WHAT WORKS: CRIME REDUCTION SYSTEMATIC REVIEW SERIES

No 2. MEDIATION, MENTORING AND PEER SUPPORT TO REDUCE YOUTH VIOLENCE: A SYSTEMATIC REVIEW

Phil Edwards, Caitlin Jarrett, Chloe Perkins, Deirdre Beecher, Rebecca Steinbach, Ian Roberts

Faculty of Epidemiology and Population Health, London School of Hygiene and Tropical Medicine, Keppel Street, London, UK

Corresponding author:

Dr Phil Edwards, Department of Population Health Faculty of Epidemiology & Population Health London School of Hygiene & Tropical Medicine Keppel Street, London Phil.edwards@LSHTM.ac.uk
+44 (20) 7958 8112

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ABSTRACT

Background – After road traffic collisions and suicide, violence is the greatest threat to life of young people. In England and Wales, 43 young people aged 15-24 years died from assault in 2012. These premature deaths are a fraction of the thousands of young people who attend hospital each year with violence-related injuries and who survive to live with scars and psychological trauma. Public health approaches that address attitudinal causes of youth violence, and that intervene early on with at-risk youth, may be effective at reducing youth violence.

Objectives – To systematically review violence prevention programmes for young people involved in, or at risk of violence that include a mentoring, mediation or peer-support component.

Search methods – To identify eligible studies for inclusion in the review searches were made of: 15 electronic bibliographic databases for published work; grey literature for unpublished work; trials registers for ongoing and recently completed trials; reference lists of the included studies.

Selection criteria – Broad inclusion criteria were used to identify eligible studies including any interventions that included contact and interaction with a positive role model. The role model might be a peer (of similar age and/or background), a mentor (someone with more experience, skills and abilities), or a peer mediator who intervenes between youth to prevent retaliation. Study designs included randomised controlled trials (RCT), cluster randomised trials (CRT), controlled before-after (CBA) studies, cohort studies and case-control (CC) studies. Participants included perpetrators of violence and those at risk of violence who were aged less than 25 years. Outcomes were carrying a weapon, violence, offending, and health service use due to injury. Crime and self-reported outcomes were included.

Data collection and analysis – All studies identified through the search process were imported into EPPI-Reviewer 4 software where screening, full text coding and data extraction took place. Two review authors independently conducted an initial screening to identify all potentially relevant reports of studies. Full-text reports were obtained and assessed by each review author in EPPI-Reviewer 4 for final inclusion in the review. Disagreements were resolved by discussion with a third review author. Data extracted from included studies were summarised using the 'EMMIE' framework, developed by researchers at the UCL Jill Dando Institute of Security and Crime Science: Effect size (how effective is the intervention?), Mechanism (how does the intervention work?), Moderators (in which contexts does the intervention work?), Implementation (what is needed to implement the intervention?), and Economics (how much might the intervention cost?).

Results – Sixteen studies were identified for inclusion with nine evaluating mentoring interventions (2 RCTs, 3 CBA, 3 Cohort/CC, 1 economic evaluation); two evaluating

mediation interventions (2 CRT); and five evaluating peer-led interventions (1 CRT, 3 CBA, 1 Cohort). Most studies were conducted in the USA, with one in the UK. Studies were heterogeneous in terms of participants, interventions and outcomes so a meta-analysis was not considered to be appropriate.

Mentoring: one RCT found a reduction in numbers of fights and fight injuries after 6 months in assault injured youth (not statistically significant). An analysis of a national cohort found mentored youth were less likely to report hurting anyone in a fight. Another RCT found no effect on reconviction rates after 2-year period in persistent offenders. One CBA study found more re-arrests in mentored youth (statistically significant). Another CBA study found fewer criminal contacts 6 months following release in youth offenders (statistically significant).

Mediation: One RCT of mediation in a school-based violence prevention programme found violent behaviours were halved (not statistically significant). One CRT of peer-mediation in schools found no evidence for a reduction in aggressive behaviours (fighting and injuries due to fighting).

Peer-support: In schools a CRT found a reduction (not statistically significant) in physically violent acts 2 years following a multi-component programme with a peer-led component. A CBA study found a reduction in aggressive behaviour when a violence prevention curriculum was administered by a teacher with a peer-leader. In a detention facility a CBA study found increased reoffending among high-risk youth receiving a multi-component intervention with peer-support (53% intervention vs. 29% of controls; p=0.08); there was no violence outcome.

Discussion – The studies on mentoring provided good information on inputs required for mentoring schemes, in terms of staff, training and time spent with youth. The evidence from two studies on mediation provided little evidence of effect on reducing violent behaviour, carrying weapons, arrests and reconvictions. The evidence from five studies on peer-led interventions found weak evidence for effect on reducing aggressive behaviour and attitudes conducive to violent behaviour, and no evidence for effect on weapon-enabled violence, arrests and reconvictions. There is insufficient evidence from high quality intervention studies that mentoring, mediation or peer-led interventions are effective in preventing youth violence. Larger scale evaluations are needed with controls for effects of other components.

CONTENTS

INTRODUCTION

The greatest threats to the lives of young people living in Europe are: road traffic collisions, suicide and violence against the person (World Health Organisation, 2010). Driving cars and riding motorcycles are almost a rite of passage for many young men, and the independence of travel and the possibility of providing transport for one's family and friends, may be for many the first marker of entering adulthood. Road traffic crashes, an unintentional violence where kinetic energy is out of control, claimed the lives of 370 young people aged 15-24 years in England & Wales in 2012, many of whom were killed as motor vehicle drivers or passengers. Another major threat to these young lives is suicide: 348 young people aged 15-24 years died in 2012 from intentional self-harm (i.e. violence against the self), with a further 118 deaths due to "undetermined intent". Assaults, a violence that is inflicted against other people, is the third of these threats to young life: 43 young people aged 15-24 years died from assault in 2012. In all of these violent causes of death, the deaths of young men outnumber those of young women by a factor of four. Sadly, these premature deaths of young people still in their prime are but a small fraction of the many thousands of young people who survive to live with debilitating injuries, scars and psychological trauma. This systematic review will address the third of these three causes, violence inflicted against others, and is specifically concerned with young people inflicting violence using weapons such as knives and guns.

Youth violence

Although Teddy boys with flick-knives may be a long since forgotten concern of the 1950s, young men in 21st Century Britain remain disproportionately involved as both the victims and perpetrators of knife (and gun) violence. Young men are at a higher risk of being a victim of violence compared with women and compared with men of other ages (Rubin et al. 2008). Young men are also more likely to be perpetrators of violence: more than 85% of violent offenders are male and more than 85% of violent offenders are between the ages of 16 to 29 years (Rubin et al. 2008). Young people carry knives primarily for four reasons: to increase capacity to cause harm, fear of violence, to facilitate robbery, and for self-image (World Health Organisation, 2010). A vicious circle can therefore develop, where the carrying of weapons by youth for self-protection may be seen by other youth as threatening, causing them to respond by starting to carry weapons (Silvestri et al. 2009). The development of interventions to prevent youth violence thus requires an understanding of individual circumstances, and the complex social meanings of youth carrying weapons, including street credibility, self-esteem and respect.

Prevalence

Measuring the true scope of the problem using crime statistics has been problematic, with offences involving the use of a knife or other sharp instrument only being collected for a selection of serious violent offences, including: robbery, violence against the person, burglary, sexual offences and domestic violence. The reporting of "knife

enabled" offences began in London in 2003 and in the rest of England and Wales in 2007. However, estimating changes to rates of youth knife crime depends critically on the completeness of police data, and many offences may either go unreported, or undetected. Recent crime statistics suggest that there were nearly 30,000 selected violent offences involving a knife or other sharp instrument in 2011-2012, including 200 homicides (all ages). According to NHS data, 4,490 people were admitted to English hospitals during 2011-2012 for injuries due to assault by a sharp object (Berman, 2012).

Knife carrying and knife crime are also significant problems for children and younger teenagers. Police data suggest that 17% of the nearly 20,000 out-of-court disposals given for possession of a knife or offensive weapon in 2011-2012 were to juvenile (ages 10 to 17 years) offenders (Berman, 2012). Data from a MORI survey found that 45% of boys and 16% of girls aged 11 to 16 years admitted to carrying a knife (Youth Justice Board for England & Wales, 2009). Children are also victims of knife crime: the Crime Survey for England & Wales suggested that a knife or other sharp instrument was used in 11% of violent incidents involving a weapon against children (Berman, 2012).

Police responses
The increase in teenage knife murders and hospital admissions due to knife wounds reached such a level in 2008 that Britain created its "Knife Czar" together with the Tackling Knives Action Programme (TKAP). This programme was based on the Police National Intelligence Model, and included components of: enforcement, hot spots policing, patrolling and targeting of offenders. Coinciding with creation of TKAP was enhanced police activity nationally, increased use of knife arches at building entrances, a reduction to the youngest age from 17 to 16 years at which possession of a knife would bring an offender before a court, test purchases of knives from retailers, and sharing of data with police by Accident & Emergency departments. By 2010 there had been a 24% reduction in A&E attendances for knife wounds and a 17% reduction in crimes involving knives. However, the TKAP Programme Head urged caution that longer-term solutions to wider societal issues were needed, including an understanding of the risk factors for violent behaviours (Hitchcock, 2010).

Although knives are the more prevalent weapon in violent crimes, in part due to their widespread availability (they are found in every kitchen) the use of firearms is not without its share of public concern and media attention. In the US, where around 45% of households legally own at least one gun, most research on the carrying of guns suggests that multi-component strategies are more effective than single-focus interventions. In the UK, the Metropolitan Police launched its Trident Gang Crime Command in 2012 with a specific responsibility for tackling gang violence in London. Tasked with investigating all non-fatal shootings, and to proactively tackle wider gang crime, Trident's police officers work with London boroughs to deliver interventions that aim to prevent young people from becoming involved in gang crime and youth violence.

Youth involvement in gangs does not imply carrying a knife or other weapon, but is a related cause for public concern. Following widespread riots in the UK in summer 2011 the Ending Gang and Youth Violence cross government report declared a need to do more to prevent young people joining gangs or getting involved in violent activity. One "pathway out of violence" promised by the Ending Gang and Youth Violence report is to explore the potential for placing youth workers in A&E departments to pick up and refer young people at risk of serious violence (Home Office, 2011). These interventions see attendance at A&E as "a teachable moment, a time of introspection and vulnerability after an injury event, and may be an opportune time to intervene with assault-injured youths to reduce violence" (Cheng TL et al. 2008). The provision of mediation, mentoring and peer-support interventions recognises that many social and psychological factors drive youth violence and gang membership. This multidisciplinary approach is necessary to understand both individual and group behaviour, and effectively counteract these emotionally complex scenarios that can provide many positive experiences for young people, such as: friendship, respect, a sense of belonging, and for some youth, may provide a substitute family (Silvestri et al. 2009).

Interventions

While it is clear that youth violence poses a serious threat to the health and well-being of the young people in the UK, and the population as a whole, there is less evidence on what strategies are effective in reducing violent crime among young people. Many initiatives in the UK have followed a 'hot spots approach' which target areas identified as being at particular risk of violence. Popular 'hot spots approach' interventions include targeted stop and search (in particular known gang members or serious offenders), knife amnesties, and reminding retailers of their duty not to sell knives to minors. Other initiatives have followed a 'public health approach' which attempts to address societal and attitudinal aspects (Silvestri et al. 2009). The US Office of Juvenile Justice and Delinquency Prevention has reported that public health approaches may well be the most promising preventive strategies (Silvestri et al. 2009).

'Public health' approach generally implies prevention of disease in the population. Many public health interventions are introduced 'upstream' of the onset of disease, and as such many are delivered by non-medical professionals (for example, diabetes can be prevented by improving the road safety of cycling, because improved safety is likely to increase the uptake of cycling, leading to an increase in levels of physical activity in the population, reducing the proportion of people overweight, thus reducing the risk of diabetes). Public health interventions for youth violence prevention might include intervention for at-risk youth, multi-agency co-ordination, educational and recreational programmes, and social marketing campaigns.

Street conflict mediators
In the US, where gun-enabled violence greatly exceeds that in the UK, programmes have been developed with components that treat violence as if treating an infectious disease, specifically aimed to "block the social transmission of violence." Medical doctor Gary

Slutkin returned to Chicago after years in Africa dealing with the devastating impact of many curable infectious diseases, and saw that homicide was rampant in his home city. By applying methods learned from epidemiology, his ideas helped to design violence prevention programmes such as CeaseFire or Cure Violence which aim to prevent gang violence from escalating (Whitehill et al. 2013). These programmes deploy 'Violence Interrupters', who are members of communities trained in mediation skills, to diffuse conflicts within the communities before shootings occur. People who are trained to become the 'Violence Interrupters' are usually from gangs, or have been involved in high risk activities such as drug dealing, to increase their "credibility" in the eyes of the youth between whom they mediate to find peaceful solutions. Other components of these programmes may include the use of outreach workers based in the communities, who help to manage individual cases, connecting with social services, or finding educational or employment opportunities. The Ceasefire programme has been reported to be successful in reducing gun-enabled violence in parts of Chicago and Baltimore, where immediate, nonviolent resolution was reported for 65% of mediated conflicts, and an additional 23% were at least temporarily resolved without violence (Whitehill et al. 2013). Although conceived as a 'gun violence' prevention programme, by learning about its components (e.g., mediation, violence interrupters and outreach) and processes, and exploring the potential mechanisms of action, it may be possible to adapt, or develop, similar approaches that may be effective in preventing knife-enabled violence.

Mentoring
Mentoring is a relationship between a more experienced person (mentor) and a young person (mentee), where the mentor takes a personal interest in providing advice, guidance and encouragement in the development of their mentee. Mentoring relationships might include social and recreational activities, such as field trips. For their analytical framework in a review of youth mentoring programmes, DuBois et al drew upon a developmental model of youth mentoring (DuBois DL *et al*. 2011). The model assumes that at the outset there is a strong and meaningful personal connection between mentor and mentee. The model then suggests three pathways of development by which the mentee might benefit from this strong interpersonal relationship with the mentor: *social-emotional* development, *cognitive* development, and *identity* development. Social-emotional development is expected to improve the mentee's view of themselves by helping them to control, understand, and express their emotions; this in turn is expected to improve their perceptions of their relationships with peers and other adults. Cognitive development is expected to help to make the mentee more receptive to adult values, advice and perspectives, possibly leading to longer term improvements to the mentee's academic or employment position. Identity development is expected as the mentee begins to imagine different types of person that they might become (or might fear becoming), arising from the educational, recreational and occupational opportunities provided by the mentor. Through these three pathways the mentee might ultimately benefit from improved educational, emotional, well-being and

behavioural outcomes. The model also includes several moderators of possible effects of mentoring, namely the mentee's: interpersonal history (i.e. mentoring effects may differ if the mentee has had previous negative or harmful relationships with adults, or rejection by peers); social competencies (i.e. youth who already have good social skills may gain more from mentoring than others); and the mentee's developmental stage (e.g., age group).

