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Dating and Relationship Violence Prevention

Toolkit technical report

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Interventions to reduce dating violence: YEF Technical Report
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Summary

This technical report reviews the evidence on the effect of interventions to reduce or prevent dating violence amongst children and young people. This technical report is based on three recent systematic reviews and meta-analyses by Lee &Wong (2022), Melendez-Torres et al. (2022), and Piolanti & Foran (2022).

Intervention programmes to reduce dating and relationship violence promote "equitable and respectful relationships amongst youth". Interventions may target either or both intrapersonal (attitudes, beliefs, and opinions) and interpersonal traits (communication skills and helping young people to create better peer relationships). They may also work at the school-level.

Most interventions were implemented in classrooms or in afterschool sessions which took place in the school environment, but some included components delivered in the community, such as those completed as part of community service. The interventions also involved schoolteachers, who received training to deliver the material, and parents who were informed about the course by pamphlets, leaflets, or newsletters to spread information about dating and relationship violence or inviting parents to take part in some intervention activities.

The school environment may also be targeted by interventions in various ways, for example, by improving policies, changing social norms, increasing bystander self-efficacy, or by addressing the physical school environment such as increasing staff presence in violence hotspots or increased monitoring of hallways.

There are many different activities or designs for dating violence interventions, which may use training, curriculum-based interventions, role-playing, discussion, reflection, visual-based materials (e.g., posters, films, video games), narrative-based activities (e.g., sharing stories, reading, and interactive theatre.

A modified version of the AMSTAR2 critical appraisal tool was used to appraise the reviews that inform the current technical report. According to this tool, the review by Melendez-Torres et al. (2022) was rated 'high', whilst the reviews by Lee and Wong (2020) and Piolanti and Foran (2022) were rated 'medium'.

Interventions to reduce dating and relationship violence or gender-based violence have a desirable impact on dating and relationship violence perpetration. The percentage reduction in dating and relationship violence perpetration ranged from 9-21%. Effects seem larger over longer periods of time compared to shorter periods of time and were notably larger for single component interventions.

There is evidence that interventions are more effective with (i) 'Caucasian/mixed' ethnic groups when compared to courses for predominantly ethnic minority participants; and (ii) if courses did not have a gender roles or bystander intervention component, whilst the gender balance of participants made no difference in effectiveness.

The results of the synthesis of process evaluations identified possible issues at the school, student, facilitator, and intervention level.

At the school level school resources and infrastructure and time were all constraints to effectiveness, especially with competing priorities to maintain exam performance. Also, schools may be reluctant to

adopt programmes as doing so could be seen as signalling the existence of a violence problem in the school.

Students can be highly engaged, especially if given roles in the programme, such as condom distribution. But participation was lower if the programme was voluntary, especially if run in after school hours. Also, it was difficult to get the right children (i.e., those who most needed it) to attend, and if these children did attend, they could be disruptive. A balance needs to be struck between zero tolerance for disruptive behaviour and allowing such children to express themselves in sessions.

A good relationship between peers and facilitators helped the smooth running of programmes but finding the right staff within a school to implement the intervention was not always easy. Teachers with a health background generally performed better than those who taught science or maths. Teachers need external support to facilitate delivery, but they generally valued ease of delivery and adaptability of programme material.

The evidence is not clear of which approach (video etc.) works best. Given time constraints, there is a need to provide evidence-based flexible, adaptable programmes. To overcome school reluctance, and ensure greater participation, curriculum-based approaches are likely most appropriate.

Objective and approach

The objective of this technical report is to review the evidence on the effect of interventions to reduce or prevent dating violence amongst children and young people.

This technical report is based on three recent systematic reviews and meta-analyses by Lee &Wong (2022), Melendez-Torres et al. (2022), and Piolanti & Foran (2022). The following inclusion and exclusion criteria were used to inform the selection of systematic reviews.

Inclusion criteria

Included in this technical report were systematic reviews and meta-analyses of interventions to reduce and/or prevent dating violence amongst children and young people.

Exclusion criteria

Reviews were excluded for the following reasons:

- Review was published more than five years ago as more recent and relevant reviews are available (e.g., De La Rue et al., 2014; Fellmeth et al., 2013).

- Systematic reviews that did not include a meta-analysis (e.g., De Koker et al., 2014).

- Review included only outcomes of sexual assault perpetration or bystander intervention and attitudes towards sexual assault (e.g., Kettrey et al., 2021).

Outcomes

Melendez-Torres et al. (2022) included outcomes relating to both dating and relationship violence (DRV) and gender-based violence (GBV) perpetration and victimisation. DRV perpetration is the outcome most relevant to the current technical report as it includes outcomes of physical or emotional violence that occurs between individuals in a dating relationship. It also includes internet-mediated DRV and sexual assault. GBV refers to outcomes such as gender or sexuality-based harassment and bullying, for example, homophobic or transphobic bullying, unwanted sexting, unwanted sexual contact, sexual assault, harassment, and rape. Melendez-Torres et al. (2022) also reported the impact of interventions on violence-related behaviours such as help-seeking behaviour, bystander behaviour and knowledge and attitudes towards DRV and GBV.

Lee and Wong (2020) measured the impact of interventions to reduce dating and relationship violence on several outcomes. These included, dating and relationship perpetration and victimisation, as well

as knowledge of, and attitudes towards, dating violence and bystander behaviour in dating violence situations. Knowledge of dating violence is described as recognition of the types of dating violence behaviours or facts about dating violence, whilst attitudes toward dating violence are described as beliefs about if/when violence is appropriate and acceptance of rape myths (Lee & Wong, 2020, p. 10).

Description of interventions

Melendez-Torres et al. (2022) conducted a systematic review of school-based interventions to prevent dating relationship violence and/or gender-based violence for children in compulsory education. These interventions generally focused on reducing dating and relationship violence perpetration and victimisation, but others targeted bystander intervention. School-based interventions allow for early intervention and serve as an important way to prevent future violence (Lee & Wong, 2020).

An important aim in most intervention programmes to reduce dating and relationship violence is promoting "equitable and respectful relationships amongst youth" (Lee & Wong, 2020, p. 3; Crooks et al., 2019). Some interventions to reduce dating and relationship violence target student intrapersonal and/or interpersonal traits (Melendez-Torres et al., 2022). Intrapersonal traits refer to students' own attitudes, beliefs, and opinions whereas interpersonal traits relate to communication skills and helping students create better peer relationships. Increasing knowledge about dating violence and what constitutes healthy and unhealthy relationships is an important component of many intervention programmes (Lee & Wong, 2020). Most interventions were implemented in classrooms or in afterschool sessions which took place in the school environment, but some included components delivered in the community, such as those completed as part of community service (Melendez-Torres et al., 2022).

