episodes of relationship violence (scores) (higher score = greater frequency of violence)	5	3171	Std. Mean Difference (IV, Fixed, 95% CI)	-0.05 [-0.19, 0.09]
1.3 Attitudes towards relationship violence (higher score = less accepting of dating violence)	22	5256	Std. Mean Difference (IV, Random, 95% CI)	0.08 [-0.06, 0.22]
1.3.1 Rape Myth Acceptance Scale	13	1931	Std. Mean Difference (IV, Random, 95% CI)	0.14 [-0.04, 0.32]
1.3.2 Other scales	9	3325	Std. Mean Difference (IV, Random, 95% CI)	0.00 [-0.21, 0.22]
1.4 Behaviour towards relationship violence (higher score = more positive behaviour)	4	887	Std. Mean Difference (IV, Fixed, 95% CI)	-0.07 [-0.31, 0.16]
1.5 Knowledge of relationship violence (higher score = better knowledge)	10	6206	Std. Mean Difference (IV, Random, 95% CI)	0.44 [0.28, 0.60]
1.6 Skills related to relationship violence (higher score = better skills)	7	1369	Std. Mean Difference (IV, Fixed, 95% CI)	0.03 [-0.11, 0.17]

2 Educational and skills-based interventions for preventing relationship and dating violence in adolescents and young adults: subgroup analyses

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
2.1 Knowledge of relationship violence (higher score = better knowledge)	10		Std. Mean Difference (IV, Fixed, 95% CI)	0.48 [0.38, 0.57]

|			
2.1.1 University-based interventions	5	Std. Mean Difference (IV, Fixed, 95% CI)	0.60 [0.46, 0.74]
2.1.2 School- or community-based interventions	5	Std. Mean Difference (IV, Fixed, 95% CI)	0.36 [0.22, 0.49]
2.2 Episodes of relationship violence (events)	8	Risk Ratio (IV, Random, 95% CI)	Subtotals only
2.2.1 General audience	7	Risk Ratio (IV, Random, 95% CI)	0.86 [0.61, 1.22]
2.2.2 High-risk audience	1	Risk Ratio (IV, Random, 95% CI)	0.25 [0.09, 0.70]
2.3 Attitudes towards relationship violence (higher score = less accepting of dating violence)	22	Std. Mean Difference (IV, Random, 95% CI)	0.08 [-0.06, 0.22]
2.3.1 General audience	21	Std. Mean Difference (IV, Random, 95% CI)	0.11 [-0.02, 0.24]
2.3.2 High-risk audience	1	Std. Mean Difference (IV, Random, 95% CI)	-0.68 [-1.17, -0.19]