A review of violence prevention strategies by the Centers for Disease Control and Prevention suggested that programmes with the most promising results tended to include combinations of interventions, with 'mentoring' being one strategy (Thornton TN et al. 2002). Maintaining commitment from mentors and ensuring a good match with a mentee requires regular contact, with many programmes contacting mentors monthly by telephone (Thornton TN et al. 2002). A recent review of mentoring and juvenile deliquency (Tolan, 2013) found a lack of detailed programme reporting in mentoring studies making it difficult to link specific features of mentoring studies to theories of how they may be effective. However, in the US an estimated 3 million youth receive the advice or guidance of a community volunteer in one of 5,000 mentoring programmes. The young person is paired with a volunteer from the community with the aim of developing a supportive relationship that is conducive to the young person receiving guidance for positive development. School-based mentoring programmes also exist in the US (e.g. Norwalk Mentor Program) and are considered to be safer, due to supervision by school teachers and administrators (Thornton TN et al. 2002). Intended outcomes are improved self-esteem, attitudes, and school attendance.

Young offenders who receive mentoring may be more likely to see a life free of crime and stay out of trouble (Karcher MJ et al. 2006). Traditionally mentoring has involved one-to-one relationship but may have advantages when experienced in a group, for example by providing a safe environment for youth to practice social skills, to give and receive feedback from peers. Three different types of mentoring are defined by Karcher et al. (2006) including: 'developmental' mentoring where the aim is to use a strong relationship between mentor and mentee to promote the young person's social, emotional and academic development; 'instrumental' mentoring, where the aim is to teach specific skills, such as decreasing risk-taking behaviours, by providing guidance and advice; and also 'intergenerational' mentoring, where mentors are adults aged 55 years or over (which is argued to have advantages due to their greater wealth of experience and wisdom).

A rapid evidence assessment of mentoring and re-offending (Joliffe and Farrington, 2007) recommended that experimental studies are required in the UK to evaluate their impact on re-offending, although Tolan (2013) suggests in order for further trials on mentoring to add useful knowledge, they should detail both the theoretical and practical components for effective mentoring.

Peer support

Peer support approaches have been based on social learning theory, recognising that young people frequently turn to their peers for information and advice, and the importance of social networks in youth development. Similarities between peer and 'recipient' can increase the persuasiveness of messages (Milburn, 1995). Young people may be more likely to hear and personalise messages (and might therefore change their attitudes and behaviours) if they perceive the 'messenger' to be similar to themselves, facing the same concerns and pressures. Peers might carry more credibility, which can help position them as important role models for positive change.

Peer-based approaches in youth violence prevention may offer benefits for both peer and the recipient of peer engagement. For example, in 'peer modelling', peers from a youth's community have carried out case management duties typical of a case manager (e.g., outreach, assessment, planning, monitoring, advocacy), whilst providing peer-led skill-based training activities and positive incentives aimed to encourage a healthier lifestyle (Albrecht and Peters, 1997). Another example of peer workers is exemplified in the peer-led programme Caught in the Crossfire, where peers met with victims of violence for a set period of time post-injury, to provide practical support to keep youth connected to the medical, judicial and educational systems, and to help them to keep moving forward with their lives (e.g., help with job or school preparation and placement; transportation to medical appointments or court hearings; referral to mental health counselling) (Shibru D et al., 2007; Becker MG et al., 2004). For peers, undertaking training and taking on the role of helper is often perceived as a meaningful experience coupled with personal and professional growth, and may also lead to increases in social interaction and acceptance between heterogeneous peers (Milburn, 1995).

Objectives

This systematic review aimed to provide a comprehensive account of the range of violence prevention programmes for young people (aged up to 25 years) who have either been involved in, or are identified as being at high-risk of violence, and that included contact and interaction with an influential peer or positive role model. This individual might be a 'peer' (of similar age and/or background), a 'mentor' (someone with more experience, skills and abilities), or a 'peer mediator' who intervenes between youth to prevent retaliation. The mentor, peer, or mediator is someone who is intended to be a positive influence in the eyes of the youth, and through contact and interaction with the youth, might affect a change in attitudes and behaviours towards violence.

METHODS

Criteria for considering studies for review

Types of studies
We used broad inclusion criteria for considering studies, in order to include programmes that have undergone controlled evaluation, as well as those that have been assessed descriptively or qualitatively. We included experimental (e.g. randomised controlled trials, controlled-before-after studies) and observational studies (e.g., cohort studies, case-control studies) that included one or more components of mediation, mentoring, or peer support.

Participants
We included studies of children, adolescents and adults aged less than 25 years who had participated in a programme that included one or more components of mediation, mentoring, or peer support. Participants included perpetrators of violence and those identified as being at-risk.

Intervention and setting
All studies of programmes that included one or more components of mediation, mentoring, or peer support were considered. For each intervention or programme, we aimed to describe: participant characteristics, setting, recruitment methods, theoretical basis used in the design of the intervention components, intervention aims, characteristics (i.e., components, content, mode, and delivery), processes and outcomes. We aimed to provide an overview of the number, type, content and costs of youth violence prevention programmes designed and delivered for the period to 2014. Where well-designed controlled evaluations of programmes were identified, we aimed to include estimates of the effect of interventions on crime and violence outcomes.

Outcome measures
The primary outcome variable was police or self-reported carrying of a weapon (including knives, guns), violence, offending, or being victim of injury; health service use due to injury. The period over which this variable relates (e.g., last month, last six months) was expected to vary by study and so all periods were included. Secondary outcomes included knowledge and attitudes about interpersonal violence, intentions (e.g. about retaliation), self-efficacy, social competence, and emotions. We also sought data on economic outcomes, including costs of providing the intervention and costs to the individual user; data on unintended adverse consequences of the interventions; and process outcomes (e.g. uptake and adherence to interventions).

Search methods for identification of studies
Our search methods comprised four parts: first, we searched electronic bibliographic databases for published work; second, we searched grey literature for unpublished work; third, we searched trials registers for ongoing and recently completed trials;

finally, we searched reference lists of published studies (see below for an example of the search strategy used). Full details of the search strategies are in the appendices.

Electronic sources

We searched the following electronic databases:

1. Ovid MEDLINE(R) (1946 to current);
2. Social Policy and Practice (OvidSP) (current);
3. Global Health (OvidSP) (1910 to current);
4. PsycINFO (OvidSP) (1806 to current);
5. PsycEXTRA (OvidSP) (1908 to current);
6. PubMed (current);
7. Applied Social Sciences Index and Abstracts (Proquest) (1987 to current);
8. International bibliography of the social sciences (1951 to current);
9. ProQuest Criminal Justice (1981 to current);
10. ProQuest Education Journals (1988 to current);
11. ProQuest Social Science Journals (current);
12. Social Services Abstracts (1979 to current);
13. Sociological Abstracts (1952 to current);
14. Criminal Justice Abstracts (EBSCOhost) (current);
15. Psychology and Behavioural Science Collection (EBSCOhost) (current).

Searching other resources

We searched the following websites for reports and other grey literature:

1. The Scottish Government (http://www.scotland.gov.uk/Topics/Justice/crimes)
2. College of Policing catalogue (http://www.college.police.uk/)
3. UK Justice (https://www.justice.gov.uk/)

We also performed an internet search, using the Google search engine, to search for grey literature and organisations related to prevention of youth violence and gangs (for example, searching for all 'Centers for Youth Violence Prevention', including: Johns Hopkins Center for the Prevention of Youth Violence; Chicago Center for Youth Violence Prevention; Striving To Reduce Youth Violence Everywhere (STRYVE), and the Academic Centers for Excellence on Youth Violence Prevention. The Ovid MEDLINE(R) search strategy detailed below was adapted as necessary to search all other listed sources including the internet search.

Search strategy

Here we present an example of the search terms used to search Ovid MEDLINE

Interventions/Crime prevention
1. (Crime adj3 (prevention or control or reduc*)).ti,ab.
2. "Situational crime prevention".ti,ab.
3. ((neighborhood* or neighbourhood*) adj3 (plan* or setting* or group* or collaboration)).ti,ab.
4. ((school* or workplace or classroom* or college or universit*) adj3 (program* or policy or polic* or strateg*)).ti,ab.
5. 1 and 3

6. 1 and 4
7. (counsell* or counsel*).ti,ab.
8. (activit* adj3 (communit* or educat* or programme* or peer* or group*)).ti,ab.
9. 1 and 8
10. (peer adj3 (intervention* or help or guidance or support*)).ti,ab.
11. (mass?media or TV or television or internet or "social media" or social-media or magazine*).ti,ab.
12. 1 and 11
13. (Youth* adj3 (motivation or change)).ti,ab.
14. community-driven.ti,ab.
15. (community adj3 (leadership or empowerment or engagement)).ti,ab.
16. (support* adj3 intervention*).ti,ab.
17. (advisor* or advocacy or advocat* or peer* or mentor*).ti,ab.
18. 1 and 17
19. interrupter*.ti,ab.
20. (amnest* or cease?fire).ti,ab.
21. peer-education.ti,ab.
22. peer-to-peer.ti,ab.
23. self-enhancement.ti,ab.
24. (Plan adj1 (community or action)).ti,ab.
25. situational crime prevention.ti,ab.
26. (support adj1 (community or personal or friend* or peer* or mentor*)).ti,ab.
27. partnership work*.ti,ab.
28. (conflict adj1 mediation).ti,ab.
29. ((community or urban) adj3 (outreach or setting* or group* or collaboration or coalition or institution*)).ti,ab.
30. communities/ or neighborhoods/
31. 20 and 30
32. counseling/ or peer counseling/ or support groups/
33. 1 and 32
34. social support/ or support groups/
35. 1 and 34
36. Crime/pc [Prevention & Control]
37. peer group/
38. Mentors/
39. mentor*.ti,ab.
40. (job* adj3 (fair* or readiness or community or centre* or center*)).ti,ab.
41. (pupil adj3 referral).ti,ab.
42. ((campus or school) adj1 officer*).ti,ab.
43. (mediation or mediator*).ti,ab.
44. Health Promotion/mt [Methods]
45. 1 or 2 or 5 or 6 or 7 or 9 or 10 or 12 or 13 or 14 or 15 or 16 or 17 or 19 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or
29 or 31 or 33 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44

Crime
46. (crime* or criminal*).tw.
47. (fight* or weapon* or abuse* or agression* or assault* or retaliation).tw.
48. (social* adj3 (contagion or contagious)).tw.
49. (violence or violent).tw.
50. violence/ or antisocial behavior/ or violent crime/
51. (anti?social adj1 behavio?r).tw.
52. antisocial behavior/ or criminal behavior/ or juvenile delinquency/
53. Crime/

54. 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53

<u>Gang violence</u>
55. (peer* adj5 (deviant or deviancy)).tw.
56. (youth adj5 violence).tw.
57. (victim* or offender* or re-offender* or perpetrator* or deliquent*).tw.
58. Adolescent Behavior/
59. "peer*".tw.
60. 56 and 59
61. (gang* adj3 (member* or violence or agression or behavio?r)).ti,ab.
62. (gang* adj3 (urban or rural or communit*)).ti,ab.
63. (deviant adj3 behavio?r).ab,ti.
64. Adolescent/
65. 55 or 56 or 57 or 58 or 60 or 61 or 62 or 63 or 64

<u>Interventions AND crime AND gang violence</u>
66. 45 and 54 and 65

Data collection and analysis

Selection of studies
All studies identified through the search process were exported first to the EndNote bibliographic database for de-duplication. Once duplicate records were removed the records were imported into EPPI-Reviewer 4 software for screening and coding. Two review authors independently examined the titles, abstracts, and keywords of electronic records for eligibility according to the inclusion criteria above. Results of this initial screening were cross-referenced between the two review authors, and full-texts obtained for all potentially relevant reports of studies.

Data extraction and management
Full-texts of potentially eligible studies were assessed by each review author using a code set in EPPI-Reviewer 4 based on the inclusion criteria for final inclusion in the review. Disagreements were resolved by discussion with a third review author. Reference lists of all eligible trials were searched for further eligible studies.

Assessment of risk of bias in included studies
In a review of quality assessment tools for non-randomised studies six tools were identified that were considered to be useful for systematic reviews (Deeks 2003). For this review, we have used a modified framework of one of these tools from the 'Effective Public Health Practice Project' (Thomas 2003). We assess the methodological quality of the study designs and describe each included study against the following criteria: Allocation to intervention/control; Confounders; Blinding; Data collection methods; Attrition; Fidelity; and Follow up. We present a table for each intervention type that summarises each included study's performance against these domains.

Data synthesis

The protocol for this systematic review specified that a meta-analysis of estimates of effect would be conducted should the study populations, intervention components and outcomes be judged sufficiently homogeneous. In the absence of sufficient homogeneity tables of the quantitative results would be presented.

Reporting using the 'EMMIE' framework

This systematic review was commissioned as part of the University Consortium for Evidence-Based Crime Reduction to provide evidence that will be useful to practitioners and policymakers interested in reducing crime. Specifically, its results will be incorporated in an online 'toolkit' devised by researchers at the UCL Jill Dando Institute of Security and Crime Science. To help structure the toolkit, the consortium produced the 'EMMIE' framework for assessing 5 dimensions of evidence (Tilley 2015; Johnson et al 2015). The EMMIE acronym refers to:

- Effect size (how effective is the intervention?)
- Mechanism (how does the intervention work?)
- Moderators (in which contexts does the intervention work?)
- Implementation (what is needed to implement the intervention?)
- Economics (how much might the intervention cost?).

For each of the five EMMIE dimensions, two components are distinguished: EMMIE-E relating to the 'Evidence' and EMMIE-Q to the 'Quality' of the evidence.

The EMMIE framework has been adopted in this systematic review and has been used to present the data extracted from each included study. Detailed data were first extracted from each included study into four tables covering: (1) aims, design and participants; (2) intervention and implementation; (3) results and outcomes; (4) costs (*available separately from the authors of this report*). Data from the detailed coding tables were further summarised into 'EMMIE' tables which are included in this report.