Interventions, and components of interventions that target students, often teach coping skills to these students' who may be at risk of perpetrating dating violence. These aim to promote the use of non-violent behaviours and responses in situations where previously violence may have been normalised (Melendez-Torres et al., 2022). Other ways programmes may indirectly target perpetration of dating and relationship violence include spreading awareness and increasing knowledge of social norms that do not condone violence (Melendez-Torres et al., 2022). This can also involve counteracting widely accepted myths and misperceptions about dating and relationship violence, for example, rape myths[1].

Interventions to reduce dating and relationship violence may also directly target victims, or individuals identified as being at-risk of victimisation. These interventions target activities like self-defence, active resistance, or identifying and avoiding relationship 'red flags' (Melendez-Torres et al., 2022). 'Red flags' are defined as indicators or warnings that a situation is unhealthy or could possibly result in violence (Melendez-Torres et al., 2022).

Interventions to reduce dating and relationship violence may also target bystanders. Melendez-Torres et al. (2022) found that these types of interventions varied greatly. Some intervention programmes used a combination of scenarios, stories, and videos to provide participants with examples of potential bystander interventions. Bystander intervention may aim to increase the self-efficacy of participants to intervene if they witness dating and relationship violence through role-play and brainstorming exercises (Melendez-Torres et al., 2022). Bystander intervention can also involve awareness raising campaigns about the harms of attitudes and beliefs that condone or promote dating and relationship violence. For example, the 'Relationships Without Violence' programme targeted bystander behaviour

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[1] The Crown Prosecution Service (CPS) describe rape myths as beliefs and attitudes people have specifically about rape and sexual violence that are commonly and persistently held yet, may be factually inaccurate (CPS, 2015). These myths may centre around victims, perpetrators, or the context in which an act of rape takes place. For example, what a victim was wearing, how they acted or behaved before, during, or after being raped, or about the relationship between the victim and perpetrator.

through the promotion of "pro-social behaviours, positive peer culture, and healthy masculinities/femininities" (Melendez-Torres et al., 2022, p. 85). Bystander intervention can also provide bystanders with the skills and mechanisms to help support those who have experienced dating and relationship violence, for example, by helping them access local support services (Melendez-Torres et al., 2022).

Finally, school staff, such as teachers, or the school environment may also be targeted by intervention programmes. Teachers and school staff are typically included in intervention programmes by being trained to deliver specific components or by delivering support to help teachers better respond to the violence that takes place in school (Melendez-Torres et al., 2022). The school environment is targeted by interventions in various ways, for example, by improving policies, changing social norms, increasing bystander self-efficacy, or by addressing the physical school environment such as increasing staff presence in violence hotspots or increased monitoring of hallways (Melendez-Torres et al., 2022).

Intervention components

Interventions to reduce dating and relationship violence in children and young people come in many forms. Melendez-Torres et al. (2022) categorised the evaluations that were included in their review as being either single-component, curriculum-based, multi-component, or multilevel.

Single component interventions typically involved a key technology or a novel activity, such as a video game or watching a video and then engaging in discussion. These were generally shorter in duration than other forms of intervention (Melendez-Torres et al., 2022). Other examples of single-component interventions to reduce dating and relationship violence included one-off training events, typically for older students, with the aim of training them on having effective conversations with younger students (e.g., "Athletes as Leaders"; Melendez-Torres et al., 2022).

Curriculum-based interventions to reduce dating and relationship violence incorporated a range of activities but were distinguishable because intervention content was integrated into the existing school curriculum or schedule (Melendez-Torres et al., 2022). These types of programmes were typically longer in duration than single-component interventions and generally involved implementing intervention lesson content in place of the 'business-as-usual' health classes in the school curriculum (Melendez-Torres et al., 2022). These types of interventions could also involve organising special assemblies where students may be separated based on their biological sex or gender.

Melendez-Torres et al. (2022) also outlined 'multi-component' interventions to reduce dating and relationship violence that aimed to implement intervention components across multiple levels of the socio-ecological model. The socio-ecological model is a way of considering how the young person at one level, exists within a dynamic and interactive model, including the school at one level, and the community at another level. All levels of a socio-ecological interact with one another. Theoretically, changing all levels of the model might be expected to have greater impact. For example, the 'Green Dot High School' programme (Coker et al., 2017) included activities such as motivational presentations given to all students and bystander intervention training to select groups of students (Melendez-Torres et al., 2022). Intervention components delivered on the student-level of the socio-ecological model included guided practice activities (e.g., role-playing), discussion, reflection, visual-based materials (e.g., posters, films, video games), narrative-based activities (e.g., sharing stories, reading, interactive theatre), amongst others.

The review by Melendez-Torres et al. (2022) also categorised some interventions as 'multilevel interventions. These programmes are "complex interventions which use a variety of modes of intervention, are designed to target multiple levels of the socio-ecological model and integrate explicit components that target structural aspects of the school" (Melendez-Torres et al., 2022, p. 83). In addition to intervention components implemented with both staff and students, these interventions

involve structural changes to the school environment or work with parents. For example, using posters in common areas to promote intervention content or by identifying 'hotspots' in schools where violent behaviours are more likely to occur and creating safety plans or increasing staff presence in these areas (Melendez-Torres et al., 2022). Parents were targeted through disseminating materials such as pamphlets, leaflets, or newsletters to spread information about dating and relationship violence or inviting parents to take part in some intervention activities (Melendez-Torres et al., 2022).

Piolanti and Foran (2022) state that the primary intervention components of programmes included in their review were: group discussions, interviews with individual students, parent-child activities, classroom activities, and a combination of classroom and parent-child activities.

Implementation setting and personnel

Lee and Wong (2020) report that interventions to reduce dating and relationship violence were generally implemented in schools. Melendez-Torres et al. (2022) noted that the implementation personnel for interventions to reduce dating and relationship violence varied slightly depending on the intervention type (i.e., single-component, multi-component, and multilevel). Whilst single-component interventions were typically implemented by teachers, external facilitators, or without a facilitator at all, curriculum-based interventions were typically implemented by trained facilitators, either trained members of the schools' staff or by external organisations. For example, Melendez-Torres et al. (2022) states that in the 'IMPower' programme (Decker et al., 2018) school staff attended an intensive training programme (126 hours over 3 weeks) to be trained to implement the intervention. Staff training is also often an important component of multi-component and multilevel interventions to reduce dating and relationship violence. Most school-based interventions included by Melendez-Torres et al. (2022) were implemented by external staff only (35.4%) or teachers only (31.6%), but most interventions included some degree of teacher participation (48.1%). Peers were

involved in implementing interventions in 11 of the 68 included interventions and four did not require any facilitator at all[2].