17 Figures

Figure 1: Study flow diagram
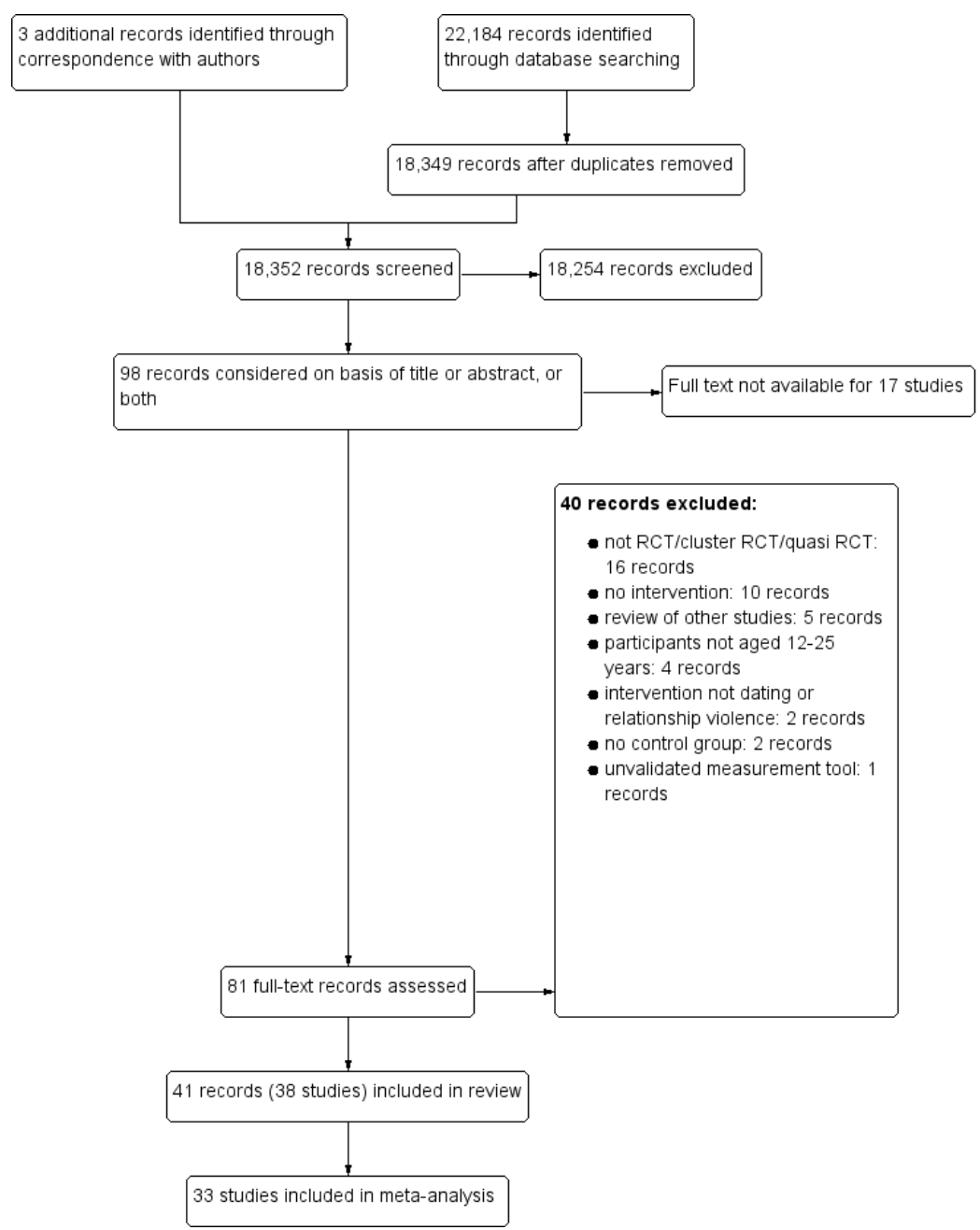
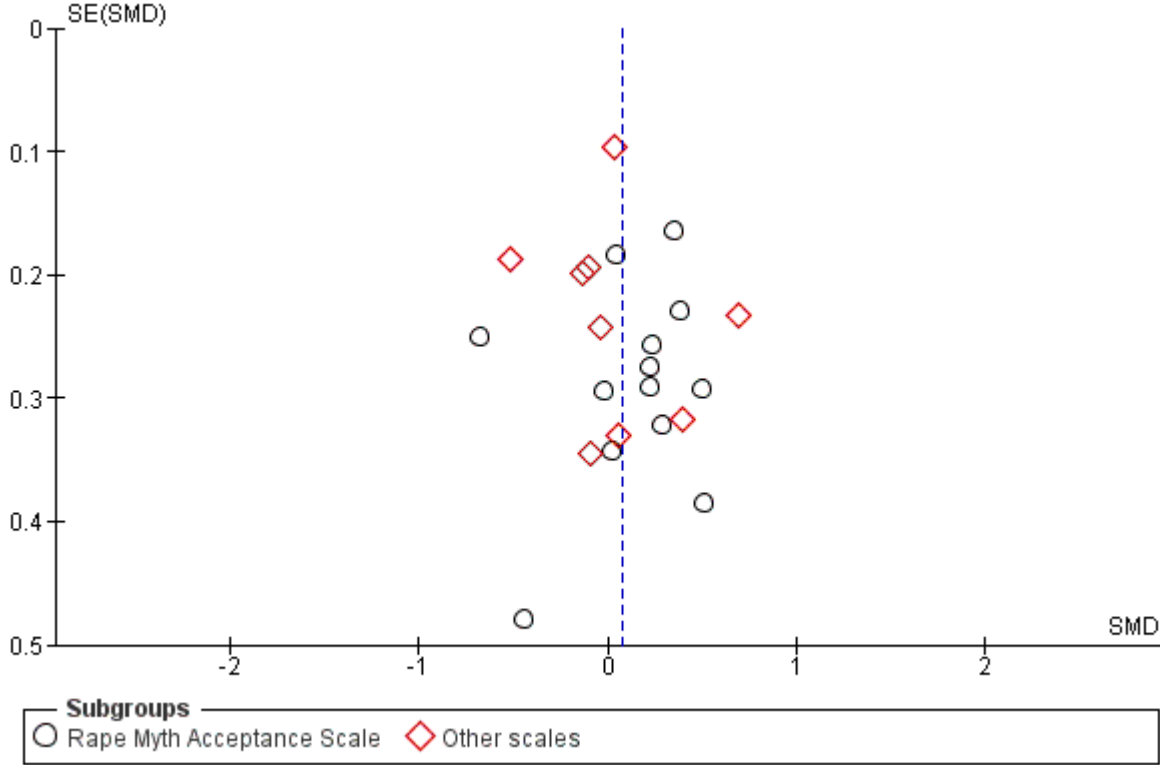*Study flow diagram.*