The discussion section has been similarly structured using EMMIE, so that its results may be incorporated easily into the online toolkit.

RESULTS

Results of the search

Records from all searches were imported, screened and coded using the EPPI-Reviewer 4 software. Initial screening was shared between three review authors, who screened the titles, abstracts and keywords of the records for its potential eligibility according to the inclusion criteria. This screening resulted in the exclusion of a total of 10,096 records. The remaining 535 potentially relevant records were then reexamined by two review authors to re-assess each record according to the inclusion criteria, and to decide whether to retrieve full text reports. Any disagreements between

the reviewers were discussed with a third review author to determine inclusion or exclusion of a record.

The reviewers identified a total of 124 records to be assessed based on the full text and subsequently coded each study's design.

The full text reports for all randomised controlled trials (RCT), cluster randomised trials (CRT), controlled before-after studies (CBA), interrupted time series (ITS), cohort studies (CS), or case-control studies (CC) were coded in detail (n=16). Reviewers coded and extracted data for each of these reports in EPPI Reviewer. The numbers of reports excluded with reasons are shown in figure 1.
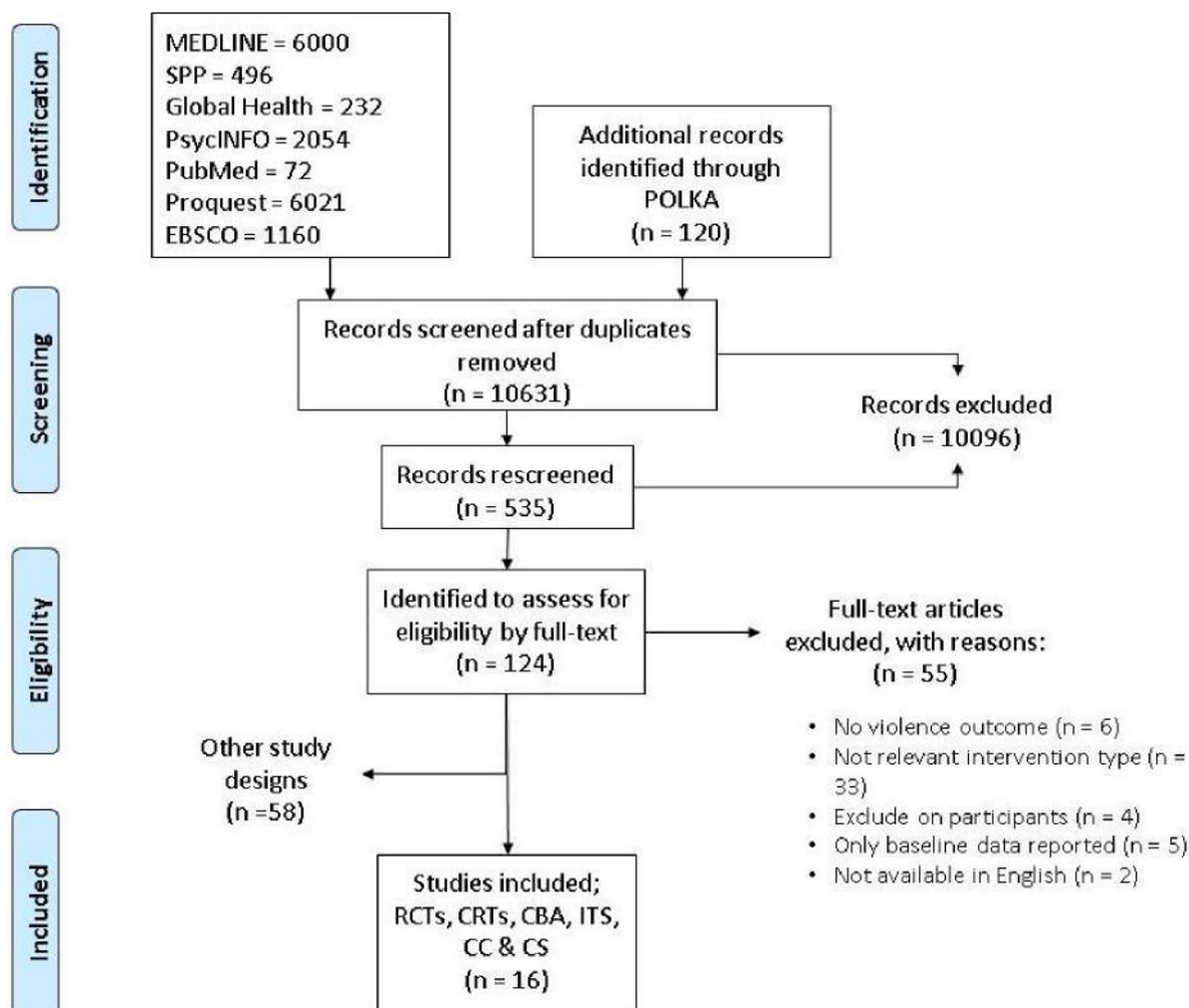
Figure 1: Flow of studies

Included studies

Of the 16 studies included for detailed coding, 9 studies were evaluations of mentoring (2 RCTs, 3 CBA, 3 Cohort/CC and 1 Economic evaluation); 2 studies were evaluations of mediation (1 RCT, 1 CRT); and 5 studies were evaluations of peer-support interventions (1 CRT, 3 CBA, 1 Cohort).

Most of the evaluations were conducted in the USA (13 out of 16 studies) with one in the Netherlands, one in Australia, and one in the UK. The interventions were evaluated during the 1990s and early 2000s, with the most recent in 2011.

The setting for most interventions was in the community (7 studies) or in schools (5 studies), followed by a hospital emergency department and in the community after discharge from hospital (2 studies), and in a juvenile detention facility and in the community after release (2 studies).

Table 1: Included studies

Study	Role model component	Study design	Region	Year	Intervention name	Participants	Setting	Outcome
Mentoring								
Ahrens (2008)	Non-parental adult made positive difference – self reported	Cohort	US (national)	1994-2002		Adolescents in foster care	Community	Self-reported violence
Becker (2004)	Mentoring from positive peer role models	CC	Oakland California, US	1998-2001	*Caught in the Crossfire*	Youth hospitalised for violent injury	Hospital ED bedside	Reoffending and violence-related offences
Blechman (2004)	Mentoring component of broader intervention	CBA	South-western state, US			Minors charged with non-violent misdemeanours or first felonies	Community	Re-arrest
Bouffard (2008)	Transitional coordinators (service brokers), intended to provide informal mentoring	CBA	US	Since 2003	*Juvenile offender re-entry programme*	High risk juvenile offenders selected by probation agents.	Community	Number of new criminal contacts
Braga (2009)	Faith based mentors from community assigned to inmates, one component	CBA	Boston, US	2001	*Boston Re-entry Initiative (BRI)*	High-risk male inmates	Juvenile detention & community	Re-arrest
Cheng (2008)	Gender matched mentors, 6 monthly sessions	RCT	Washington, Baltimore , Maryland, US	2001-2004		Assault injured youths	Hospital ED and community	Self-reported fighting or weapon carrying (last 30 days)
Little (2004)	A component includes young role model mentor	RCT	Kent, UK	N/K	*Intensive Supervision and Support Programme (ISSP)*	Persistent young offenders with previous detention	Community	Court, offence, arrests/month of liberty and pre-post offence ratio outcomes
Moodie (2009)	Trained, supervised adult volunteer as mentor	Economic evaluation	Melbourne, Australia	2004	*Big Brothers Big Sisters (BBBS)*	Children age 10-14	Community	Economic threshold analysis of intervention
Shibru (2007)	Mentoring from positive peer role models	Cohort	2 Californian Counties, US	1998-2003	*Caught in the Crossfire*	Youth hospitalised for violent injury	Community	Subsequent violent criminal behaviours
Mediation								
Farrell (2001)	School based prevention programme	RCT	Richmond, Virginia, US	1995-1996	*Responding in Positive Peaceful Ways (RIPP)*	Middle school students	School	Rates of disciplinary violations for violent behaviours
Orpinas (2000)	Peer mediation programme	CRT	Texas, US	1994	*Students for Peace*	Middle school students	School	Self-reported aggressive behaviours
Peer-support								
Brugman (2011)	Mutual peer help meetings	CBA	Netherlands	2006	*EQUIP*	Inmates incarcerated for serious crime	High security juvenile correctional facilities	Reoffending
Katz (2011)	Trained student leaders (mentors in violence prevention) - bystander	CBA	Midwestern state, US	N/K	*Mentors in Violence Prevention (MVP)*	Middle school students	School	Self-report on whether they would intervene
Komro (2004)	4 peer led classroom sessions	CRT	Minnesota, US	1999-2001	*D.A.R.E. Plus*	Middle school students	School	Self-reported violence and weapon carrying
Orpinas (1995)	Trained peer leaders	CBA	US	1993	*Second Step: A violence prevention curriculum*	6th grade students	School	Self-reported aggressive behaviours
Sheehan (1999)	Adolescent peer mentors	Cohort	Chicago, US	1990s	*Children Teaching Children (CTC)*	Children in pre-existing community programme	Community	Violence knowledge and attitudes.

Assessment of risk of bias in included studies

The methodological quality of the studies is presented below, summarising each included study against the criteria: allocation, confounders, blinding, data collection methods, attrition, fidelity and follow up.

Mentoring

Table 2: Assessment of risk of bias in mentoring studies

Study	Allocation	Confounders	Blinding	Data collection	Attrition	Fidelity	Follow up
Randomised controlled trial							
Cheng (2008)	Random allocation: Opaque sealed envelopes.	Analyses of outcomes controlled for age and gender. Intervention participants analysed on intention to treat basis.	Blinded assessments	Self-reported outcomes	71% completed. Non-random loss to follow up. No imputation of missing data.	Fidelity evaluated - 54% of intervention group received full intervention.	6 months.
Little (2004)	Random allocation with matched control groups	Mentoring one component only. Baseline groups differed.	-	Official criminal records	79 of 90 eligible followed up – no loss.	Mentoring in 59% intervention cases (n=24), 64% effectively implemented.	2 years – monthly data collected
Controlled before after							
Blechman (2004)	Propensity scoring used to develop groups.	Mentoring one component only.	-	Official criminal records	245 participants, 5% incomplete data.	-	2.6 years Recidivism after 2 years
Bouffard (2008)	Groups selected by probation agents.	Mentoring one component only.	-	Official criminal records	Data available for all youth.	Some implementation reported, not evaluated	6 months
Braga (2009)	Propensity scoring used to develop groups.	Analyses controlled for baseline covariates	-	Official criminal records	-	Some implementation reported, not evaluated	3 years from release date.
Cohort							
Ahrens (2008)	Retrospective cohort.	Analysis controlled for baseline covariates.	-	Self-reported outcomes: Questionnaires (national longitudinal study).	Imputed missing data.	Retrospective self-report on receiving mentoring for 2 years or more.	6 years – 3 waves of data collection
Shibru (2007)	Matched controls selected from hospital database (on age, gender, race or ethnicity, type of injury and year of admission).	Logistic regression analysis adjusted for age, race or ethnicity, and gender. Age had a confounding effect on the association between participation and criminal justice involvement (effect was evident for patients under age 17).	-	Re-hospitalisation for intentional violent injury (medical records), death (coroner) and criminal justice involvement (police records).	Four participants missing information (n=158).	Participants required minimum of 5 interactions with interventionist.	18 months
Case Control							
Becker (2004)	Random allocation with matched controls (age and injury severity).	Different in injury mechanism between baseline groups -Stabbing in 22% controls and 9% cases.	-	Official criminal records. Data quality checked	86% participants completed programme	Programme completion defined as minimum of 3 peer contacts.	6 months post injury.
Economic							
Moodie (2009)	Control group – no allocation method described		-	-	-	-	-

Allocation: In intervention studies, allocation to intervention or control group should ideally be random and concealed. Two RCTs of mentoring interventions were identified

(Little 2004; Cheng, 2008) and only one (Cheng, 2008) specified the method of allocation used: participants were identified from hospital records and opaque sealed envelopes were prepared with random assignment to the groups. Of the three CBA studies that used non-random allocation (Blechman, 2004; Braga, 2009; Bouffard, 2008), two studies allowed for non-random allocation by applying propensity score matching methods to generate comparable baseline intervention and control groups (Braga, 2009; Blechman, 2004); scores were based on factors including age, race, current conviction rate, past gang associations and arrest history (Braga, 2009). Bouffard (2008) reported that participants were selected for the intervention by juvenile probation agents, while a comparison group was selected by probation staff in a neighbouring county. The case control study (Becker, 2004) randomly selected controls that were matched by age and injury severity but did not consider the mechanism of injury (e.g. stabbing). One cohort study Shibru (2007) included matched control groups.

Confounders: Of the two RCTs, only Cheng (2008) evaluated mentoring as the sole intervention and the analysis adjusted for age and gender. Participants in the intervention group were analysed on an intention to treat basis and those who did not complete the intervention were included in the analysis. The second RCT (Little, 2004) only included mentoring as one of seven components in a wider study (including multi agency interventions with police, educators and social services) and also identified differences in baseline groups where more difficult cases tended to be assigned to the intervention. Two of the CBA studies evaluated mentoring as one component of a more complex intervention. Braga (2009) included independent variables including age, race, current conviction offense, prior gang involvement, and prior criminal history measures to control for differences between treatment and control groups. One cohort study (Ahrens, 2008) adjusted for a number of baseline covariates, including gender, race, ethnicity, parental education, parental income and average neighbourhood household income. While the other cohort study (Shibru, 2007) found that after adjusting for age, ethnicity and gender in their analyses, age had a confounding effect on the association between intervention and outcome. The case control (Becker, 2004) also found a key difference in that their control group had a higher rate of stabbing (22%) as the mechanism for injury than the cases (9%).

Blinding: To minimise observer bias, outcome assessors should ideally be blinded to the allocation status of participants, as they may be biased towards one group. Only one RCT of mentoring (Cheng, 2008) used interviewers to collect outcome data. In this study efforts were made to ensure that both the baseline and follow up assessments were conducted by a research assistant blinded to allocation, who only became aware of assignment at the end of the follow up interview.