Duration and scale

Interventions to reduce dating and relationship violence were typically short in duration, with those that only targeted dating and relationship violence typically implemented for one month or less (Melendez et al., 2022). However, when considered alongside interventions that also target gender-based violence behaviours, the majority of interventions lasted longer than 1 month (59.5%). Piolanti and Foran (2022) found that the number of sessions included in the programmes included in their review ranged from one to 24, and the interventions were implemented for durations of between one day to two years. This is a much wider range than other interventions included in the Toolkit.

Melendez-Torres et al. (2022) presented an outline of the duration of different types of interventions to reduce dating and relationship violence. Single-component interventions ranged from a one-off session to a week of daily sessions, whilst curriculum-based interventions were implemented for at least six sessions or typically longer than one school week. Sessions could be implemented on consecutive school days or over the period of a few months (Melendez-Torres et al., 2022). Multi-component and multilevel interventions to reduce dating and relationship violence were generally longer in duration than single-component and curriculum-based interventions, but Melendez-Torres et al. (2022) did not specify an average length for how long these interventions were implemented.

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[2] Melendez-Torres et al. (2022) outline that there was no clear difference in the facilitators involved in interventions to reduce dating and relationship violence compared to interventions to reduce gender-based violence.

Theory of change/presumed causal mechanisms

Melendez et al. (2022) conducted an in-depth analysis of the theories of change and presumed casual mechanisms underlying the interventions to reduce dating and relationship violence. This analysis also included the theories of change in interventions to reduce gender-based violence.

The review categorised mechanisms of change as being 'higher-level' or 'lower-level' mechanisms. Lower-level mechanisms refer to those where students interact with intervention content and behavioural change occurs, whereas higher-level mechanisms are concerned with relationships and mechanisms within the school system (Melendez-Torres et al., 2022). Examples of higher-level mechanisms in interventions to reduce dating and relationship violence include positive and prosocial peer interaction, positive student-teacher relationships, increasing the normalisation of prosocial behaviour and improving school connectedness (i.e., a feeling of belonging or being connected to a school). On the other hand, lower-level mechanisms in these intervention programmes may include changes in individual students, teachers, and parents particularly in their attitudes towards, and knowledge of, relationship and dating violence. Another important component in the theory of change is interactive and experiential student learning. For example, using interactive intervention activities such as discussions, worksheets, games for students or allowing students to input into their own learning and for them to learn through experience.

The overall findings from the analysis of theories of change by Melendez-Torres et al. (2022, p. 114) found that: (1) Interventions that include only lower-level change mechanisms are less likely to be effective and sustainable; (2) Multilevel interventions that target the same outcome through change mechanisms on numerous levels of the socio-ecological model are more likely to be effective and sustainable; (3) Higher-level change mechanisms will only work in some schools, but lower-level mechanisms can be effective in all schools; and (4) The intervention change mechanisms are similar in interventions to reduce relationship and dating violence and gender-based violence.

Evidence base

Descriptive overview

Piolanti and Foran (2022) included 18 evaluations of programmes which aimed to assess the efficacy of prevention programs for sexual and physical dating violence in adolescents. The total sample size was 22,781 students and the mean age of the students ranged from 12.2 to 17.6 years. Only one study was conducted in Europe, with the remaining evaluations conducted in North America. Most interventions were implemented in schools (n = 13) and 5 were implemented in 'other' settings (Piolanti & Foran, 2022).

Melendez-Torres et al. (2022) included interventions which were mostly designed to reduce dating and relationship violence (n = 80; 50%). Fifty-three (33.1%) of the evaluations were based on a programme that was designed to reduce gender-based violence, and a smaller number (n = 27, 16.9%) were designed to reduce both. In total, 79 interventions were evaluated and included in the review.

Melendez-Torres et al. (2022) included 68 evaluations of school-based interventions to reduce dating and relationship violence and gender-based violence, of which 14 were randomised controlled trials, and 54 were cluster-randomised controlled trials. The majority of the interventions were implemented in North America (61.8%) and only three of the included evaluations were conducted in England (4.41%). The majority were implemented in secondary schools (83.8%). Only one study was implemented in a primary school, and three studies were implemented in both primary and secondary school settings. A further 4 studies were implemented in secondary schools and sixth form colleges (i.e., ages 16 to 18 years) and 2 studies were implemented solely in sixth form colleges. Students were aged between 7 and 19 years old, with the median age about 14.5 years old. There was no difference in ages of those who received the different types of interventions. The sample sizes, from intention-to-treat analyses, ranged from 47 to 89,707 participants. The median sample size for interventions that targeted dating and relationship violence only was 660 participants. Most included studies asked

participants to indicate their gender as a binary outcome (i.e., male/female) but the review does not provide further information about the proportion of male and female students in the included studies. Amongst studies that enabled students to choose another gender (i.e., non-binary), the prevalence of 'other gender' ranged from 0.2% to 10%. Similarly, most studies did not ask participants about their sexuality, and of those that did, the majority were designed to reduce gender-based violence. Student ethnicity was reported for 33 evaluations, of which 50% reported that the majority of students were identified as being White or Caucasian. Ten studies reported that no one ethnic group was the majority in the evaluation and the remaining studies reported a majority of Black or African-American students (n = 4) or Hispanic or Latino (n = 4). Eighteen studies reported information about the socioeconomic status of participants, of which 50% were mostly students from a low socioeconomic background. Only 4.4% of included evaluations were targeted at students who were considered at-risk for dating and relationship violence.

The review by Melendez-Torres et al. (2022) also found that the majority of included evaluations were categorised as having a high risk of bias (44.1%) or having 'some concerns' on risk of bias (54.4%). Only one evaluation was low risk of bias.

Lee and Wong (2020) included 38 evaluations in their review, of which 16 reported an effect size for the effectiveness of the programme on dating violence perpetration. They do not provide descriptive information about programmes that reported effects on dating violence perpetration independently of evaluations that reported the effects of programmes on other outcomes, such as dating violence victimisation or bystander behaviour. Overall, 50% of the evaluations were published prior to 2015 and 50% were published between 2015 and 2019. The majority (81.6%) were published in journals and the sample sizes ranged from 20 to 1,389 students in the treatment group (Lee & Wong, 2020). The mean age of the participants was 14.46 years old. Programmes were generally implemented in classrooms (74%) and lasted between 15 minutes and 28 hours (Lee & Wong, 2020).

Assessment of the evidence rating

We have confidence that, at the time of writing, the reviews by Lee and Wong (2022), Melendez-Torres et al. (2022), and Piolanti and Foran (2022) represent the best available evidence on the effectiveness of interventions to reduce dating violence. Our decision rule for determining the evidence rating is summarised in the technical guide.