Figure 2 : Risk of bias graph
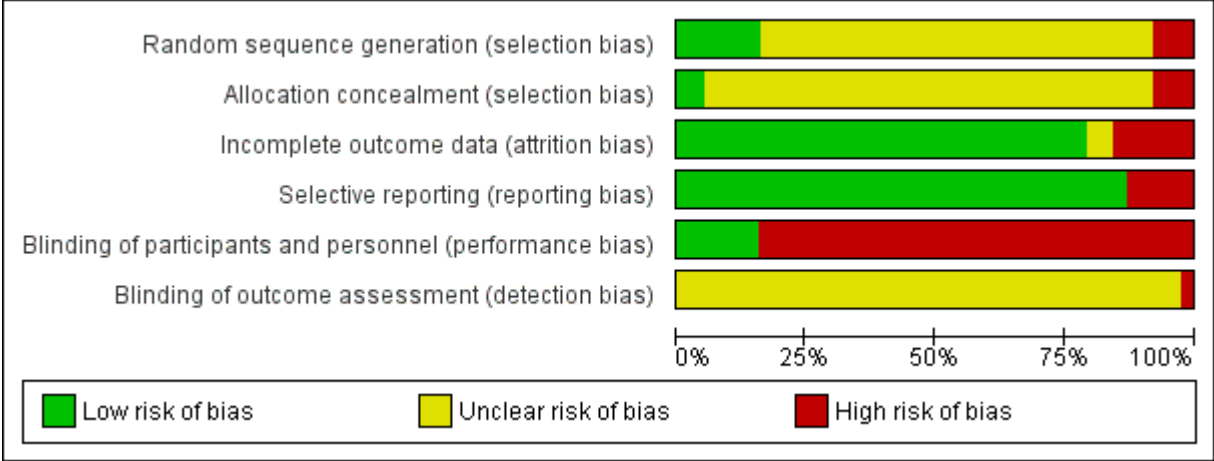
Risk of bias graph: review authors' judgements about each risk of bias item presented as percentages across all included studies

Figure 3: Risk of bias summary

Risk of bias summary: review authors' judgements about each risk of bias item for each included study

	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)
Andersen 1992	–	?	+	–	–	?
Anderson 1998	?	?	+	+	–	?
Avery-Leaf 1997	?	?	+	+	–	?
Boulter 1997	+	?	–	+	–	?
Bradley 2009	–	–	+	+	–	?
Breitenbecher 1998	?	?	+	+	–	?
Davis 1997	–	–	+	+	+	?
Fay 2006	?	?	+	+	–	?
Florsheim 2011	?	?	+	+	–	–
Forst 1993	+	+	+	+	–	?
Foshee 1998	?	?	+	+	–	?
Foubert 1997	?	?	–	+	–	?
Foubert 1998	?	?	+	+	–	?
Foubert 2000	?	?	+	+	–	?
Gidycz 2001	?	?	+	+	+	?
Gidycz 2006	?	?	+	+	–	?
Gidycz 2011	?	?	+	–	+	?
Holcomb 2002	?	?	+	+	–	?
Jaycox 2006	?	?	+	+	+	?
Kuffel 2002	?	?	+	+	–	?
Lanier 1998	?	?	?	+	–	?
Macgowan 1997	?	?	–	+	–	?
Miller 1999	+	?	–	+	–	?
Miller 2012	+	?	–	+	–	?
Orchowski 2008	?	?	+	+	+	?
Pacifici 2001	+	?	+	+	–	?
Pinzone 1998	?	?	+	+	–	?
Saberi 1999	?	?	+	+	–	?
Salazar 2006	?	+	+	–	–	?
Schewe 1996	?	?	+	+	–	?
Senn 2011	?	?	+	+	–	?
Shultz 2000	?	?	+	–	–	?
Stephens 2009	?	?	–	+	–	?
Wolfe 2003	?	?	+	+	+	?
Wolfe 2009	+	–	+	+	–	?
Wolford 1993	?	?	?	+	–	?
Woodin 2010	?	?	+	–	–	?
Yom 2005	?	?	+	+	–	?