Data collection: The method of collection of outcome data may be associated with biases, for example, self-reported measures of behaviour are likely to be more prone to bias than observed behaviour. Of the eight mentoring studies (excluding the economic

evaluation), six used data collected from official records while a further two used self-reported outcomes. One RCT (Little, 2004) collected four outcome measures for offenders from official records, including court outcomes, offence outcomes, arrests per month of liberty during follow up and pre-post offence ratio. Sources included local police, youth justice workers and national criminal records. All of the three CBA studies also collected outcome data from official records, including dates of arrest and criminal record, recidivism measures (reoffending, time to reoffending, number of subsequent official contacts). Self-reported outcomes were reported in one RCT (Cheng, 2008) who measured attitudes and self-efficacy around violence and risk factors for violence incorporating a number of predetermined scales in their survey (e.g. Attitude about Interpersonal Violence Scale, Perception of Environmental Violence Scale, Middle School Youth Risk Behavior Survey) which underwent pretesting and subsequent pilot testing. Of the cohort studies, Ahrens (2008) used data collected by the National Longitudinal Study of Adolescent Health (Add Health) through staff administered and computer assisted questionnaires, and secondary outcomes of self-reported fighting, gang membership and arrest. Shibru (2007) collected data from a number of official record sources including hospital records, local police department (for data including arrests, convictions, parole violations and violent crime histories) and the County Coroner's Bureau. The case control study (Becker, 2004) used only arrest or criminal outcome data collected from official records, and data was additionally quality checked and missed information added from case notes.

Withdrawals and dropouts: Both RCTs reported reasonable rates of follow up. Cheng et al (2008) maintained follow up of 71% across intervention and control groups over the 6 months but found that the youth lost to follow up were less likely to be enrolled in school, employed or living with father compared to those followed up. The second RCT, with a two year follow up, found a period of three years was required to achieve the recruitment target but of the 79 participants enrolled all were followed up. Of the three CBA studies, Bouffard (2008) had a follow up period of 6 months and was the only study reporting no loss to follow up. Of the CBA studies with longer follow up, Blechman (2004) reported incomplete data for only 5% (n=11) of participants over the average 2.6year follow up while Braga (2009) reported following up offenders for up to three years (post release date) but did not report on loss to follow up. Becker (2005) reported that 85% of participants completed the programme. Of the cohort studies, Ahrens (2008) reported using multiple imputation with predictive matching to impute missing data while Shibru (2007) reported only four of 158 participants were lost to follow up.

Fidelity: Only the reports of RCTs clearly evaluated and reported the fidelity of the implementation of the interventions. Cheng (2008) reported that only 54% of participants received the full intervention, comprising 6 mentor visits and 3 health educator visits. Little (2004) also reported low levels of fidelity with only 59% of the intervention group receiving any mentoring and of those, only 64% were said to be implemented effectively. Two of the CBA studies quantified the amount of intervention received by participants but did not evaluate the intervention fidelity. Bouffard (2008)

reported an average of 7 months spent in the programme with 46 hours of face-to-face contact with coordinators and an average of 42 activities recorded for each youth, most of which were supervision or mentoring related. Braga (2009) reported that participants had average 7 contacts with mentors in community who typically stayed involved with participant for 12-18 months after release and received 39 hours of programming. . Becker (2004) and Shibru (2007) identified minimum interaction requirements for participants to be considered as enrolled (3 and 5 interactions with interventionists respectively).

Follow-up: Follow up for the two RCTs ranged from 6 months with one follow up assessment (Cheng, 2008), to a longer term follow up over 2 years with monthly data collected on participants and recidivism (Little, 2004). The length of outcome data collection periods in the CBA studies ranged from 6 months to 3 years and for one cohort study (Ahrens, 2008) data was collected over a period of 6 years with 3 waves of data collection.

Summary

Nine studies were included with a mentoring component, one of which was included for its economic assessment of mentoring schemes. Only two were randomised trials with potential to produce high quality evidence of effect and of these only Cheng (2008) focused solely on mentoring as an intervention; but was only able to implement the full intervention for half of the participants. Of the three CBA studies, Braga (2009) used propensity scoring to account for non-random allocation of groups, and followed up participants for three years using official recorded data for outcome measures. While these studies are varied in setting, intervention implementation and outcomes, study quality was such that some qualitative inferences about effects of mentoring may be drawn.

Mediation

Table 3: Assessment of risk of bias in mediation studies

Study	Allocation to intervention/control	Confounders	Blinding	Data collection	Attrition	Fidelity	Follow up
CRT							
Farrell (2001)	Random numbers used to assign classrooms to groups.	Different classes in same schools assigned to intervention and control groups. Peer mediation available to all students.	Blinded interviewers	Self-reported outcomes. School reported measures (e.g. violent disciplinary violations)	High losses to follow up 66% at 6 month, 57% 12 month).	Fidelity evaluated and reported - 24% perfect attendance.	12 months
Orpinas (2000)	One of each matched pair of schools randomly assigned to intervention.	-	-	Self-reported outcomes (questionnaires).	58% completed all 3 evaluations; 75% (n=2246) at least one follow-up.	Four schools began intervention but only two implemented them fully.	3 years from baseline

Allocation: Only two studies of mediation interventions were included, both cluster randomised trials (CRTs) (Farrell, 2001; Orpinas, 2000). In both CRTs, groups were randomly assigned to intervention or control; Farrell (2001) used a random numbers

table to assign each of their 27 classes. Orpinas (2000) randomly assigned each of a matched pair of schools to intervention or control but did not specify how this was done.

Confounding: Farrell (2001), found no differences between intervention and control groups according to gender, ethnicity, or age at baseline, however the by assigning students from the same schools to intervention and control group introduces the possibility of effect contamination. Orpinas (2000) matched schools first on ethnic composition of students, then on the levels of aggression and frequency of fights reported in baseline questionnaires.

Blinding: Both of the mediation studies used interviewers or administered self-reported questionnaires for data collection, only Farrell (2001) specified that this was done by research assistants who were unaware of the participants' treatment conditions.

Data collection: Both of the studies used self-reported questionnaires to collect primary outcome data. Farrell (2001) included self-reported data for baseline and post-test, with primary outcome measures focused on violent behaviour using The Problem Behaviour Frequency Scales (Farrell et al, 1992) and The Beliefs Supporting Aggression Scale (Lam, 1989). Orpinas (2000) measured five main outcome variables; aggressive behaviours measured by the aggression scale (Orpinas, 1993), fights at school, injuries due to fighting, missing classes because of feeling unsafe at school and being threatened to be hurt through standardised questionnaires. *Withdrawals and dropouts*: The Farrell study (2001) reported very high losses to follow up, and also noted that students excluded from follow-up tended to have poorer school performance and higher rates of problem behaviours. While Orpinas (2000) reported a 90% response rate for each cross-sectional evaluation, only 69% completed all three evaluations and also reported that approximately 36% of the student population transferred out of participating schools over the three years.

Fidelity: Farrell (2001) applied a manual to increase the fidelity of the implementation across schools, but reported that students missed an average of 3.6 sessions with 75% missing four or less sessions and only 24% of participants' attained full attendance. Orpinas (2000) reported that of the four schools included in the intervention group only two fully implemented the programme fully.

Follow-up: Length of follow up ranged from 12 months to 3 years for the CRTs (Farrell, 2001; Orpinas, 2000) with both reporting similarly high attrition rates.

Summary
Two studies were included with a mediation component; both randomised trials. In both trials clustered randomisation was used (by class or school) and both studies reported high rates of attrition. Concerns with intervention fidelity were reported in both trials with only 24% achieving full implementation in the Farrell (2001) trial and only half of the schools fully implementing the intervention in the Orpinas (2000) trial.

Both studies used self-reported primary outcome measures which increased the risks of reporting and recall biases. The small number of studies and the risk of biases present within them suggest that any conclusions drawn on the effectiveness of mediation should be considered with caution.

Peer-support

Table 4: Assessment of risk of bias in peer-support intervention studies

Study	Allocation to intervention/control	Confounders	Blinding	Data collection	Attrition	Fidelity	Follow up
(C)RCT							
Komro (2004) CRT	Schools randomly assigned to one of three study conditions.	Peer led programme just one component. Statistical analyses adjusted for common set of covariates, stratified by gender. Baseline level of outcome variable was included as covariate.	-	Self-reported violence (questionnaires).	84% of participants followed up at 18 months -did not differ by study condition; boys more likely to be lost.	Implementation of components high, (98% of observed lessons completed).	18 months
CBA							
Brugman (2011)	Control group participants from same facilities as intervention.	Peer led programme just one component. No difference in baseline groups (diversity, detention time, mean age, number offences)	-	Official criminal records and self-reported outcomes (interviews and questionnaires).	High attrition (40-50%) in both groups. Non-selective dropouts.	-	12 months.
Katz (2011)	Matched control school selected by size and diversity.	Gender and ethnicity controlled for in analyses.	-	Self-reported outcomes (surveys)	-	Mentors receive 16-20 hrs of training.	3 months
Orpinas (1995)	Neither schools nor classes for intervention and control were randomly selected.	Separate analysis by gender, controlled for ethnicity and grades. Differences in baseline groups.	-	Self-reported outcomes (questionnaires)	84% (n=223) participants completed all surveys. Attrition bias (age and aggression)	Some implementation problems identified	3 months
Cohort							
Sheehan (1999)	Case-matched controls in same housing project (on age, sex, census tract).	Incomplete surveys excluded from analysis.	-	Self-reported outcomes (surveys) behavioural change evaluated by teachers.	60% cases completed baseline and final follow up; 65% controls.	Considered enrolled if youth received one or more lessons.	18 months

Allocation: In the CRT (Komro, 2004) randomly assigned each of participating the 24 schools to intervention and control groups but did not report the method used. Of the CBA studies; Brugman (2011) offered the intervention to all eligible participants in correctional facilities and a control group was selected from non-participating youth; Katz (2011) used non-random allocation of schools; while Orpinas (1995) allowed non-random allocation of schools and classrooms to intervention and control groups. Katz (2011) recruited a matched school for the control group, based solely on school size and diversity. The cohort study Sheehan (1999) included matched control groups, selecting these from a pool of non-participating youth admitted to trauma centre for intentional violent trauma during the study period (based on age, gender, race or ethnicity, type of injury and year of admission).

Confounding: Most of the studies conducted comparisons of baseline groups with a few studies reporting statistically significant differences. While the Orpinas (1995) CBA study found no statistically significant differences between groups based on violence related variables, they found their control group had a higher mean of knowledge and skills than intervention groups. Katz (2011) found differences in the ethnic diversity of baseline groups and so controlled for ethnicity in all predictive analyses (Katz, 2011).

Blinding: None of the studies reported using interviewers in the collection of outcome data.

Data collection: The majority of studies used self-reported outcomes, with only one using official criminal records. The Komro (2004) CRT measured primary outcomes using only self-reported behaviour questionnaires on violence. Of the CBA studies, Brugman (2011) measured recidivism through Ministry of Justice Criminal Records Service and additionally, 'Cognitive distortions' measured through interviews and questionnaires. Orpinas (1995) measured only self-reported outcomes; aggressive behaviours and violence prevention knowledge and skills. Katz (2011) used self-reported measures including perceived aggressive behaviours and reporting of willingness to intervene from data gathered from surveys administered in two schools. The Sheehan (1999) cohort study measured self-reported outcomes with an additional behaviour change evaluation conducted by participants' teachers.

Withdrawals and dropouts: Two of the five studies of peer-led interventions achieved follow up greater than 84% (Komro, 2004; Orpinas, 1995). The Komro (2004) CRT reported no difference in loss to follow up between intervention and control groups, but found that boys were more likely to be lost to follow up. Orpinas (1995) reported follow up of 84% and noted that students who dropped out were both significantly older and more aggressive (using violence related variables). The Sheehan (1999) cohort study reported 60% and 65% follow up for cases and controls. The Brugman (2011) CBA study reported the highest attrition rates of 40-50% in intervention and control groups, which they identified as being characteristic of the type of facility (juvenile detention) in which the study was conducted. They found there was no difference to those dropouts with regard to intelligence, age and social variables.

Fidelity: While efforts were made across the five studies to implement the interventions consistently and monitor this, there were weaknesses observed in a number of the studies Brugman (2011) identified that 30 lessons were applied over 3 months and supervised by an experienced trainer but fidelity of the implementation beyond that was not reported. Sheehan (1999) considered participants to be enrolled after receiving just one lesson. Orpinas (1995) reported that teachers responsible for delivering their programme emphasised a number of problems in faithfully implementing it, which included, insufficient time and inadequate course content. Conversely, the Komro (2004) CRT observed that the implementation of curriculum

components of the intervention was high and that around 98% of observed lessons were completed.

Follow-up duration: The length of time elapsing between intervention and subsequent follow ups ranged in these studies from three to 18 months.

Summary
Five studies were included with a peer intervention component employing a range of study designs. The only randomised trial (Komro, 2004) included a peer component as only one component of a wider intervention and also used self-reported outcome measures. Across the CBA studies Brugman (2011) reported high attrition (40-50% follow up), and Orpinas (1995) reported attrition bias with participants lost to follow up being significantly older and more aggressive. Overall, the studies are varied in quality and while together they provide some useful information on the potential effectiveness and implementation of peer-support interventions, risk of bias is high and interpretation of results should be undertaken carefully.

Description of included studies

Mentoring
In an analysis of a large US cohort study (Ahrens, 2008) strong statistical evidence was found for an association between youth who reported having been in foster care and had been mentored in a relationship that lasted at least 2 years, and not having hurt anyone in a physical fight. This study used retrospective self-reported data of being mentored and of violence between 1994 and 2002. The analysis used statistical imputation for missing data, sensitivity analysis to allow for varying durations of mentor relationships, and it controlled for a range of potential confounding variables. However no crime or weapon-based violence outcome was measured. The study criteria for youth being mentored reflect the mechanism of effect hypothesised by the authors: having someone to provide the youth with good advice and emotional support (e.g. the mentor made the youth feel loved), and having a role model, or parental figure in the absence of their own parent.

A peer mentoring initiative based in the Emergency Department for youth who have been hospitalised for a violent injury has been evaluated in Oakland California, USA, using a case-control study (Becker 2004). The intervention employed and trained young adults, from similar communities as the youth admitted with injury, and who may also have experienced violence, to become 'Crisis Intervention Specialists'. The Crisis Intervention Specialists meet with the youth, their family and friends soon after arrival in hospital for the violent injury. They serve as a positive role model and establish a trusting mentoring relationship. The Specialists receive training including counselling skills, anger management, conflict resolution, and effective communication. The evaluation ran during 1998 to 2001 and recruited 69 cases of violent injury and randomly selected 69 controls (youth with violent injury who did not receive the peer-to-peer/mentoring) matched by age and injury severity. Not all cases agreed to

participate in the evaluation and 43 cases were eventually analysed. Efforts were made to check the quality, accuracy and completeness of data from hospital records. The case-control design did not match cases to controls by mechanism of injury (e.g. gun/knife). Outcomes were arrest for any offence, and arrest for a violence-related offence, 6 months post injury. The youth who received the peer- mentoring were 74% less likely (OR 0.26; 95% CI 0.05 to 1.22) to be arrested for any offence 6 months post-injury compared with the control group. The odds of having any criminal outcome controlling for injury severity were also significantly reduced. None of the youth who received the peer- mentoring was arrested for a violence-related offence whereas 6% of controls had been arrested for a violence-related offence.