A modified version of the AMSTAR2 critical appraisal tool was used to appraise the reviews that inform the current technical report. According to this tool, the review by Melendez-Torres et al. (2022) was rated high, whilst the reviews by Lee and Wong (2020) and Piolanti and Foran (2022) were rated 'medium'. The results of this assessment are summarised in Annex 3.

The review by Melendez-Torres et al. (2022) adequately specified the research question and extensively outlined the inclusion/exclusion criteria. The inclusion criteria included components relating to the population, intervention, comparison group and outcome of interest. Melendez-Torres et al. (2022) included evaluations of school-based interventions implemented and evaluated with children aged 5 to 18 years old conducted using a randomised control trial design. To be eligible for inclusion, evaluations could have implemented interventions that were separate from, or part of, normal relationship and sex education (RSE) curricula. Also, these had to evaluate the impact on later dating and relationship violence or gender-based violence outcomes, or both, compared to a control group that did not receive the intervention. Eligible control groups included business as usual control groups, waitlist control groups, and active 'other intervention' control groups. Melendez-Torres et al. (2022) also included process evaluations and conducted a mixed methods review.

Lee and Wong (2020) included evaluations of programmes that focus on dating violence prevention or education in children and young people under 18 years of age. Evaluations had to include at least

one relevant quantitative outcome and include an appropriate control group and a sample size of at least 20 students. The authors do not specify if this is the total sample size, or the sample size of the intervention group. The review included evaluations that used randomised controlled trial, quasi-experimental, and single group pre-test post-test designs.

Piolanti and Foran (2022) included randomised controlled trials of evaluations to reduce teen dating violence with youth under 18 years old that reported at least one measure of sexual or physical dating violence perpetration or survivorship.

Melendez-Torres et al. (2022) specified that their review protocol was pre-registered, and they outline throughout the review the ways in which the final review deviated from this protocol. Lee and Wong (2020) and Piolanti and Foran (2022) did not refer to a protocol for their review.

All three reviews reported a comprehensive literature search strategy including a number of different databases, designated keywords and search strategies. Melendez-Torres et al. (2022) used additional techniques such as searches of citations and references lists in addition to searching databases. They did not restrict searches by date of publication, type of publication, or language. Lee and Wong (2020) only included evaluations published in English or French that were implemented in North America, Western Europe, Australia or New Zealand.

All reviews included multiple reviewers to screen eligible studies for inclusion. Two authors independently screened potentially eligible studies in the review by Melendez-Torres et al. (2022), and data extraction was performed by one author, although two additional authors preformed quality assurance checks. Two reviewers screened search results for the review by Lee and Wong (2020), and all studies selected for inclusion were coded independently by two reviewers on a series of 83

variables. Piolanti and Foran (2022) also included two screeners to identify eligible studies and extract data about study characteristics and effect sizes.

Melendez-Torres et al. (2022) conducted a risk of bias analysis using the Cochrane risk of bias assessment tool and reported a thorough explanation of the results. They also assessed the quality of the body of evidence using the GRADE approach. The authors also declared the source of funding and declared any possible conflict of interest. Piolanti and Foran (2022) also measured risk of bias using the Cochrane Collaboration tool. Lee and Wong (2020) did not assess risk of bias beyond analysis of possible publication bias.

All three reviews undertook a meta-analysis, reported detailed information on the synthesis and estimation of weighted effect sizes and adequately reported the heterogeneity between primary effects. They also examined a number of potential explanations for the heterogeneity, such as the programme type and publication bias. Lee and Wong (2020) undertook a meta-analysis that included effect sizes derived from single group pre-test post-test designs combined with effect sizes derived from experimental and quasi-experimental designs which is not usually recommended. The authors outline that they applied a correction to effect sizes from these less rigorous designs (Lee & Wong, 2020, p. 8). Melendez-Torres et al. (2022) and Lee and Wong (2020) used advanced meta-analytical techniques and included multiple outcomes from the included evaluations.

Melendez-Torres et al. (2022) provide a direct estimate of the effectiveness of the included interventions on an overall measure of dating and relationship violence perpetration for both short term outcomes (18 studies, 118 effect sizes) and long-term outcomes (16 studies, 79 effect sizes). The decision rule for choosing a headline impact estimate for the Toolkit outlines that the estimation of effectiveness is derived from the point most proximate to the completion of the delivery of the intervention. However, in the case of interventions for dating and relationship violence, the range of

intervention lengths was very varied (1 day to 2 years) and thus, means that intervention length is potentially confounded with follow-up. Melendez-Torres et al. (2022) did not make the distinction between immediate post-intervention effects and additional follow-ups in their analysis. For this reason in this instance we have selected the longer-term follow-up effect size as the headline impact estimate.

The results are significantly heterogeneous (I^2 = 83%). The review is rated 'high' on the AMSTAR2 tool, so the overall evidence rating is 4, marked down due to the heterogeneity.

Melendez-Torres et al. (2022) also report the effects of interventions to reduce dating and violence perpetration using various measurement instruments (e.g., 'omnibus' instruments, or instruments that measured only reports of physical or only emotional dating and relationship violence perpetration) and for each of these intervention types for both short-term and long-term outcomes. These estimates are outlined below and the evidence ratings for these effect sizes are marked down to the number of evaluations used to estimate the effect size.

Lee and Wong (2020) provide a direct estimate of the effectiveness of the included interventions of dating violence perpetration based on 16 studies and 17 effect sizes. There was significant heterogeneity between studies (I^2 = 62.2%) and the review is rated as 'medium' on the AMSTAR2 tool. Thus, the overall evidence rating is 4, marked down due to the heterogeneity.

Piolanti and Foran (2022) provide a direct estimate of the effectiveness of the included interventions on: (1) physical dating violence perpetration (*n* = 13 studies); (2) sexual dating violence perpetration (*n* = 6 studies); and (3) a composite measure of physical or sexual dating violence perpetration (*n* = 16). The results for physical dating violence perpetration and the composite measure were heterogenous (I^2 = 65.7% and 45% respectively). The results for sexual dating violence perpetration

were not heterogenous ($I^2 = 0.7\%$). The review was rated 'medium' on the AMSTAR2 tool, and thus, the evidence ratings were: (1) 4 for physical dating violence perpetration; (2) 3 for sexual dating violence perpetration; and (3) 5 for the composite physical and sexual dating violence perpetration outcome.

Impact

Summary impact measure

Based on the meta-analysis by Melendez-Torres et al. (2022) interventions to reduce dating and relationship violence or gender-based violence have a desirable impact on dating and relationship violence perpetration. The mean effect sizes are summarised in Table 1. The mean effects are mostly of moderate size by the YEF standard (small is d<0.1).