Figure 4 (Analysis 1.3)

Funnel plot of comparison of studies included in meta-analysis for outcome 1.3: attitudes towards relationship violence

Figure 5 (Analysis 1.5)
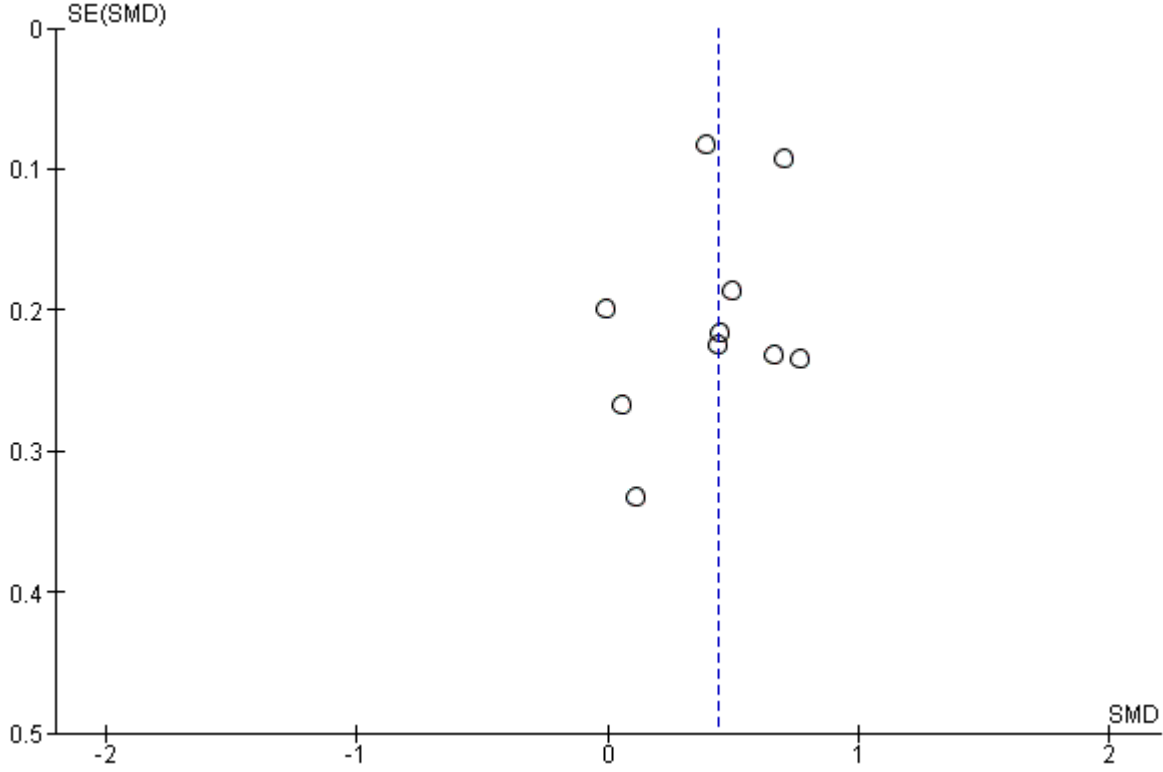
Funnel plot of comparison of studies included in meta-analysis for outcome 1.5: knowledge of relationship violence

18 Sources of support

18.1 INTERNAL SOURCES

No sources of support provided

18.2 EXTERNAL SOURCES

No sources of support provided

19 Appendices

19.1   SEARCH STRATEGIES

Cochrane Central Register of Controlled Trials (CENTRAL) Issue 4 of 12, April 2012, searched 7 May 2012

#1 MeSH descriptor: [Sex Offenses] this term only

#2 MeSH descriptor: [Homicide] this term only

#3 MeSH descriptor: [Rape] this term only

#4 MeSH descriptor: [Violence] this term only

#5 MeSH descriptor: [Domestic Violence] this term only

#6 MeSH descriptor: [Aggression] this term only

#7 MeSH descriptor: [Stalking] this term only

#8 MeSH descriptor: [Battered Women] this term only

#9 MeSH descriptor: [Spouse Abuse] this term only

#10 (stalking or stalker*)