An economic evaluation of this intervention was conducted using data between 1998 and 2003 (Shibru 2007). By assuming that 75 to 100 youths could be treated annually it estimated the cost of the intervention to be $3,500 per youth per year. The annual cost of a detention centre admission was assumed to be $80,000 per youth. By assuming that 6 patients need to be treated to reduce one youth involvement in the criminal justice system, the study estimates the annual cost of the intervention to be $60,000 less per youth than the cost of incarceration. By assuming that each youth who is rearrested and reconvicted spends 1 year in a detention centre, the cost reduction from the intervention is estimated to be between $0.75 million to $1.5 million per year.

Mentoring was one component of a broader intervention used to prevent recidivism among youth offenders in a south western US state (Blechman, 2000). The study found significantly more re-arrests in the mentored group. The analysis used propensity score methodology to account for the non-random allocation of offenders to intervention and control groups. The study did not offer insight into why recidivism increased in youth who formed a relationship with a caring adult.

A CBA evaluation of a youth offender re-entry programme that included a mentoring component found statistical evidence for fewer criminal contacts during the 6 months following release than in a probation-only control group (Bouffard, 2008). The programme used 'Transitional Co-ordinators' whose role in addition to providing probation series was to mentor youth by spending one-to-one time together and engaging in sporting or leisure activities. The programme required two full-time staff members each with a caseload of 10-12 youth. Each youth received just under 50 hours of face-to-face contact with a Transitional Co-ordinator, over a 7 month period. The sample receiving the intervention was 63 youths in the USA, one quarter of whom had committed a violence-related offence. The authors speculate that the additional component of 'pro-social' activities for youth adds value to standard services assisting youth in transition back to their community.

Mentoring was one component of the Boston Re-entry Initiative (BRI) which was evaluated in 2001 in a CBA design (Braga, 2009). The participants in the study were 'high-risk' inmates involved in ongoing violent gang conflicts and expected to return to

violence. The mentors were assigned to youth within 45 days of entering the facility, and on release the youth are encouraged to continue contact with their mentors. The authors speculated that supervision after release could reduce subsequent offending through surveillance and improving structure of inmate's lives to encourage better connections with work, family and support networks and programmes. On average youth had 7 contacts with mentors in the community over a 12 to 18 month period. The evaluation found a statistically significant reduction in re-arrests for violent crime: after 2 years, 20% of BRI participants had been arrested for a new violent crime compared with 35% of the comparison group; after 3 years, 28% of BRI participants had been arrested for a new violent crime compared with 39% of comparison group. The report is not clear about methods used to identify the control group.

Mentoring for assault injured youth was evaluated in a randomised controlled trial in Washington DC during 2001 to 2004 (Cheng, 2008). Assault injured youth were identified in hospital Emergency Departments and were randomly allocated to receive usual care from clinicians or usual care plus a mentor who was to meet with them 6 times in the subsequent 6 months. Mentors were recruited from a community mentoring organisation and received training, including role playing regarding adolescent communication and conflict scenarios. The curriculum was grounded in social cognitive theory; the intervention was designed to provide sessions on conflict management, hot buttons, problem solving, weapon safety, decision-making and goal-setting to bring about behaviour change. Mentors were supervised by programme staff by telephone contact, feedback from youth and their parents, occasional observation and retraining sessions, and received payment of $240 in total. The study included blinded outcome assessment. Feedback from the assault injured youth said that their mentor understood their needs and cared about them. After six months the study found a reduction in numbers of fights and fight injuries in the previous 30-days; however this was not statistically significant. A randomised controlled trial of an intensive supervision and support programme including mentoring for persistent offenders (youth charged or cautioned on 3 or more occasions in last 12 months) having previously been detained in custody was conducted in Kent, UK (Little, 2004). One quarter of participants had been convicted of crimes of violence, and 59% received mentoring. The study also used a control group in another part of the region. The study assessed criminal outcomes over a 2-year period using data from local police records but found no statistically significant effect on reconviction rates.

An economic evaluation of an established US mentoring programme for vulnerable young people was conducted in Melbourne, Australia, to establish whether a mentoring programme would be cost effective (Moodie, 2009). The comparator was a scenario in which participants would not receive mentoring. The authors compare the cost of mentoring 2,200 of the most vulnerable young people ($40 million) with the associated costs of their expected adult criminality ($3.3 billion). They argue that such a mentoring programme would need to avert high-risk behaviours in 1.3% of participants to break even.

Tables of included studies of mentoring

Ahrens (2008)	MENTORING	**Intervention:** The presence or absence of a mentor was determined on the basis of a single retrospective question, whether a non-parental adult had made an "important positive difference in your life since you were 14 years old". Types of mentors reported: relatives, professionals (e.g. teachers, therapists, social workers), and adults in more informal roles (e.g. parent of a friend, coach). Restricted definition of mentored adolescents to those who reported a relationship of at least 2 years in duration.
Effect *How effective is it?*	Mentored participants were significantly less likely to report hurting someone in a physical fight (P<0.001).	
Quality of evidence?	- Longitudinal cohort study with 3 waves of data collected over 6 years. - Multiple logistic regression used to determine whether the presence of a natural mentor was associated with each outcome after taking into account the contributions of baseline covariates. - Sensitivity analyses based on varying durations of mentor relationships - Multiple-imputation with predictive matching used to impute missing data - Covariates included gender, race, ethnicity, parental education level, parental income level, and average neighbourhood household income level.	
Mechanism *How does it work?*	Criteria for being mentored: guidance/advice ("gave good advice"), emotional support ("he made me feel loved"), role modelling ("set an example for me"), tangible/instrumental support ("he helped me get my GED") and serving as a parental figure ("she was always there for me when my mother wasn't").	
Moderators *In which contexts does it work?*	- USA (national study) 1994-2002 - Youth were included in this study when they reported that they had been in foster care	
Implementation *What is needed to implement it?*	Not applicable in this case	
Economics *How much might it cost?*	No cost data provided	
General considerations	- Retrospective self-report on receiving mentoring for 2 years or more - Self-reported outcome (fighting) - No crime or weapon-enabled violence outcome	

Becker (2004)	MENTORING	**Intervention:** Caught in the Crossfire programme. Crisis Intervention Specialists serve as positive peer role models and are particularly qualified to establish trusting mentoring relationships with "highest risk" and "hardest-to-reach" youth. Crisis Intervention Specialists meet with the youth and their family and friends immediately after, or very soon after, the youth have been hospitalised for a violent injury.
Effect — *How effective is it?*		Youth who participated in Caught in the Crossfire were 74% less likely (OR 0.26; 95% CI 0.05 to 1.22) to be arrested for any offence 6 months post-injury when compared with the control group. The odds of having any criminal outcome were also significantly reduced for members of the treatment group, even after controlling for the severity of the injury. Whereas none of the youth treated by the Caught in the Crossfire programme were arrested for a violence-related offence during the 6-month post-injury evaluation period, only 5.8% of the controls were arrested for a violence-related offence.
Quality of evidence?		- Retrospective case-control study - Stabbing was the mechanism of injury for more controls (21.7%) than for members of the treatment group (9.3%). Use of blunt instrument was also much more common among controls (11.6%) than among members of the treatment group (2.3%). - Quality and accuracy of the collected data was assured by, rechecking hospital or other records for questionable data (e.g. high injury severity scores), completing missing information whenever possible through case notes - Controls were selected randomly and 69 controls were matched to 69 treatment cases by age and injury severity. Control group participants were selected randomly from youth ages 12 through 20 years who were hospitalised for a violent injury and survived the previous year. These youth did not receive services from Caught in the Crossfire. - The final sample comprised 69 controls (61.6%) and 43 treated cases (38.4%).
Mechanism — *How does it work?*		Intervention draws on the theoretical frameworks of counselling, casework, community social work, and youth development.
Moderators — *In which contexts does it work?*		- Alameda County Medical Centre/Highland General Hospital, Oakland California, USA 1998-2001 - African-American (60.0%), Latinos (25.9%), Asian/Pacific Islanders (8.0%) and "Other" race/ethnicity (6.1%). - Setting is at hospital bedside and the individual's home.
Implementation — *What is needed to implement it?*		Successful completion of the program was defined as a minimum of three contacts with a Crisis Intervention Specialist (CIS) within 6 months of injury, at least one of these being in person. The programme employs and trains young adults who are from the same or similar communities as the youth which they serve and who have experienced violence. CISs receive training in counselling skills development, cultural competency, anger management, conflict resolution, effective communication, resource identification, sexual assault, and the theoretical frameworks of counselling, casework, community social work, and youth development. New staff members receive intensive training in these areas during their first month of employment and all staff participates in ongoing in-service training sessions.
Economics — *How much might it cost?*		No cost data provided.
General considerations		- Short term (6 months post injury) effects only - Controls matched to cases by age and injury severity but not mechanism of injury (e.g. gun/knife)

Blechman (2000)	MENTORING	**Intervention:** Compared three interventions used to prevent recidivism among juvenile offenders: Juvenile Diversion (JD), JD plus Skill Training (ST), and JD plus Mentoring (MEN).
Effect *How effective is it?*		There were significantly more post-intake rearrests in the MEN than in the ST group. In ST, 63% of participants were not rearrested two years or more after the intake arrest, compared to 49% in MEN and 54% in JD.
Quality of evidence?		• Official records provided dates of arrests and associated criminal charges preceding and following the intake arrest. • The Skill Training (ST) (n=55) and JD plus Mentoring (MEN) (n=45) groups provided sufficient power (0.94) to detect a large effect of regimen in a one-way fixed effects analysis of variance with two levels and alpha set at 0.05. • Followed Rosenbaum and Rubin's propensity score methodology to achieve balance on pre-treatment characteristics across groups. • The 137 participants who did not receive a skill training or a mentoring intervention constitute this study's JD group. The MEN group included 45 participants who were matched with adult volunteer mentors by a Community Agency.
Mechanism *How does it work?*		For some participants 'skill training' delayed the timing of the first re-arrest (767 days) compared to mentoring (638 days) or the standard program (619 days). How skill training achieved these results is unclear: results cannot be attributed to improved supervision of youth, to formation of a relationship with a caring adult, or to separation of delinquent youths from their deviant peers.
Moderators *In which contexts does it work?*		• Southwestern state, USA • Ethnicity was 76.7% white (n=188), 17.1% Latino (n=42), and 6.1% black, Asian, Native American, and multi-ethnic (n=15). • Minors charged with nonviolent misdemeanours or first felonies ("intake arrest")
Implementation *What is needed to implement it?*		No details given
Economics *How much might it cost?*		No cost data provided
General considerations		• No violence outcome • Propensity score methods used to adjust for non-randomised design • Power calculation did not specify size of effect to be detected • Mentoring only one component of a broader intervention

Bouffard (2008)	MENTORING	**Intervention:** Juvenile offender re-entry program, including a strong mentoring component. Youth are selected for reentry services by juvenile probation agents who attempt to make participation a court-ordered condition of their supervision. The re-entry programme includes a three-phase design, offender assessment, individualised case planning and case management to reduce later offending among high-risk youth. A specific focus of the programme is the attempt for Transitional Coordinators (TCs) to develop an informal mentoring relationship in addition to their roles as service brokers and providing various surveillances functions. They spend one-on-one time with clients in a variety of ways, including school tours, local plays or performances, shopping or sporting events.
Effect *How effective is it?*		Re-entry youth experienced fewer new official contacts during the first 6 months after release (mean 0.48 vs. 0.96 for comparison youth), and this difference was statistically significant (p=0.01). Re-entry services youth experienced significantly fewer new criminal contacts during the initial 6 months following release (0.35) than the youth in the probation only group (0.61, p =0.05).
Quality of evidence?•		• CBA design The number of cases available for analysis was relatively small, limiting the ability of the study to uncover smaller treatment effects. • The sample consisted of 63 youths served by the re-entry program since its inception in 2003, as well as a comparison group consisting of 49 youthful offenders returning from out-of-home placement in a neighbouring comparison county (these youth received only regular supervised probation). • The comparison group was identified by probation staff, using the criteria of three or more weeks of out-of-home placement.
Mechanism *How does it work?*		The re-entry programme attempted to improve the transition from out-of-home placements by providing Transitional Coordinators (TCs) to increase access to services in the community, increase monitoring and supervision, and provide supportive mentoring relationships and prosocial activities for youth. The preliminary results presented provide reason to speculate that the addition of comprehensive re-entry services can improve both intermediate adjustment to the community and success in desisting from crime and delinquency. It may be that the one-on-one mentoring aspect of this program provides an additional "active ingredient" beyond the potentially effective combination of supervision and specific treatment services (e.g., drug treatment, educational services).
Moderators *In which contexts does it work?*		• Study conducted in 2003 • 41% of the sample was White, and the most common minority groups were Native American (42.9%) and Hispanic (13.4%). • Forty-two percent of youths' offences involved a property-related offence (e.g., theft, vandalism), 23%, a persons-related offences (e.g., assault, threats, sexual conduct), and 35% involved "other" types of offences.
Implementation *What is needed to implement it?*		Two full-time staff members (Transitional Coordinators, or "TCs") are each assigned a specific caseload of 10-12 youths (the program serves approximately 50 youths per year).Youth served by the re-entry services program spent an average of 7.2 months in the program and approximately 46 hours in face-to-face contact with TCs. TCs recorded an average of 18.8 supervisory activities, 4.1 therapeutic activities and 18.6 mentoring activities per youth.
Economics *How much might it cost?*		No cost data provided.
General considerations		• Comparison group (received standard probation services) was selected by probation staff • Poor information on process • Mentoring was one component of a re-entry programme • Information not provided on nature of criminal contacts following release

Braga (2009)	MENTORING	**Intervention:** The Boston Re-entry Initiative (BRI). Within 45 days of entering the facility, inmates are assigned jail-staff caseworkers and faith-based mentors from the community, who begin meeting and working with them immediately. On the day of release, the institution arranges for either a family member or a mentor to meet them at the door. The returning prisoners are encouraged to continue to work with their caseworks, mentors and social service providers during their re-entry periods.
Effect *How effective is it?*	The BRI treatment was associated with a statistically significant 32.1% (p=0.002) reduction in the subsequent overall arrest hazard rate. Two years post release, 20% of BRI participants had been arrested for a new violent crime, while 35% of comparison group subjects had been arrested. Three years post release, 28% of BRI participants had been arrested for a new violent crime, while 39% of comparison group subjects had been arrested.	
Quality of evidence?	- CBA design. - Propensity score matching methods were used to develop equivalent comparison and treatment groups. - Massachusetts Criminal Offender Record Information (CORI) data were used to measure prior offending and subsequent recidivism. - Examined whether the treatment and control subjects were rearrested for any crime and for violent crime within 3 years of release. - Used simple Kaplan-Meier group comparisons of survival times and Cox proportional hazard models to compare the recidivism patterns of BRI participants relative to the recidivism patterns of an equivalent comparison group.	
Mechanism *How does it work?*	No details provided	
Moderators *In which contexts does it work?*	- Boston, USA. - Study conducted in 2001 - The BRI targets male inmates who are between the ages of 18 and 32. - High-risk inmates involved in ongoing violent gang conflicts and expected to return to communities with high rates of violent crime.	
Implementation *What is needed to implement it?*	A typical BRI participant has 7.3 contacts with his mentors in the community. Mentors typically stay involved with BRI participants for 12 to 18 months after their release.	
Economics *How much might it cost?*	No cost data provided.	
General considerations	- Propensity score methods used to adjust for non-randomised design. - Survival analysis used to assess effect on time to arrest. - Follow up for 3 years. - Unclear how control group was identified. - Mentoring only one component of the re-entry programme.	