Table 1

Mean effect sizes from included systematic reviews and meta-analyses

Review	Outcome	*n* studies (*k* effect sizes)	ES (*d* and OR)	95% CI	% reduction	Evidence rating on crime and violence
Lee & Wong (2022)	Perpetration of dating violence behaviours	16 (17)	OR = 1.33 *d* = 0.157	0.06, 0.26[a]	20%	4
Melendez-Torres et al. (2022)	DRV perpetration (1 year+ measures; all intervention types)*	16 (79)	OR = 1.282 *d* = 0.137	1.06, 1.56	17%	4
Piolanti & Foran (2022)	Physical TDV	13	OR = 1.351 *d* = 0.166	1.09, 1.69	21%	4
	Sexual TDV	6	OR = 1.136 *d* = 0.07	1.02, 1.32	9%	3

	Physical and sexual TDV composite	16	OR = 1.281 d = 0.137	1.07, 1.52	17%	5

Note: DRV = dating and relationship violence; TDV = teen dating violence; ES = the weighted mean effect size; p = the statistical significance of the mean ES; OR = odds ratio; d = Cohen's d; n = number of studies; ns = not significant; * = headline impact estimate. a = confidence intervals estimated using the value of z reported by the report authors

In order to convert the d measures to a percentage reduction, we first used the equation: Ln(OR) = d / 0.5513 (Lipsey & Wilson, 2001). Then we assumed that there were equal numbers (n = 100) in the experimental and control conditions, and that 25% of persons in the control condition committed an offence.

Melendez-Torres et al. (2022) also reported the mean effect sizes for dating and relationship violence perpetration for different types of interventions and for outcomes measured at, or more than, one-year post-baseline. The results are summarised in Tables 2 and 3. The findings suggest that programmes were more effective on long-term outcomes. In other words, dating and relationship violence outcomes measured at one year or more than one-year, post-baseline were more effective than those measured less than one year later. For both short-term and long-term outcomes, single component intervention programmes are associated with larger reductions in dating and relationship violence perpetration.

Table 2

Additional effect sizes for short-term outcomes for dating and relationship violence reported by Melendez-Torres et al. (2022)

Outcome	n studies (k effect sizes)	ES (d and OR)	95% CI (OR)	% reduction	Evidence rating on crime and violence
All intervention types	18 (118)	OR = 1.10 d = 0.05	0.96, 1.25	7%	4

Curriculum based interventions	2 (5)	OR = 1.205 d = 0.103	0.89, 1.64	13%	2
Multi-component interventions	6 (38)	OR = 1.042 d = 0.023	0.87, 1.25	3%	3
Multi-level interventions	5 (35)	OR = 1.075 d = 0.039	1.02, 1.14	5%	2

Table 3

Additional effect sizes for long-term outcomes for dating and relationship violence reported by

Melendez-Torres et al. (2022)

Outcome	*n* studies (*k* effect sizes)	ES (*d* and OR)	95% CI (OR)	% reduction	Evidence rating on crime and violence
Single-component interventions	2 (8)	OR = 1.961 d = 0.371	1.75, 2.17	42%	2
Multi-component interventions	5 (29)	OR = 1.235 d = 0.116	0.84, 1.85	15%	2
Multi-level interventions	9 (42)	OR = 1.176 d = 0.08	0.92, 1.52	12%	4

Moderators and mediators

Melendez-Torres et al. (2022) reported mean effect sizes for different forms of dating and relationship

violence outcomes. For example, emotional dating and relationship violence perpetration included

behaviours such as insulting or demeaning a victim and spreading rumours. Physical dating and

relationship violence included behaviours such as slapping, hitting, kicking, or threats of physical

violence. For short-term outcomes (i.e., those reported up to one year post baseline), the mean effect

sizes for these different measures were as follows:

(1) emotional OR = 1.29 (95% CI 0.90, 1.85; *n* = 9, *k* = 19, I^2 = 90%)

(2) physical OR = 1.10 (95% CI 0.85, 1.41; *n* = 7, *k* = 16, I^2 = 83%)

(3) sexual OR = 1.01 (95% CI 0.88, 1.16; *n* = 7, *k* = 30, I^2 = 79%)

(4) physical and sexual OR = 1.22 (95% CI 0.19, 7.69; *n* = 3, *k* = 6, I^2 = 76%)

(5) cyber OR = 1.04 (95% CI 0.85, 1.29; *n* = 2, *k* = 4, I^2 = 71%)

For long-term outcomes (i.e., those reported at or more than one year post baseline), the mean effect sizes for these different measures were as follows:

(1) emotional OR = 1.30 (95% CI 0.99, 1.69; *n* = 9, *k* = 21, I^2 = 85%)

(2) physical OR = 1.20 (95% CI 0.85, 1.69; *n* = 7, *k* = 22, I^2 = 80%)

(3) sexual OR = 1.18 (95% CI 0.52, 2.70; *n* = 4, *k* = 9, I^2 = 60%)

(4) physical and sexual OR = 1.30 (95% CI 0.69, 2.38; *n* = 5, *k* = 9, I^2 = 78%)

(5) cyber OR = 2.04 (95% CI 1.59, 2.63; *n* = 2, *k* = 3, I^2 = 50%)

The review also reported several additional mean effects for outcomes relating to dating and relationship violence (such as victimisation, and attitudes to dating violence,) but these are not reported here due to the large number of effect sizes. Meta-regression moderator analysis was conducted to explore the relationship between the percentage of females in the sample and the overall effect size. There was no evidence to suggest that there was any relationship between the proportion of females in the sample and the overall effectiveness of the programme (Melendez-Torres et al., 2022).

Lee and Wong (2020) included a number of different effect sizes for subgroups of studies based on several moderators. The results indicated that interventions that did not include content on gender roles were associated with greater reductions in dating violence perpetration (*d* = 0.192, *n* = 23)

compared to those that did include content on gender roles (d = 0.055; n = 12). Similarly, interventions that included elements of bystander training were associated with smaller reductions in dating violence perpetration (d = 0.013; n = 11) than those that did not (d = 0.228; n = 20). Lee and Wong (2020) also compared the effect sizes for studies that used a randomised design with those that didn't and found that randomised studies were associated with larger effect sizes (d = 0.159; n = 22) than non-randomised studies (d = 0.136; n = 5), but the difference between the two mean effects was not statistically significant. Lee and Wong (2020) did not compute subgroup analyses for the single-group pre-test/post-test designs that were included in their review. The review found that interventions evaluated with 'Caucasian/mixed' ethnic groups were associated with greater reductions in dating violence perpetration (d = 0.328; n = 11) compared to interventions evaluated with samples that were predominately minority ethnicities (d = 0.091; n = 21). Effect sizes measured more than one month after the end of interventions were also larger (d = 0.19; n = 19) than effect sizes categorised as immediate post-intervention effect sizes (d = 0.093; n = 19).