#11 rape*

#12 "intimate partner violence" or IPV

#13 (sex* near/3 (aggress* or assault* or attack* or violenc* or victimi*ation or revictimi*ation or re-victim*ation))

#14 ((gender or peer) near/3 violence)

#15 (date or dating) near/3 (abuse* or abusive or aggress* or assault* or attack or coerc* or femicid* or homicid* or injur* or manipulat* or murder* or rape* or violen*)

#16 ((relationship* or partner* or acquaintance* or non-stranger* or nonstranger*) near/3 (abuse* or abusive or aggress* or assault* or attack* or coerc* or femicid* or homicid* or injur* or manipulat* or murder* or rape* or violen*))

#17 ((boyfriend* or boy-friend* or girlfriend* or girl-friend*) near/3 (abuse* or abusive or aggress* or assault* or attack* or coerc* or femicid* or homicid* or injur* or manipulat* or murder* or rape* or violen*))

#18 #1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17

#19 (adolescen* or teen* or preteen* or pre next teen* or young next people or young next person* or young next adult* or youth* or girl* or boy* or juvenile*)

#20 MeSH descriptor: [Adolescent] this term only
#21 MeSH descriptor: [Young Adult] this term only
#22 #19 or #21 or #21
#23 #18 and #22

Ovid MEDLINE(R) 1946 to April week 4 2012, searched 7 May 2013

1 homicide/ or rape/ or sex offenses/ or violence/ or domestic violence/ or aggression/ or stalking/
2 (stalking or stalker$).tw.
3 rape$.tw.
4 ("intimate partner violence" or IPV).tw.
5 (sex$ adj3 (aggress$ or assault$ or attack$ or violenc$ or victimi#ation or revictimi#ation or re-victimi#ation)).tw.
6 spouse abuse/
7 Battered Women/ or (batter$ adj3 wom#n).tw.
8 ((gender or peer) adj3 violence).tw.
9 ((date or dating) adj3 (abuse$ or abusive or aggress$ or assault$ or attack or coerc$ or femicid$ or homicid$ or injur$ or manipulat$ or murder$ or rape$ or violen$)).tw.
10 ((relationship$ or partner$ or acquaintance$ or non-stranger$ or nonstranger$) adj3 (abuse$ or abusive or aggress$ or assault$ or attack$ or coerc$ or femicid$ or homicid$ or injur$ or manipulat$ or murder$ or rape$ or violen$)).tw.
11 ((boyfriend$ or boy-friend$ or girlfriend$ or girl-friend$) adj3 (abuse$ or abusive or aggress$ or assault$ or attack$ or coerc$ or femicid$ or homicid$ or injur$ or manipulat$ or murder$ or rape$ or violen$)).tw.
12 or/1-11
13 Adolescent/
14 Young Adult/
15 (adolescen$ or teen$ or preteen$ or pre-teen$ or young people or young person$ or young adult$ or youth$ or girl$ or boy$ or juvenile$).tw.
16 or/13-15
17 intervention studies/
18 evaluation studies/
19 Treatment Outcome/
20 ((interven$ or evaluat$ or effectiv$ or compar$) adj3 (study or studies or research)).tw. (441750)
21 17 or 18 or 19 or 20
22 randomized controlled trial.pt.
23 controlled clinical trial.pt.
24 randomi#ed.ab.
25 placebo$.ab.
26 drug therapy.fs.

27 randomly.ab.

28 trial.ab.

29 groups.ab.

30 or/21-29

31 exp animals/ not humans.sh.

32 30 not 31

33 12 and 16 and 32

EMBASE (Ovid) 1980 to 2012 week 18, searched 7 May 2013

1 homicide/ or rape/ or sex crime/ or violence/ or domestic violence/ or aggression/ or stalking/ or battered woman/ or partner violence/ or intimate partner violence/

2 (stalking or stalker$).tw.

3 rape$.tw.

4 ("intimate partner violence" or IPV).tw.

5 (sex$ adj3 (aggress$ or assault$ or attack$ or violenc$ or victimi#ation or revictimi#ation or re-victimi#ation)).tw.

6 (batter$ adj3 wom#n).tw.