Little (2004)	MENTORING	**Intervention:** Intensive Supervision and Support Programme (ISSP) is a multi-systemic intervention with seven components: supervision by police and social services, family group conference to identify needs, availability of victim reparation and mediation, availability of mentoring scheme to place participants in contact with young role model, individual treatment plan, improved information sharing between police, social service and education professionals and regular multi-agency reviews of cases.
Effect *How effective is it?*	The programme had no impact on reconviction rates (no statistically significant differences found). No single component of ISSP correlated with a successful outcome. Study emphasises maintaining modest expectations for change in behaviour of persistent young offenders.	
Quality of evidence?	• Randomised controlled trial with an additional control group in another region. • Multivariate regression analysis using Poisson and negative binomial models were used, to model the numbers of arrests. • 90 young people identified as eligible for study, 11 excluded, 79 included. • Intervention only offered in Southern region, where participants were randomly allocated to either intervention or control group. In the North, all participants were provided with standard intervention and matched to ISSP cases in South. • Sample consisted of 3 groups, ISSP intervention (n=24), control (n=24) and matched controls in another region (n=31). • Follow up was for 2 years after completing the programme monthly data collected. • Four outcomes measured; court outcomes, offence outcomes, arrests per month of liberty during follow up and pre-post offence ratio. • Data from local police records, professional records and interviews with youth justice workers and national criminal records.	
Mechanism *How does it work?*	No information provided.	
Moderators *In which contexts does it work?*	• Kent, United Kingdom; north and south regions • 15-17 year old persistent offenders (charged or cautioned on 3 or more occasions in last 12 months) having previously been detained in custody. A quarter of participants had been convicted of crimes of violence.• Mentoring was implemented in 59% of participants.	
Implementation *What is needed to implement it?*	No information provided.	
Economics *How much might it cost?*	No cost data provided.	
General considerations	• Mentoring was one of many components in the intervention	

Moodie (2009)	MENTORING/ COST	**Intervention:** The Big Brothers Big Sisters (BBBS) programme matches vulnerable young people with a trained, supervised adult volunteer as mentor. The programme offers formal supervised mentoring on a one-on-one basis as the sole focus of a stand-alone programme.
Effect *How effective is it?*		If BBBS-M program serviced 2,208 of the most vulnerable young people, it would cost AUD 39.5 M. Assuming 50% were high-risk, the associated costs of their adult criminality would be AUD 3.3 billion. To break even, the program would need to avert high-risk behaviours in only 1.3% (14/ 1,104) of participants. This indicative evaluation suggests that the BBBS program represents excellent 'value for money'.
Quality of evidence?		• Economic evaluation using threshold analysis was undertaken to determine whether investment in the program was a worthwhile use of limited public funds, determines threshold intervention must achieve to be acceptable. • The comparator was a scenario in which participants did not receive the BBBS-M intervention. • Data from BBBS-M financial records and imputed. • Costing included both 'budgeted' and 'off-budget' items, with market values being imputed for the latter. • Evaluation focused on cost-offsets to society through any reduction in crime (juvenile and adult) as a result of participation in the program
Mechanism *How does it work?*		No information provided.
Moderators *In which contexts does it work?*		• Melbourne metropolitan area, Australia • Study conducted in 2004 • Children aged 10-14, typically seriously disadvantaged with multiple psychosocial problems
Implementation *What is needed to implement it?*		Mentors are required to commit to between 2 to 6 hours per week of contact with their mentee during the first year of the match.
Economics *How much might it cost?*		Programme costs included resources used (staff time, office space, transport and other administrative infrastructure costs), including a range of resources which incur no costs (e.g. 'pro bono' legal, and the time which the mentors donate). Volunteer time was valued at AUD16 per hour. Total annual cost per each of the 110 young people matched in 2004 was AUD6,264. Associated costs of juvenile and adult criminal behaviour over 3 years based on average cost of AUD 3M per youth.
General considerations		• Economic evaluation of a stand-alone mentoring programme • No violence or crime outcomes reported

Shibru (2007) *A continuation of Becker (2004)*	MENTORING / COST	**Intervention:** Caught in the Crossfire is staffed by youth violence 'intervention specialists' recruited from similar neighbourhoods as the victims and may be earlier perpetrators or victims of youth violence. Patients who participated in the intervention programme are considered 'enrolled' with a minimum of 5 interactions, 2 of which had to be in-person contacts with their assigned intervention specialist over the course of their participation in the programme.
Effect *How effective is it?*		After successful completion of the programme, the risk of subsequent violent criminal behaviour by the enrolled group was reduced by 7% compared with the control group (p=0.15). When controlling for ethnicity and gender the effect of the programme on reducing criminal justice involvement was more evident in youth under 17 years. To prevent a single adverse criminal outcome the number needed to treat was 6 patients. The number of patients who required re-hospitalisation during the 18-month follow up period was not sufficient to determine whether there were clinically meaningful differences between the intervention and control groups.
Quality of evidence?		- Retrospective cohort study - A power calculation indicated that a sample size of 600 patients would reliably identify clinically relevant outcomes of death and traumatic re-injury from intentional violence. - Four intervention programme participants were not included in the analysis because of missing record information. - Logistic regression analysis was used to control for age, gender, and ethnicity or race (only age had a confounding effect on the association between programme participation and criminal justice involvement; RR 0.71; p=0.04). - The initial sample size was 158 patients, 75 patients participated in the peer intervention group and 79 patients served as non-enrolled matched controls. - Controls were selected from the hospital database by matching age, gender, race or ethnicity, type of injury and year of admission. - Controls were also admitted to the trauma centre for intentional violent trauma but had not participated in the programme. - Follow up was conducted over a period of 18 months after the date of initial hospitalisation. - Outcomes assessed were subsequent violent criminal behaviours (e.g. burglary, assault) during the 18-month follow-up period, using data provided by the Oakland Police Department Special Victims Unit.
Mechanism *How does it work?*		The programme assists youth based on their needs and their families. Assistance may include help obtaining state victim-of-violence restitution funds, help determining eligibility for assistance with medical costs, transportation to medical appointments or court hearings, help with job or school preparation and placement, help obtaining a driver's license and other identification necessary for job retention and high school retention, school transfers, graduation, GED and college educational assistance, referral to mental health counselling, and other needed services.
Moderators *In which contexts does it work?*		- Oakland and Alameda County, USA; Economically disadvantaged areas. - Between January 1998 and June 2003. - Patients aged 12 to 20 years who suffered violence-related trauma. - Most patients were African-American men.
Implementation *What is needed to implement it?*		California's Alameda County Medical Centre (Highland General Hospital, Oakland, CA) collaborated with Youth ALIVE!, a youth violence prevention non-profit agency, to develop a unique hospital-based, peer intervention programme.
Economics *How much might it cost?*		The programme treats 75 to 100 youths annually costs approximately $3,500 per patient per year. The annual cost for a juvenile detention centre admission in Alameda County is $80,000 per person. Because NNT is 6 patients to see a 16% risk reduction in involvement in the criminal justice system, the intervention programme's annual cost amounts to $60,000 less per patient than the cost of incarceration in the juvenile detention system. Assuming each juvenile who is rearrested and reconvicted spends 1 year in a detention centre, the total cost reduction derived from the peer intervention programme annually on an NNT basis is approximately $750,000 to $1.5 million.

Mediation

A school-based violence prevention programme including training was evaluated in a randomised controlled trial (Farrell, 2001). The study took place in three middle schools in Virginia, USA between 1995 and 1996. Students were taught specific skills for preventing violence (e.g., avoiding potentially violent situations, talking things through). Techniques used included behavioural repetition, mental rehearsal of a social-cognitive problem-solving model, and experiential learning techniques. The curriculum was delivered weekly in 25 fifty minute sessions. The majority of students were African Americans. There were no crime outcomes. Follow-up assessment was 12 months after completion of the programme, but it did not achieve high follow-up (18% loss to follow up). The study found violent behaviours were twice as high in the control group as in the intervention group, however the difference was not statistically significant. The students who were observed to have benefitted most from the intervention were those who reported higher rates of violent behaviour at baseline.

Peer mediation was one component of a multi-component intervention to reduce aggressive behaviours, evaluated in Texas, USA in 1994, using a cluster randomised trial of 8 matched pairs of middle schools in an urban district (Orpinas, 2000). The intervention schools trained 50 to 60 students to be peer mediators. The intervention training was based on Social Cognitive Theory, whereby interactions between behavioural, social, environmental and personal factors determine behaviour. With over 2200 students included in the evaluation, the study was powered to detect a reduction in an aggression score, based on fights and injuries due to fighting, but it found no evidence for an effect of the intervention. The statistical analysis accounted for the clustered nature of the study.

Tables of included studies of mediation

Farrell (2001)	MEDIATION	**Intervention:** Responding in Peaceful and Positive Ways (RIPP): A School-Based Prevention Program for Reducing Violence. Students are instructed in the use of specific skills for preventing violence (e.g., avoiding potentially violent situations, talking things through).
Effect *How effective is it?*		Rates of disciplinary violations for violent behaviours were 2.2 times greater in the control group than the intervention group. Effect size estimates representing differences between the intervention and control groups based on regression analyses were generally not significant.
Quality of evidence?		• Randomised controlled trial • A random numbers table was used to assign sixth-grade classrooms within each school to the intervention (13 classrooms, N = 305) or to a no-intervention control group (14 classrooms, N = 321). • Measures were administered by research assistants unaware of treatment conditions. • Approximately equal numbers of boys & girls in intervention (N = 152 boys; 153 girls) and control (N = 162 boys; 159 girls) groups. • Missing data on 116 students (18%) who left the three schools before the follow-up assessments. • Students assigned to intervention missed average of 3.6 sessions; 24% had perfect attendance, and 75% missed 4 or fewer sessions. • Follow-up data were obtained 6 and 12 months after completion of the program. • Having students within the same schools assigned to intervention and control groups introduces the possibility of diffusion effects.
Mechanism *How does it work?*		Through repeated use of this problem-solving model, the nonviolent options it makes available, and opportunities for reflection, participants learn how to choose strategies most likely to be successful in a given situation. Three basic techniques are used throughout the program (i.e., behavioural repetition and mental rehearsal of the social-cognitive problem-solving model, experiential learning techniques, and didactic learning modalities). Peer mediation was available to all students, including those in the control condition.
Moderators *In which contexts does it work?*		• Richmond, Virginia, USA • Public middle schools in within the context of a school-wide peer mediation program supervised by the prevention specialist • Students who benefitted from the intervention tended to be those who reported high pre-test rates of violent behaviour • October 1995 to May 1996 • The majority (96%) were African American
Implementation *What is needed to implement it?*		The curriculum was implemented in twenty-five 50 minute sessions that generally were taught during social studies or health education. Sessions were conducted weekly. Included three male, African American, trained prevention specialists, each was assigned to one school. All were required to have a commitment to reducing youth violence; a college education in a relevant field; the ability to demonstrate activities in the appropriate fashion; and skills in classroom management, public speaking, and conflict resolution. A manual was used to increase consistency of implementation across schools.
Economics *How much might it cost?*		No cost data provided.
General considerations		• Randomised controlled trial with blinded outcome assessment • 12 month follow up • Losses to follow up were high • No crime or weapon-enabled violence outcomes

Orpinas (2000)	PEER MEDIATION	**Intervention:** Students for Peace aimed to evaluate a multi-component, school-based intervention to prevent and reduce aggressive behaviours among middle school students. The strategies used included a violence-prevention curriculum and a peer mediation programme.
Effect _How effective is it?_	For five outcome variables: aggressive behaviours (measured by aggression scale Orpinas 1995), fights at school, injuries due to fighting, missing classes because of feeling unsafe at school and being threatened to be hurt, the evaluation showed no significant intervention effect.	
Quality of evidence?	• Cluster randomised trial; 8 schools divided into matched pairs; one of each pair randomly assigned to intervention or control. • Sample size (4 intervention and 4 control schools) calculated using 'aggression score' as the main dependent variable; Type I and Type II error of 0.05 and 0.20, respectively, intraclass correlation of 0.04. • Baseline student survey was administered to all students in the participating schools before matching the schools. • The control schools received the district's usual violence-prevention activities. • Approximately 9000 students completed each cross-sectional evaluation, with almost 90% response. • Nested cohort evaluation included 2246 students who completed a survey at baseline and at least one follow-up survey • Statistical analysis accounted for hierarchical structure of the study design, and provides variance and covariance adjustments for the levels of the structure.	
Mechanism _How does it work?_	Based on Social Cognitive Theory, strategies were designed to influence both environmental and personal factors, to modify aggressive behaviour.	
Moderators _In which contexts does it work?_	• Texas, USA in 1994. • Middle schools (sixth, seventh and eighth graders) of a large, urban school district. • Boys 1132 (50.4%), girls 1114 (49.6%). • Two thirds of the students were Hispanic.	
Implementation _What is needed to implement it?_	During the first year of Students for Peace implementation, 50-60 students per intervention school were trained to be both peer mediators and peer helpers. Two teachers per school served as sponsors, met regularly with students and kept a log of their activities.	
Economics _How much might it cost?_	No cost data provided.	
General considerations	• No crime outcomes • Self-reported aggressive behaviours • Mediation one component of a multi-component school-based intervention	

Peer-support

In a mid-western state in USA, a CBA evaluation of peer driven mentoring intervention in high schools that encourages youth to intervene as bystanders, and promotes change to social norms around acceptance of violence, used self-report outcomes on whether youth would intervene (Katz, 2011). However, it included no violence outcomes and no crime outcomes.