Piolanti and Foran (2022) conducted several subgroup analyses on a composite measure of teen dating violence, that included both measures of perpetration and survivorship. Results were not reported for perpetration outcomes separately.

Implementation and Cost analysis

Melendez-Torres et al. (2022) conducted a mixed methods review of school-based interventions to prevent dating and relationship violence and gender-based violence. It is their synthesis of process evaluations that informs the implementation evidence section of the current report.

The review included 137 process evaluations of evaluations to prevent dating and relationship violence and gender-based violence. Melendez-Torres et al., (2022) provide the criteria used to derive overall quality ratings of process evaluations in terms of 'reliability' and 'usefulness', see table

overleaf. Overall, many process evaluations were rated as high for reliability (49.6%; Melendez-Torres et al., 2022). The remaining studies were rated as medium (9.4%) or low (41%) for reliability. About half of the studies were rated as low for usefulness (50.4%; Melendez-Torres et al., 2022), with the remainder rated as medium (33.1%) or high (16.5%). Only 18 process evaluations were rated high for both reliability and usefulness, whereas 48 studies were rated as low for both reliability and usefulness. The results of the synthesis of process evaluations were presented in a multilevel framework, with the review authors identifying important implementation factors at the school, student, facilitator, and intervention level (Melendez-Torres et al., 2022).

Criteria used to derive overall quality ratings of process evaluations

	Reliability/trustworthiness of the data	Usefulness of the data
High	Rigour in at least three of the first four criteria	Studies privileged the perspectives of participants and to present findings that achieved both breadth and depth
Medium	Rigour in two out of the first four criteria	Studies partially met criteria for privileged perspectives of participants and presenting findings that achieved both breadth and depth
Low	Rigour in one or none of the first four criteria	Sufficient but limited findings

(Melendez-Torres et al., 2022: 46).

School-level implementation factors

One barrier to implementation at the school-level was school resources and infrastructure (Melendez-Torres et al., 2022), and in particular, the absence of necessary resources and appropriate school infrastructure. This was found to be an important theme in 32 process evaluations. In many instances this led to the modification of the originally proposed intervention components. For example, in one intervention, schools did not have the resources available to play an audio drama on MP3 players and so the script was read to students, which is arguably much less impactful (Melendez-Torres et al., 2022). School infrastructure, both physical, such as availability or size of classrooms, and organisational, such as availability of teaching staff, also led to aspects of the intervention being modified. For example, one intervention omitted a physical activity from the programme because the

available classrooms were too small for all students to participate, and another had to modify a same-gender intervention to mixed-gender due to the limited availability of teachers (Melendez-Torres et al., 2022).

Another barrier to implementation on the school-level was time constraints, and Melendez-Torres et al. (2022) outline that this often led to changes to the intervention dosage and fidelity, which may have negatively influenced the potential impact of the intervention. This barrier was mentioned in 54 of the process evaluations. In many instances schools had limited time available to implement an intervention and academic performance and standardised testing were prioritized. For example, a facilitator of the Green Dot intervention programme noted:

"Yeah, I think it's why [they said no to Green dot] – actually both schools – because when I talked to our control school, you know, he [the principal] was like these [results] are wonderful, but, you know, test scores… If your test scores aren't here or you don't have this much class time then you're losing funding and you're not going to do this. So he was all about it but he's like I just can't" (Davidov et al., 2019).

Time constraints and lack of staff availability led to an unwillingness of schools to implement longer interventions and Melendez-Torres et al. (2022) found that schools would often favour one-time lessons instead.

Another major barrier to implementation at the school level, noted in 42 process evaluations, was the perception amongst school staff that dating and relationship violence and/or gender-based violence were not a problem in their schools (Melendez-Torres et al., 2022). This was also sometimes connected to school reputation, with some senior administrators at schools believing that by implementing an intervention to reduce violence they would be communicating to the wider

community that their school has a problem with violence (Melendez-Torres et al., 2022). For example, one facilitator noted:

"The implementation school acted like they don't have a problem with violence but that's a lie and everybody will tell you that's a lie. I mean, any school will say we don't have a problem with bullying, we don't have a problem with violence, and I think that's just to say, you don't want it out there that your school is violent. Who wants to go to a school that's full of violence?" (Davidov et al., 2019).

Melendez-Torres et al. (2022) also noted that for interventions to reduce dating and relationship violence, resistance was often expressed as a refusal to admit that dating and relationship violence and gender-based violence were issues that faced students. For gender-based violence more broadly this denial was found to often be rooted in staff personal beliefs and opinions. For example, staff with homophobic views would be reluctant to implement a programme to reduce sexuality-based bullying and some male staff felt alienated by interventions to reduce gender-based violence (Melendez-Torres et al., 2022).

Similarly, pre-existing negative perceptions and misunderstandings about dating and relationship violence were associated with lower levels of staff engagement with interventions. Unfortunately, those schools with staff who had the lowest levels of knowledge before the intervention were less likely to participate in training offered by interventions (Melendez-Torres et al., 2022).

Student-level implementation factors

One facilitator to implementation on the student level was the inclusion of interactive intervention components. This was highlighted in 48 process evaluations. Specifically, students and teachers viewed interventions that contained elements such as discussion, games, or role-play, in which students got involved in the intervention components more favourably. For example, a teacher noted:

"The participatory and interactive nature of the work – not just talking or preaching at them through theatre but really involving them. The moments where the pupils were allowed to stop the action and take over were particularly effective". (Walton, 2007).

Take-home activities, such as homework tasks, were associated with lower levels of student engagement, with Melendez-Torres et al. (2022) finding that the critical element to boost engagement was interaction with intervention facilitators and peers, as well, as student ownership of the intervention. For example, one student noted:

"We were all happy that we would be the ones to distribute the condoms… It was as if we belong to this team and, like, it somehow left the best impression on me… We are now, you know, like some collective that fights together for something important" (Namy et al., 2015).

Twenty-two process evaluations noted that a barrier to implementation was related to student attendance, typically due to students dropping out of school, students being truant, or missing parental permission forms (Melendez-Torres et al., 2022). When programmes were voluntary, attendance was often lower and more variable. Low attendance was a particular barrier when programmes were implemented after-school or students had a long commute home after school (Melendez-Torres et al., 2022). Overall, it was difficult to get the 'right' children to attend interventions. That is, those children and young people who were most at-risk or would benefit the most from the programme were less likely to attend. For example, a nurse in one process evaluation noted:

"At first I thought they chose the best children to come to the project until I realised it was voluntary. Basically, the children that came weren't the children I wanted to see. The children that we know needed the program were not there" (Fonn, 2017).