7 ((gender or peer) adj3 violence).tw.

8 ((date or dating) adj3 (abuse$ or abusive or aggress$ or assault$ or attack or coerc$ or femicid$ or homicid$ or injur$ or manipulat$ or murder$ or rape$ or violen$)).tw.

9 ((relationship$ or partner$ or acquaintance$ or non-stranger$ or nonstranger$) adj3 (abuse$ or abusive or aggress$ or assault$ or attack$ or coerc$ or femicid$ or homicid$ or injur$ or manipulat$ or murder$ or rape$ or violen$)).tw. (8357)

10 ((boyfriend$ or boy-friend$ or girlfriend$ or girl-friend$) adj3 (violen$ or assault$ or abuse$ or manipulat$ or aggress$ or injur$ or coerc$ or rape$ or murder$ or homicid$ or femicid$)).tw.

11 or/1-10

12 adolescent/

13 adult/

14 (adolescen$ or teen$ or preteen$ or pre-teen$ or young people or young person$ or young adult$ or youth$ or girl$ or boy$ or juvenile$).tw.

15 or/12-14

16 11 and 15

17 exp Clinical trial/

18 Randomization/

19 Single blind procedure/

20 Double blind procedure/

21 Crossover procedure/

22 Placebo/

23 Randomi#ed.tw.

24 RCT.tw.

25 (random$ adj3 (allocat$ or assign$)).tw.
26 randomly.ab.
27 groups.ab.
28 trial.ab.
29 ((singl$ or doubl$ or trebl$ or tripl$) adj3 (blind$ or mask$)).tw.
30 Placebo$.tw.
31 Prospective study/
32 (crossover or cross-over).tw.
33 prospective.tw.
34 intervention study/
35 evaluation research/
36 treatment outcome/
37 ((interven$ or evaluat$ or effectiv$ or compar$) adj3 (study or studies or research)).tw.
38 or/17-37
39 16 and 38

PsycINFO (Ovid) 1967 to May week 1 2012, searched 7 May 2012

1 exp partner abuse/ or battered females/ or domestic violence/
2 exp rape/
3 homicide/ or sex offenses/ or aggressive behavior/ or stalking/
4 (stalking or stalker$).tw.
5 rape$.tw.
6 ("intimate partner violence" or IPV).tw.
7 (sex$ adj3 (aggress$ or assault$ or attack$ or violenc$ or victimi#ation or revictimi#ation or re-victimi#ation)).tw.
8 ((gender or peer) adj3 violence).tw.
9 (batter$ adj3 wom#n).tw.
10 ((date or dating) adj3 (abuse$ or abusive or aggress$ or assault$ or attack or coerc$ or femicid$ or homicid$ or injur$ or manipulat$ or murder$ or rape$ or violen$)).tw.
11 ((relationship$ or partner$ or acquaintance$ or non-stranger$ or nonstranger$) adj3 (abuse$ or abusive or aggress$ or assault$ or attack$ or coerc$ or femicid$ or homicid$ or injur$ or manipulat$ or murder$ or rape$ or violen$)).tw.
12 ((boyfriend$ or boy-friend$ or girlfriend$ or girl-friend$) adj3 (abuse$ or abusive or aggress$ or assault$ or attack$ or coerc$ or femicid$ or homicid$ or injur$ or manipulat$ or murder$ or rape$ or violen$)).tw.
13 or/1-12
14 (adolescence 13 17 yrs or young adulthood 18 29 yrs).ag.
15 (adolescen$ or teen$ or preteen$ or pre-teen$ or young people or young person$ or young adult$ or youth$ or girl$ or boy$ or juvenile$).tw.
16 14 or 15

17 13 and 16

18 clinical trials/

19 (randomis* or randomiz*).tw.

20 (random$ adj3 (allocat$ or assign$)).tw.

21 ((clinic$ or control$) adj trial$).tw.

22 ((singl$ or doubl$ or trebl$ or tripl$) adj3 (blind$ or mask$)).tw.

23 (crossover$ or "cross over$").tw.

24 random sampling/

25 Experiment Controls/

26 Placebo/

27 placebo$.tw.

28 exp program evaluation/

29 treatment effectiveness evaluation/

30 exp intervention/

31 ((effectiveness or evaluat$ or intervention$) adj3 (stud$ or research$)).tw.