A multi-component intervention for youth in a high security correctional facility in the Netherlands including a peer-support component was evaluated in a CBA design in 2006 (Brugman 2011). Youth attended a 30-lesson programme meeting 3 times a week over 3 months. The meetings focused on teaching anger management skills and social decision-making. Participants practice the skills by helping each other to solve their problems. The outcome was re-offending 12 months after release from the institution. The evaluation found some evidence for an increase in the intervention group (53% of the multi-component intervention group reoffended vs. only 29% of the control group; p=0.08). There was no violence outcome, and not all participants were at risk of violence. There was a high attrition rate (40%) in the experimental as well as the control group.

A multi-component drug and violence prevention programme including a peer-led classroom component was evaluated in a cluster randomised trial in Minnesota, USA, 1998 (Komro 2004). 24 schools were randomly assigned to one of 3 study conditions (intervention, control, and a delayed-intervention control). The intervention included a four-session peer-led classroom programme aiming to decrease youth intentions to be violent, to provide positive role models, to support reasons for being non-violent and to produce negative expectations related to violence. A total of 84% of the sample was followed-up after 2 years and found that boys intervention group reported fewer physically violent acts than boys in the control condition (although not statistically significant). No crime outcomes were included.

A US violence prevention curriculum was evaluated when administered by teacher with a peer leader nominated by their classmates as someone they admire and respect, versus without peer-leader (Orpinas 1995). Peer leaders were trained to modify social norms about violence and to reinforce classmates for non-violent response. All peer leaders from the same school were trained together once per week (45 minutes) for 6 weeks during the time the curriculum was being implemented. Training of peer-leaders was conducted by a counsellor specialising in violence prevention. Students in a third group (control) were not exposed to a violence prevention curriculum or any other related special programme. A total of 265 youth were included and 223 completed all three surveys over follow-up. The study found that boys in the intervention classes reported lower aggressive behaviour compared to the control group. There were no crime or violence outcomes.

A cohort study with matched controls evaluated the effect of adolescent mentors who designed lessons to teach younger children about violence prevention (Sheehan 1999). The intervention provided 20 weekly sessions for 400 school children over an 18-month period in Chicago, USA. A total of 50 children were enrolled in peer mentoring and were compared with 75 control subjects. Self-reported outcomes on knowledge and attitudes to violence were recorded. The study found that compared with controls, the children who received the peer-mentoring lessons avoided an increase in attitudes that support violence and may also have avoided an escalation of aggressive behaviours.

Tables of included studies of peer-support

Brugman (2011)	PEER SUPPORT	**Intervention:** EQUIP is a multi-component multimodal training program intended to teach delinquent adolescents during confinement to act responsibly and help one another. It involves 30 EQUIP meetings and a number of mutual help meetings. EQUIP meetings focus on teaching skills of anger management, social behaviour and social decision-making. In mutual help meetings, the participants practice the skills learned at EQUIP meetings by helping one of the participants to solve his problems. The intervention was supervised by an experienced EQUIP trainer.
Effect *How effective is it?*		After 12 months, 53% of the experimental group had reoffended and 29% of the control group (p=0.08). No positive effect on the prevalence, speed or gravity of recidivism was found for the EQUIP intervention.
Quality of evidence?		• CBA design. • In the experimental group a total of n=117 individuals participated in the pre-treatment test and n=57 in the post-treatment test; in the control group a total of n=49 participated in the pre-treatment test and n=31 in the post-treatment test. • To establish whether the participants had reoffended since their release from the institution, the Ministry of Justice Criminal Records Service (JDS) was consulted. • The study showed a high attrition rate (40-50%) in the experimental as well as the control group.
Mechanism *How does it work?*		The multi-component part of the EQUIP training programme is based on Aggression Replacement Training (ART, Goldstein & Glick 2001), while the peer-group intervention part is based on the Positive Peer Culture (PPC, Vorrath & Brendtro 1985) model.
Moderators *In which contexts does it work?*		• Netherlands, 2006. • High security juvenile correctional facilities in urbanised part of the Netherlands. • Participants were incarcerated for one or more serious crimes (e.g. violent robbery, murder, rape, drug dealing), awaiting sentencing, or under supervision order. • Minority groups were equally present in the experimental and the control group, 72% and 66%, respectively of the participants.
Implementation *What is needed to implement it?*		A 30-lesson programme completed in 3 months, with a meeting 3 times a week.
Economics *How much might it cost?*		No cost data provided
General considerations		• No violence outcome. • Not all participants necessarily at risk of violence. • Peer-support only one component of the intervention.

Katz (2011)	PEER SUPPORT	**Intervention:** Mentors in Violence Prevention (MVP) programme is a peer-driven, prosocial bystander model that offers a forum for student exploration and discussion. MVP program trains a group of student leaders (MVP mentors) to catalyse change in gendered social norms around the acceptance of abuse, harassment, and violence; to equip peers with concrete options on how to intervene as empowered bystanders; and to encourage all students to respond to abuse, harassment, and bullying before, during, or after the fact.
How effective is it?	Examination of the mean scores indicated that students in the MVP school (Mean = 3.56, SD = 1.24) reported being more likely to intervene than non- MVP students (Mean = 3.20, SD = 1.20) when they encounter situations involving more aggressive types of behaviours. Students exposed to MVP programme were more likely to report a range of behaviours as being wrong than control students, and were more likely to intervene in contexts in which aggressive behaviours were exhibited.	
Quality of evidence?	- CBA study - A non-MVP school (that had not yet implemented the programme) was recruited as a matched comparison school, based on student population size and diversity. - Survey administration occurred with students at the MVP school approximately 3 months after the final MVP session. - Whether students exposed to the MVP programme perceive aggressive behaviours differently and report greater willingness to intervene than students in non-MVP school, examined using one-way between groups multivariate analysis of variance. - Ethnicity controlled in all predictive analyses. - Assesses perceptions and attitudes, study does not ask students to report on actual prosocial behaviours they have engaged in.	
Mechanism *How does it work?*	MVP aimed to apply key concepts of social justice education to the issue of men's violence against women. Engaging men (and later, both sexes) in the prevention of all forms of men's violence against women and heterosexuals in the prevention of gay-bashing and other abuses. The strategy that MVP staff settled on was to encourage people to speak out in the face of abusive behaviour before, during, or after the fact and thus contribute to a climate in which sexist abuse was seen as uncool and unacceptable, and with men in particular, as a transgression against—rather than an enactment of—the social norms of masculinity.	
Moderators *In which contexts does it work?*	- Set in 2 high schools in a midwestern state, USA. - Average age of students was 15.59 (SD=1.15), students in Grades 9 through 12. - MVP school 50% of 849 participants were White, 23% Hispanic, 7% African American, 5% Asian, 4% Native American, and 12% as Other. Of the 850 respondents from the non-MVP school, 55% were White, 5% Hispanic, 36% African American, 3% Asian and 2% Native American.	
Implementation *What is needed to implement it?*	Participation in leadership training that consists of a variety of topics, such as group facilitation skills; dating violence prevention, bullying, and harassment awareness; awareness of harassment and targeting of gay, lesbian, and transgendered students; role-play activities; and a review of the MVP playbook's structure and content, helps to provide mentors with skills and practice to lead and conduct meaningful MVP sessions. In most cases, student MVP mentors are likely to acquire nearly 16-20 hrs of training and instruction in MVP prior to facilitating mentoring sessions with groups of younger students.	
Economics *How much might it cost?*	No cost data provided.	
General considerations	- No violence outcome, no crime outcome; Self-report outcome on whether they would intervene - Intervention promotes change to social norms around acceptance of violence, abuse and harassment - Encourages youth to intervene as bystanders	

Komro (2004)	PEER SUPPORT	**Intervention:** The D.A.R.E. Plus Project is a multi-component drug and violence prevention programme, combining school, family, and neighbourhood strategies to prevent drug use and violence among young adolescents. The D.A.R.E. plus intervention includes a four-session peer-led classroom programme with 4 interactive homework assignments; each component included violence prevention activities.
Effect *How effective is it?*	At follow-up, boys in the D.A.R.E. Plus condition reported fewer physically violent acts than boys in the control condition (effect size =0.10, not statistically significant).	
Quality of evidence?	24 schools were randomly assigned to one of 3 study conditions, 8 schools in each condition, DARE only, DARE plus and delayed – programme control. - Seventh-grade students during the 1999-2000 school year, in the 24 participating schools, were the study cohort. There were 6,728 students eligible for the baseline survey, and 93% completed a questionnaire in autumn 1999. - N=2,501 boys and n-2,475 girls. - At second follow-up (spring 2001), 84% of the baseline sample was surveyed; losses to follow-up did not differ by study condition. - Implementation of the D.A.R.E. curriculum was high with 98% of the observed lessons being completed - Statistical models employed in these analyses were adjusted for a common set of covariates.	
Mechanism *How does it work?*	Violence-specific goals of the D.A.R.E. Plus intervention included decreasing intentions to be violent, providing positive role models to create and support school and community violence-free norms, supporting reasons for being violence free and negative outcome expectations related to violence.	
Moderators *In which contexts does it work?*	- Minnesota, USA, 1998. - Schools in urban, suburban and rural regions - Ethnic composition in Minnesota schools was 85% White, 6% Black, 5% Asian, 3% Hispanic, and 2% American Indian.	
Implementation *What is needed to implement it?*	Organisers were hired and trained to coordinate the after-school activities and neighbourhood action teams for each D.A.R.E. Plus school.	
Economics *How much might it cost?*	No cost data provided.	
General considerations	- Peer-led classroom component was only one of several in the intervention. - Cluster randomised trial with a 'delayed-programme' control. - No crime outcomes; self-reported violence	

Orpinas (1995)	PEER SUPPORT	**Intervention:** Second Step: A Violence Prevention Curriculum. The effects of two interventions were evaluated: a violence prevention curriculum, used to modify knowledge and skills about violence prevention, and peer leaders trained to modify social norms about violence. Unit I describes violence as a societal problem. Unit II (four lessons) trains students on empathy and regulation of aggression. Unit III combines anger management and inter-personal problem solving for reducing impulsive and aggressive behaviour in adolescents. Unit IV (five lessons) applies the skills introduced in previous units to five specific situations including diffusing a fight through behaviour modelling with videotapes and guided practice through role-play.
Effect *How effective is it?*	Comparison of adjusted means at post-test showed boys of the 6 intervention classes reduced aggressive behaviour by between 4%-51% compared to control group. Students from the 'teacher plus peer leader' groups had a more negative attitude toward responding with aggression when provoked after the intervention.	
Quality of evidence?	- CBA design - Schools chosen based on the school principal's willingness to participate - Within two schools, three 6th grade classes were assigned to one of three conditions - The school principal chose a control class that was similar to the intervention class. - Students in the control group were not exposed to a violence prevention curriculum or any other related special programme. - For the comparison of baseline, post-test, and follow-up, repeated measures analysis of variance was used. - Follow up was 3 months after completion of curriculum. - Of the 265 students in these classes, 258 (117 boys and 141 girls) completed the baseline evaluation, 239 (113 boys and 126 girls) completed both baseline and post-test, and 223 (105 boys and 118 girls) completed all three surveys. - Cannot separate any teacher effect from the intervention (peer leader) effect. - Analyses were done separately for boys and girls, controlling for the confounding effect of race/ethnic group for the aggression score.	
Mechanism *How does it work?*	Peer leaders were trained to modify social norms about violence and to reinforce classmates for non-violent response.	
Moderators *In which contexts does it work?*	USA, 1993	
Implementation *What is needed to implement it?*	Second Step was taught by the teacher 2-3 times per week. Peer leaders were selected from the same classes in which the curriculum was to be administered by the teacher plus a peer leader. The peer leaders were two boys and two girls nominated by their classmates as people they both admire and respect. Teachers participated in an 8-hour training workshop conducted by trainers certified by the Committee for Children. Training sessions for peer leaders were conducted by a counsellor specialising in violence prevention. All peer leaders from the same school were trained together once per week (45 minutes) for 6 weeks during the time the curriculum was being implemented.	
Economics *How much might it cost?*	No cost data provided.	
General considerations	- Peer leaders were only one component of the intervention. - No crime or violence outcomes - Self-reported aggressive behaviour. - Compares curriculum administered by teacher with peer leader, versus without.	

Sheehan (1999)	PEER SUPPORT/ MENTORING	**Intervention:** Youth Program's Children Teaching Children (CTC) program. The adolescent mentors designed lessons to teach younger children about violence prevention. Information was provided through skits, games, and rap music. Role models from within and outside the Cabrini Green community lead activities in education, recreation, health care, unintentional injury prevention, and violence prevention.
Effect *How effective is it?*	Compared with matched control children, school-aged children who received the CTC peer-mentoring lessons avoided an increase in attitudes that support violence and may also have avoided an escalation of aggressive behaviours.	
Quality of evidence?	- Cohort study with matched controls 50 children enrolled in peer mentoring (case subjects) were compared with 75 control subjects. - Violence knowledge and attitudes were primary outcome measures. - Control subjects were recruited by a study staff person going door-to-door to find children who matched the case subjects on age (within 1 year), sex, and census tract. - ANOVA was used for comparison of continuous variables, chi-squared tests for categorical variables, and Wilcoxin Rank-Sum test was used for nonparametric data. - Based on an intent-to-treat model, case subjects were considered enrolled if they received one or more lessons and completed data at two or more data collection times. - The scales used to measure study outcomes were administered at baseline, 9 months, and 18 months after baseline.	
Mechanism *How does it work?*	No details provided.	
Moderators *In which contexts does it work?*	- Chicago, USA, late 1990s - The CGYP was founded in 1984 by a group of Northwestern University medical students with the goal of improving the life opportunities of children living in Cabrini Green, a Department of Housing and Urban Development housing project in Chicago.	
Implementation *What is needed to implement it?*	An 18-month intervention, the Youth Program provides 20 weekly programmes for 400 children.	
Economics *How much might it cost?*	The largest CTC expense was the stipend for the adolescents, \$4.50/hour with a \$.50/hour raise yearly. The approximate cost for our 19 adolescents to work with 50 CGYP children for 48 weeks at \$4.50 an hour was \$20,000. This is only slightly above the average charge of one paediatric gun injury hospitalization in Illinois.	
General considerations	- Self-reported outcomes (knowledge and attitudes only) 18 month follow-up. - No crime or violence outcomes	

DISCUSSION

This systematic review aimed to provide a comprehensive account of the range of violence prevention programmes for young people (aged up to 25 years) who have either been involved in, or are identified as being at high-risk of violence, and that included contact and interaction with an influential peer or positive role model. This individual might be a 'peer' (of similar age and/or background), a 'mentor' (someone with more experience, skills and abilities), or a 'peer mediator' who intervenes between youth to prevent retaliation. The mentor, peer, or mediator is someone who is intended to be a positive influence in the eyes of the youth, and through contact and interaction with the youth, might affect a change in attitudes and behaviours towards violence.