Thirty-eight process evaluations also noted that the formation of positive relationships with peers and facilitators was an important facilitator to implementation (Melendez-Torres et al., 2022). This was particularly important to combat the potential embarrassment or discomfort that some students may feel when learning about topics such as dating and relationship violence or gender-based violence (Melendez-Torres et al., 2022). For examples, students noted:

"At first when I started group, I was kind of scared to talk to people. I didn't know anyone in group, so I kind of had to work up a trust relationship with them… Now I can talk to anyone in group" (Diegel, 1999).

Good student-facilitator relationships were also important facilitators to implementation, with factors such as trust and accessibility noted as important elements. Melendez-Torres et al. (2022) found that this is particularly important for facilitators who are not already members of the school community as they will not have pre-existing relationships with students. Ways in which facilitators could build this trust was to be vulnerable with students and share examples from their personal lives, for example, one student noted:

"Several students also said that when the Mexfam health educators shared their own personal experiences during the sessions it helped the course participants to open up about their own lives" (Makleff et al., 2019).

Another student found that having facilitators share their experiences helped them to realise they were not alone. For example, a student said:

"It helped me because I kept it in for that long, for like 7 years. I never got help on it. It was just like a wound that never healed. It was shocking to see that I wasn't the only person who's been through it. It made me feel more comfortable" (Ball et al., 2009).

Several process evaluations (*n* = 59) also noted that making sure interventions were the right fit for the student body and the school, was an important factor that impacted implementation. Many interventions had to be modified either before or during implementation because interventions were not a good fit based on the cultural context, age of students, background knowledge, sexual identity, previous experiences of trauma, or disability (Melendez-Torres et al., 2022). For example, intervention materials may not be suitable to students based on the age of participants, as one student commented:

"I thought it was more towards adult relationships than towards teenagers. Or like early adult… There were some text messages we couldn't really relate to… Like, cause teenagers don't usually spend a lot of time with their mates… So like, yeah. Usually, when you're an adult relationship it's like kind of different because you're with each other more" (Guillot-Wright et al., 2018).

Student immaturity and disruptive behaviours was also a common barrier to implementation, with 30 process evaluations citing these issues. Immaturity was seen across all age ranges and facilitators reported finding it difficult to decide how to respond to these behaviours properly (Melendez-Torres et al., 2022). This is particularly difficult if students respond in a very inappropriate way, even endorsing or suggesting violence, in response to the intervention content. For example, one facilitator explained a very challenging situation with a student:

"The teacher tells me about the consent lesson, saying he told students that even if you meet a woman in a bar, have drinks together, she comes back to your hotel, takes off her clothes off and lies down on the bed next to you... you do not have the right to have sex with her without consent. He relates that a male student responded that in such a case 'I'd give her a slap!'. The teacher says there were intakes of breath from other students and that he gave the student an hour's detention – 'I had to, it was unacceptable..." (Bragg et al., 2020).

Facilitators had to balance schools' zero tolerance policies with the opportunity to educate disruptive students, who may require the intervention more than their non-disruptive peers (Melendez-Torres et al., 2022).

Facilitator-level implementation factors

A total of 67 process evaluations reported implementation factors on the facilitator level. For example, school-based facilitators were found to have a greater variation in their knowledge compared to external facilitators (Melendez-Torres et al., 2022). External facilitators generally had considerable knowledge and were more confident in implementing the intervention components. Finding the right staff within a school to implement the intervention is also important. For example, a principal reported:

"I think that there are some staff that are absolutely fabulous at delivering stuff like that. And then some others who should not be allowed anywhere near it. Because it can... be quite damaging if it's not done the right way" (Meiksin et al., 2020).

Melendez-Torres et al. (2022) found that teachers with a health background were more suitable at implementing interventions to reduce dating and relationship violence in comparison to teachers of purely academic subjects like English or Maths.

Support from the 'other side' was another important facilitator for implementation in relation to the facilitators (Melendez-Torres et al., 2022). For school-based facilitators this refers to having support from outside violence prevention organisations, and for external facilitators this relates to the importance of having the support of teachers and school staff (Melendez-Torres et al., 2022).

Melendez-Torres et al. (2022) also found that school-based facilitators were associated with more successful long-term implementation of programmes as the intervention could be embedded into the school curriculum. For example, intervention staff in the Start Strong Bronx intervention noted:

"I really like the Fourth R model because I felt like it has to be institutionalised and it means more to the kids to have their teacher [give them the information]… Because then they could kind of weave it in, throughout the day and keep the content kind of alive. And also… I felt like it was making it part of the school's – it wasn't just this extra, side thing that they did once in awhile, but it was woven into the curriculum in a lot of ways. The big thing, though was, that if the teachers were trained, then it stays" (Cissner & Ayoub, 2014).

Intervention-level implementation factors

On the intervention-level, factors such as ease of delivery and adaptability were related to increased implementation fidelity. For example, Melendez-Torres et al. (2022; p. 135) found that… "For facilitators, especially those who were school-based, the more straight-forward and lesser amount of additional time the intervention took to deliver, the better the programme fidelity and staff

acceptability. Because school-based facilitators often had competing demands on their time, they could have limited availability to invest in intervention delivery".

Nineteen process evaluations mentioned that ease of programme modification, such as changing the timings, was also related to increased programme fidelity. Modifications may allow schools to change the intervention slightly to better fit the needs of their students and flexible delivery timings were very appealing to school staff (Melendez-Torres et al., 2022).

Findings from the UK

Melendez-Torres et al. (2022) included a recent evaluation of an intervention to reduce dating and relationship violence in English secondary schools. A pilot cluster-RCT was conducted in six state secondary schools in areas close to London or Bristol. "Project Respect" was implemented in four intervention schools during the 2017-18 academic year as a whole-school multi-component intervention to reduce dating and relationship violence perpetrated by girls or boys in heterosexual or same-sex relationships (Meiksin et al., 2020). The intervention was informed by the theory of planned behaviour (Ajzen, 2012) which posits that interventions should aim to affect behavioural change through promoting the development of skills and challenging attitudes and norms that may support problem behaviours.

School leadership teams received training provided by a National Society for the Prevention of Cruelty to Children (NSPCC) trainer and the delivery followed a train-the-trainer model. In other words, these trained school leaders then trained other school staff on how to respond effectively to dating and relationship violence and gender-based harassment amongst their students. The school leadership teams were also asked to review school policies and procedures and ensure that these included content to prevent dating and relationship violence. The intervention also involved identifying the

'hotspots' in the school where dating and relationship violence occurred more frequently and increasing staff presence in these areas, using rotas for staff members to patrol these. (Meiksin et al., 2020). Information was also provided for parents and the intervention utilised the 'Circle of 6' app which is freely available and allows users to discreetly request help and support from their identified contacts if they are experiencing dating and relationship violence victimisation (Meiksin et al., 2020). The programme also included a classroom curriculum with age-appropriate lessons for those in Years 9 and 10. The curriculum was developed in based on a collaboration between the NSPCC and the evaluation team and focused on a number of different components. These included challenging gender norms, defining healthy relationships, setting boundaries in relationships, giving and receiving consent. Additional topics included effective communication and anger management skills, helping friends at risk of dating and relationship violence, awareness raising campaigns and further, provided guidance on accessing local support services (Meiksin et al., 2020). Lessons included a variety of different activities, such as discussions, videos, role-play, quizzes, and student-led campaigns.