32 or/18-31

33 17 and 32

CINAHL (EBSCOhost) 1937 to current, searched 7 May 2013

S37 S16 and S35 and S36

S36 S1 or S2 or S3 or S4 or S5 or S6 or S7 or S8 or S9 or S10 or S11 or S12 or S13

S35 S17 or S18 or S19 or S20 or S21 or S22 or S23 or S24 or S25 or S26 or S27 or S28 or S29 or S30 or S31 or S32 or S33 or S34

S34 TI ((interven* N3 stud*) or (interven* N3 research) or (evaluat* N3 stud*) or (evaluat* N3 research) or (effectiv* N3 stud*) or (effectiv* N3 research)) OR AB ((interven* N3 stud*) or (interven* N3 research) or (evaluat* N3 stud*) or (evaluat* N3 research) or (effectiv* N3 stud*) or (effectiv* N3 research))

S33 (MH "Evaluation Research") OR (MH "Summative Evaluation Research") OR (MH "Program Evaluation")

S32 (MH "Treatment Outcomes")

S31 (MH "Comparative Studies")

S30 TI ((prospectiv* study) or (prospectiv* research) or (compar* stud*) or (compar* research)) or AB ((prospectiv* study) or (prospectiv* research) or (compar* stud*) or (compar* research)) or TI ((follow-up study) or (follow-up research)) or AB ((follow-up study) or (follow-up research))

S29 "cross over*"

S28 crossover*

S27 (MH "Crossover Design")

S26 (tripl* N3 mask*) or (tripl* N3 blind*)

S25 (trebl* N3 mask*) or (trebl* N3 blind*)

S24 (doubl* N3 mask*) or (doubl* N3 blind*)

S23 (singl* N3 mask*) or (singl* N3 blind*)

S22 (clinic* N3 trial*) or (control* N3 trial*)

S21 (random* N3 allocat*) or (random* N3 assign*) S

S20 randomis* or randomiz*

S19 (MH "Meta Analysis")

S18 (MH "Clinical Trials+")

S17 MH random assignment

S16 S14 or S15

S15 (adolescen* or teen* or preteen* or pre-teen* or young people or young person* or young adult* or youth* or girl* or boy* or juvenile*)

S14 AG adult OR AG adolescent

S13 (boyfriend* or boy-friend* or girlfriend* or girl-friend*) N3 (abuse* or abusive or aggress* or assault* or attack* or coerc* or femicid* or homicid* or injur* or manipulat* or murder* or rape* or violen*)

S12 (relationship* or partner* or acquaintance* or non-stranger* or nonstranger*) N3 (abuse* or abusive or aggress* or assault* or attack* or coerc* or femicid* or homicid* or injur* or manipulat* or murder* or rape* or violen*)

S11 ((date or dating) N3 (abuse* or abusive or aggress* or assault* or attack* or coerc* or femicid* or homicid* or injur* or manipulat* or murder* or rape* or violen*))

S10 ((gender or peer) N3 violence)

S9 (MH "Battered Women") or (battered N3 wom?en)

S8 ("Intimate partner violence") or IPV

S7 (stalking or stalker*)

S6 (sex* N3 (aggress* or assault* or attack* or violenc* or victimi?ation or revictimi?ation or re-victimi?ation))

S5 (MH "Aggression")

S4 (MH "Stalking")

S3 (MH "Violence") OR (MH "Domestic Violence") OR (MH "Intimate Partner Violence")

S2 (MH "Rape")

S1 (MH "Homicide")

ERIC (Proquest) 1966 to current, searched 7 May 2012

Searched for:(("intimate partner violence" OR "IPV" OR stalker* OR stalking* OR rape* OR " battered women" OR ((gender OR peer) NEAR/3 violence) OR (sex* NEAR/3 (aggress* OR assault* OR attack* OR violenc* OR victimi*ation OR revictimi*ation OR re-victimi*ation)) OR ((date OR dating) NEAR/3 (abuse* OR abusive OR aggress* OR assault* OR attack OR coerc* OR femicid* OR homicid* OR injur* OR manipulat* OR murder* OR rape* OR violen*)) OR ((relationship* OR partner* OR acquaintance* OR non-stranger* OR nonstranger*) NEAR/3 (abuse* OR abusive OR aggress* OR assault* OR attack* OR coerc* OR femicid* OR homicid* OR injur* OR manipulat* OR murder* OR rape* OR violen*)) OR