Costs

There is limited information about the costs of these interventions. Melendez-Torres et al. (2022; pg 22) stated 'No eligible economic evaluations were identified…', however, some of the evaluations included in the Melendez-Torres et al. (2022) review provided some detail about costs and resource use (Table 57, pg. 1018). Single component and curriculum interventions were found to be more effective, and these might be expected to be less costly than the multilevel interventions.

What do we need to know? What don't we know?

Dating violence interventions are found to be effective with teenagers, although the effects are mostly not large.

There are a wide range of different intervention designs which have been utilized. We do not know which of these are most effective or cost-effective.

Most interventions take place in a school-setting. Running programmes during school hours will ensure larger attendance than after school programmes, but limited time and resources means that programmes are often cut short or adapted. There are at least two possible solutions.

The first is to derive and test flexible intervention designs, with guidance as to which interventions and activities to pick for the age group and time available, and what to add if time allows. If possible, we should clearly understand the minimum dose required to have a desirable effect.

However, given the reluctance of schools to adopt dating violence programmes as it potentially signals that the problem exists in the school, it may be better to build the programme into the existing relationship and sexuality education curriculum, which is already done in many cases.

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Annex 1: Effect size calculation

This annex shows the calculation based on the results and assumptions given in the text. We assume 200 observations made by police, evenly divided between treatment and control groups. That means there are 100 recorded observations in the control group and 100 recorded observations the treatment group. Assuming that 25% of individuals in the control group perpetrated dating and relationship violence, the mean effect sizes for each outcome reported by each review can be easily transformed to a percentage reduction in crime.

If the odds ratio for the dating and relationship violence perpetration outcome for short-term outcomes, OR = 1.099 (Melendez-Torres et al., 2022), then using the table below and the formula for an OR, we can estimate the value of X. The odds ratio is estimated as: A*D/B*C, where A is the number of observations not involving violence in the treatment group, B is the number of observations that did involve violence in the treatment group, C is the number of observations that did not involve violence in the control group, and D is the number of observations that did involve violence in the control group. Therefore, the value of X is 23.27 for the dating and relationship violence perpetration outcome.

	No violence	Violence	Total
Treatment	100-x	x	100
Control	75	25	100

Therefore, the relative reduction in crime is (25 – 23.27)/25 = 6.92%. The corresponding values for X in the review by Lee and Wong (2020), is 20.05. Thus, the relative reduction is 19.79% [(25-20.05)/25*100]. Similarly, the value of X for the composite physical and sexual teen dating violence perpetration outcome

The prevalence of dating and relationship violence perpetration is likely to vary between studies and across individuals. Furthermore, it can be influenced by a number of different factors such as the type of behaviour, the type of report, or the time frame. If we were to adjust our assumption that 25% of the control group perpetrated dating and relationship violence, the relative reduction in the intervention group is not greatly affected.

For example, if we assume that 40% of the control group perpetrated dating and relationship violence, the 2x2 table would be as follows for and the value of X is 38.12 (for the overall short-term outcome). Therefore, the relative reduction is 4.71% (i.e., (40 − 38.12)/40]*100).

	No violence	Violence	Total
Treatment	100-x	X	100
Control	60	40	100

Similarly, if we assume that 10% of the control group perpetrated dating and relationship violence, the value of X is 9.18 and the relative reduction is 8.18%. Given the difference in the assumed prevalence of dating and relationship violence in the short-term (i.e., up to one-year post-baseline) and long-term (i.e., at or more than one-year post-baseline), the percentage relative reduction does not vary in a similar fashion. Tables 4 and 5 show this further.

Table 4

Variation of the relative reduction in short-term outcomes reported by Melendez-Torres et al. (2022) based on various assumptions.

	All interventions OR = 1.099	Single component interventions OR = 1.249	Curriculum interventions OR = 1.205	Multi-component interventions OR = 1.042	Multilevel interventions OR = 1.075
Assumed prevalence	Relative reduction				
10%	8.18%	18.31%	15.58%	3.64%	6.32%
25%	6.92%	15.74%	13.33%	3.05%	5.33%
40%	4.71%	13%	10.95%	2.46%	4.31%

Table 5

Variation of the relative reduction in long-term outcomes reported by Melendez-Torres et al. (2022) based on various assumptions.

	All interventions OR = 1.282	Single component interventions OR = 1.961	Curriculum interventions OR = 1.235	Multilevel interventions OR = 1.176
Assumed prevalence	Relative reduction			
10%	20.24%	46.38%	17.46%	13.67%
25%	17.46%	41.88%	14.98%	11.66%
40%	14.47%	36.57%	12.36%	9.55%

Annex 3 – AMSTAR Quality Rating

	Modified AMSTAR item	Scoring guide	Interventions to reduce dating violence		
			Lee & Wong (2020)	Melendez-Torres et al. (2022)	Piolanti & Foran (2022)
1	Did the research questions and inclusion criteria for the review include the components of the PICOS?	To score 'Yes' appraisers should be confident that the 5 elements of PICO are described somewhere in the report	Yes	Yes	Yes
2	Did the review authors use a comprehensive literature search strategy?	At least two bibliographic databases should be searched (partial yes) plus at least one of website searches or snowballing (yes).	Yes	Yes	Yes
3	Did the review authors perform study selection in duplicate?	Score yes if double screening or single screening with independent check on at least 5-10%	Yes	Yes	Yes
4	Did the review authors perform data extraction in duplicate?	Score yes if double coding	Yes	Partial yes	Yes
5	Did the review authors describe the included studies in adequate detail?	Score yes if a tabular or narrative summary of included studies is provided.	Yes	Yes	Yes
6	Did the review authors use a satisfactory technique for assessing the risk of bias (RoB) in individual studies that were included in the review?	Score yes if there is any discussion of any source of bias such as attrition, and including publication bias.	Partial Yes	Yes	Yes
7	Did the review authors provide a satisfactory explanation for, and discussion of, any heterogeneity observed in the results of the review?	Yes if the authors report heterogeneity statistic. Partial yes if there is some discussion of heterogeneity.	Yes	Yes	Yes

8	Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review?	Yes if authors report funding and mention any conflict of interest	No	Yes	No
	Overall		Medium	High	Medium