SU.EXACT("Rape") OR SU.EXACT("Aggression") OR SU.EXACT("Violence") OR SU.EXACT("Family Violence")) AND (SU.EXACT("Youth") OR SU.EXACT("Adolescents") OR SU.EXACT("Late Adolescents") OR SU.EXACT("Preadolescents") OR (adolescen* OR teen* OR preteen* OR pre-teen* OR "young people" OR "young person*" OR "young adult*" OR youth* OR girl* OR boy* OR juvenile*)))

NCJRS Abstracts Database (www.ncjrs.gov/library.html), searched 7 May 2012

General Search Search type Phrase selected: Date rape
General Search Search type Phrase selected: Acquaintance rape
General Search Search type Phrase selected: IPV
General Search Search type Phrase selected: Dating violence

SSCI: Social Sciences Citation Index (Web of Science) 1970 to 4 May 2012, searched 7 May 2012

#4 AND #3
DocType=All document types; Language=All languages;
#4 TS=(random* or control* or trial* or groups* or effectiveness or evaluation or intervention or comparative)
DocType=All document types; Language=All languages;
#3 #2 AND #1
DocType=All document types; Language=All languages;
#2 TS=(adoles* or teen* or pre-teen* or preteen* or young adult* or youth* or "young people" or young person* or juvenile* or boy* or girl*)
DocType=All document types; Language=All languages;
#1 TS=(dating or relationship* or partner* or acquaintance* or boyfriend* or girlfriend* or boy-friend* or girl-friend* or "boy friend* " or "girl friend*") SAME TS= (violen* or rape* or assault* or homicid* or femicid* or murder* or abus* or injur* or coerc* or manipulat* or agress*)

Sociological Abstracts (Proquest) 1952 to current, searched 7 May 2013

Searched for: ((SU.EXACT("Partner Abuse") OR SU.EXACT("Stalking") OR SU.EXACT("Spouse Abuse") OR SU.EXACT("Battered Women") OR SU.EXACT("Sexual Coercion") OR SU.EXACT("Rape") OR SU.EXACT("Violence") OR SU.EXACT("Sexual Abuse") OR SU.EXACT("Assault") OR SU.EXACT("Homicide") OR SU.EXACT("Victimization") OR "intimate partner violence" OR "IPV" OR stalker* OR stalking* OR rape* OR " battered women" OR ((gender OR peer) NEAR/3 violence) OR (sex* NEAR/3 (aggress* OR assault* OR attack* OR violenc* OR victimi*ation OR revictimi*ation OR re-victimi*ation)) OR

((date OR dating) NEAR/3 (abuse* OR abusive OR aggress* OR assault* OR attack OR coerc* OR femicid* OR homicid* OR injur* OR manipulat* OR murder* OR rape* OR violen*)) OR ((relationship* OR partner* OR acquaintance* OR non-stranger* OR nonstranger*) NEAR/3 (abuse* OR abusive OR aggress* OR assault* OR attack* OR coerc* OR femicid* OR homicid* OR injur* OR manipulat* OR murder* OR rape* OR violen*))) AND ((adolescen* OR teen* OR preteen* OR pre-teen* OR "young people" OR "young person*" OR "young adult*" OR youth* OR girl* OR boy* OR juvenile*) OR SU.EXACT("Adolescents") OR SU.EXACT("Young Adults") OR SU.EXACT("Youth"))) AND (SU.EXACT("Random Samples") OR SU.EXACT("Effectiveness") OR SU.EXACT("Intervention") OR SU.EXACT("Treatment Outcomes") OR SU.EXACT("Evaluation Research") OR SU.EXACT("Program Evaluation") OR SU.EXACT("Comparative Analysis") OR (random* OR trial* OR control* OR intervent* OR evaluat* OR "effectiv* stud*" OR "effectiv* research" OR "compar* study" OR "compar* research"))

WorldCat www.worldcat.org/, searched 7 May 2012

'kw:("dating violence" | "date rape"| "acquaintance rape" |"partner violence") + (teen* |adolescen* |young people|youth|young adult*|student*) + (random*|trial*|intervention*|evaluat*|effectiv*|program*)' > 'Thesis/dissertation'

ZETOC (Conference Proceedings), searched 7 May 2012

All fields "Dating violence"
All fields "Partner violence"
All fields "Date rape"
All fields "acquaintance rape"

metaRegister of Controlled Trials. all registers selected
"Dating violence" OR "Partner violence" or "Date rape" or "acquaintance rape"