On inspection of the eligible studies it was clear that there was a high degree of heterogeneity in terms of participants, interventions and outcomes which meant that a pooled analysis (i.e. meta-analysis) was not considered to be scientifically appropriate. Instead, data from each study were reviewed qualitatively, and effect estimates and statistical significance from each study report were summarised. The evidence for mentoring from nine studies provided good information on the inputs required for mentoring schemes, in terms of staff, training and time spent with youth. The evidence for mediation from two studies provided little evidence of effect on reducing violent behaviour, carrying weapons, arrests and reconvictions. The evidence for peer-led interventions from five studies found weak evidence that for effect in reducing aggressive behaviour and attitudes conducive to violent behaviour; there was no evidence for effect on weapon-enabled violence and mixed evidence on arrests and reconvictions.

MENTORING

How effective is it?
One RCT found a reduction in numbers of fights and fight injuries after 6 months in assault injured youth (not statistically significant). An analysis of a national cohort found mentored youth were less likely to report hurting anyone in a fight. Another RCT found no effect on reconviction rates after 2-year period in persistent offenders. One CBA study found more re-arrests in mentored youth (statistically significant). Another CBA study found fewer criminal contacts 6 months following release in youth offenders (statistically significant). In hospitals, a CC study found a reduction (OR 0.26; 95% CI 0.05 to 1.22) in arrests for any offence among injured youth 6 months after they received a peer-led intervention in the hospital ED. No youth were arrested for a violence-related offence compared with 6% of controls (not statistically significant).

EMMIE - Effect: Overall the evidence suggests that mentoring may be effective in violence reduction but larger scale evaluations are needed with controls for effects of other components. The evidence is mixed on arrests and reconvictions.

How strong is the evidence?

EMMIE - Quality of evidence: Unable to quantify an overall effect on violence or criminal outcomes. The evidence comes from eight studies (2 RCTs, 4 CBA, 1 Cohort, 1 Economic evaluation).

How does it work?

EMMIE - Quality of evidence: Authors suggest that mentoring might work by youth having someone to provide them with good advice and emotional support (e.g. "*the mentor made me feel loved"; "my mentor understood my needs and cared about me*"), and having a role model or parental figure in the absence of their own parent. 'Pro-social' activities may add value to standard services received by youth offenders when in transition back to their community. None of the mechanisms suggested were empirically tested.

In which contexts does it work best?

The RCT that found a reduction in fights and fight injuries after 6 months in assault injured youth (not statistically significant) was set in a hospital ED where youth received a mentor who then met once a month.

The evidence from a national cohort that mentored youth were less likely to report hurting anyone in a fight was from youths who had been in foster care.

The RCT that found no effect of mentoring on reconviction rates after a 2-year period was based on 'high-risk' inmates expected to return to violence.

The CC study in a hospital ED was in California, USA and the youth were predominantly African-American (60%) and Latino (26%).

EMMIE - Quality of evidence: Mentoring may be effective in assault-injured youth when established in the hospital A&E department. At-risk youth from foster care may benefit from mentoring. The evidence on context is unclear for youth offenders.

What can be said about implementing this initiative?

Mentoring staff are required (e.g., recruited from a community mentoring organisation) and the mentors require training (e.g., role play regarding adolescent communication and conflict scenarios) and supervision. Mentors were expected to acquire 16-20 hrs of training and instruction before facilitating mentoring sessions. In one programme 2 full-time mentors were required, each with a caseload of around 10 youths in probation who received 50 hours of face-to-face contact over 7 months. Another programme used mentors for 12 to 18 months after youth were released from a detention facility, each receiving around 7 contacts their mentor in the community. Another assumed that mentors were required to give 2 to 6 hours per week with their mentee during the first year.

EMMIE - Quality of evidence: There is good evidence on the inputs required for mentoring schemes, in terms of staff, training and time spent with youth.

How much might it cost?
Few studies provided information on how much mentoring schemes cost. In a study based in a hospital ED for assault injured youths the mentors each received a total payment of $240. An economic evaluation of a mentoring programme assessed costs against a scenario in which participants receive no mentoring. The authors compare the cost of mentoring 2,200 of the most vulnerable young people (a cost of $40 million) with the associated costs of their expected adult criminality ($3.3 billion). The mentoring programme would be cost-effective if it averted high-risk behaviours in 1.3% of participants.

An economic evaluation of a peer- mentoring intervention for assault-injured youth in a hospital ED was conducted using data between 1998 and 2003. By assuming that 75 to 100 youths could be treated annually it estimated the cost of the intervention to be $3,500 per youth per year. The annual cost of a detention centre admission was assumed to be $80,000 per youth. By assuming that 6 patients need to be treated to reduce one youth involvement in the criminal justice system (an effect suggested by the study), the annual cost of the intervention per youth would be $60,000 lower than the cost of incarceration. By assuming each youth who is rearrested and reconvicted spends one year in a detention centre, the cost reduction from the intervention is estimated to be between $0.75 million to $1.5 million per year.

EMMI**E** - Quality of evidence: There is some evidence on the costs of mentoring programmes. An economic evaluation found mentoring interventions would be cost-effective if they can avert criminal activity in around 1% of youths. Economic evaluations, making broad assumptions about effects on reducing arrests or violence, have suggested peer-mentoring interventions would be cost-effective.

MEDIATION

How effective is it?
One RCT of mediation in a school-based violence prevention programme found violent behaviours were halved (not statistically significant). One CRT of peer-mediation in schools found no evidence for a reduction in aggressive behaviours (fighting and injuries due to fighting).

EMMIE - Effect: There is no evidence that mediation has an effect on reducing further violent behaviour or carrying of weapons, however larger scale evaluations are needed with controls for effects of other components. There is little evidence on its effects on arrests and reconvictions.

How strong is the evidence?
EMMIE - Quality of evidence: Unable to quantify an overall effect on violence or criminal outcomes. The evidence comes from two studies (two CRTs).

How does it work?

EM**M**IE - Quality of evidence: Authors suggest that mediation may work by youth learning skills for avoiding potentially violent situations. Techniques include talking things through, repetition of behaviour, and mental rehearsal of problem-solving. Peer mediation training has been based on Social Cognitive Theory and on Social Learning Theory, where violent behaviour is assumed to be learned through social experiences, and where youth develop orientations favourable to violence. None of the mechanisms suggested were empirically tested.

In which contexts does it work best?

EMM**I**E - Quality of evidence: Mediation has been evaluated in middle schools in Virginia and Texas USA in the mid 1990s (no evidence for effects). The authors suggested that youth with higher rates of violent behaviour benefitted most.

What can be said about implementing this initiative?

In one school-based violence prevention intervention 50-60 youth were trained in each school to be peer mediators; 2 teachers per school were required to serve as 'sponsors' of the intervention, to meet regularly with the peer mediators and record their activities. In another school-based conflict resolution programme, youth received 25 hourly sessions including training on identifying and handling potentially violent situations.

EMM**I**E - Quality of evidence: There is some evidence on the inputs required for mediation schemes, in terms of staff and training.

How much might it cost?

EMMI**E** - Quality of evidence: There is no evidence on the costs of these mentoring programmes.

PEER-SUPPORT

How effective is it?

In schools: a CRT found a reduction (not statistically significant) in physically violent acts 2 years following a multi-component programme with a peer-led component. A CBA study found a reduction in aggressive behaviour when a violence prevention curriculum was administered by a teacher with a peer-leader. A cohort study with matched controls found no increase in attitudes that support violence among youth who received peer-mentored lessons about violence prevention.

In a detention facility: a CBA study found increased reoffending among high-risk youth receiving a multi-component intervention with peer-support (53% intervention vs. 29% of controls; p=0.08); no violence outcome.

EMMIE - Effect: Overall there is (at most) weak evidence to suggest that peer-support interventions are effective in reducing aggressive behaviours and attitudes conducive to violent behaviour. Larger scale evaluations are needed with controls for effects of other

components. There is no evidence for effects on weapon-enabled violence. The evidence is mixed on arrests and reconvictions.

How strong is the evidence?
<u>EMMIE - Quality of evidence:</u> Unable to quantify an overall effect on violence or criminal outcomes. The evidence comes from five studies (one CRT, three CBA, one Cohort). Studies tended to be small and have high attrition (e.g. 40% losses).

How does it work?
<u>EMMIE - Quality of evidence:</u> Authors suggest that peer-support interventions might work by peers serving as positive role models and through establishing trusting relationships. In one instance, peer leaders were nominated by their peers as someone they admire and respect. The techniques include: increasing motivation to change, rehearse avoiding arguments, showing empathy, enhancing self-efficacy, modify social norms about violence, reinforce attitudes and support reasons for being non-violent, and to produce negative expectations related to violence. One study based its intervention on a 'Positive Peer Culture' model, whereby youth practice skills by helping each other to solve their problems. It is not possible, however, to disentangle the effects of the content of the interventions and the peer mode of delivery.

In which contexts does it work best?
The CBA in a detention facility which found an increase in reoffending was in urban Netherlands, where not all participants were considered at risk of violence.

<u>EMMIE - Quality of evidence:</u> There is evidence to suggest that peer-support interventions are effective when implemented in schools.. The evidence suggests, however, an increase in criminal outcomes when implemented with youth offenders in criminal detention facilities.

What can be said about implementing this initiative?
The CC study intervention employed and trained young adults from similar communities as the injured youth, who may also have experienced violence. These peers would have a minimum of three contacts with the injured youth within 6 months of injury, at least one in person.

In schools: in the CRT of a multi-component programme with a peer-led component organisers were hired and trained to coordinate activities for each school. In the CBA of a violence prevention curriculum administered by a teacher with a peer-leader, teachers participated in an 8-hour training workshop, and peer leaders were trained together for 45 minutes once a week for 6 weeks by a counsellor specialising in violence prevention. In the cohort study of peer-mentored lessons about violence prevention it required 20 weekly sessions for 400 children over 18-months.

In a detention facility: the intervention required a 30-lesson programme to be completed in 3 months, including meetings 3 times a week.

EMMIE - Quality of evidence: There is some evidence on the inputs required for peer-support schemes, in terms of staff, training and time spent with youth.

How much might it cost?
Few studies provided information on how much peer-support schemes cost. An economic evaluation of peer-mentored lessons about violence prevention estimated that the cost for 19 peers to work with 50 youth for 48 weeks at $4.50 an hour was $20,000, a sum slightly higher than the average cost of one paediatric gun injury hospitalisation.

EMMIE - Quality of evidence: There is limited evidence on the costs of peer-led interventions.

Completeness and applicability of evidence
We identified 16 studies that met the inclusion criteria for the systematic review. Most of the evaluations were conducted in the USA, with only one in the UK. In the US many of these interventions are provided in a context where there are no social support systems. In controlled studies that used a control group receiving 'usual care' or 'standard treatment', the control group may actually get nothing, and so the study results may differ to what would be seen in the UK. Interventions were evaluated during the 1990s and early 2000s, so their relevance and generalisability to present day may be questionable.

Limitations and potential biases
The validity of the inferences based on a systematic review is dependent on the quality of the included studies. Overall, the methodological quality of the studies included in this review was judged to be weak. There are few high quality evaluations and most studies used self-reported outcome measures. Five studies used experimental designs (either individual or cluster randomised controlled trials), six were controlled-before-after comparisons (non-randomised comparisons), four were cohort or case-control studies, and one was an economic evaluation.

Most of the interventions included mentoring, mediation or peer-support as only one component of many in a broader package of services for youth violence prevention. It is not therefore possible to attribute any observed effects to the mentoring, mediation or peer-support component. Few studies reported carrying weapons.

Implications for practice and policy
There is currently insufficient evidence from high quality intervention studies that mentoring, mediation or peer-support interventions are effective in preventing youth violence.

Implications for research
The methodological quality of future evaluations of mentoring, mediation or peer-led interventions to prevent youth violence needs to be improved. Randomised controlled

trials with adequate allocation concealment and blinding are feasible, as demonstrated by the few RCTs included in this review, and these are needed to improve the evidence base. Further well conducted non-randomised trials are also needed, when random allocation is not feasible. When collection of crime outcome data is not feasible, research is needed to identify the most valid proxy indicators.

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APPENDICES

Appendix 1: Search sources

Electronic sources

We searched the following electronic databases on **22/02/2014**:
1. Ovid MEDLINE(R), Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid OLDMEDLINE(R) (1946 to current);
2. Social Policy and Practice (OvidSP) (current);
3. Global Health (OvidSP) (1910 to current);
4. PsycINFO (OvidSP) (1806 to current);
5. PsycEXTRA (OvidSP) (1908 to current);
6. PubMed (current);

We searched the following electronic databases on **07/03/2014**
7. Applied Social Sciences Index and Abstracts (Proquest) (1987 to current);
8. International bibliography of the social sciences (1951 to current);
9. ProQuest Criminal Justice (1981 to current);
10. ProQuest Education Journals (1988 to current);
11. ProQuest Social Science Journals (current);
12. Social Services Abstracts (1979 to current);
13. Sociological Abstracts (1952 to current);

We searched the following electronic databases on **05/03/2014**
14. Criminal Justice Abstracts (EBSCOhost) (current);
15. Psychology and Behavioural Science Collection (EBSCOhost) (current).

Searching other resources

We searched the following websites for reports and other grey literature:
1. The Scottish Government (http://www.scotland.gov.uk/Topics/Justice/crimes)
2. College of Policing catalogue (http://www.college.police.uk/) **(13/07/2014)**
3. UK Justice (https://www.justice.gov.uk/)

Appendix 2: Search strategies for electronic

databases MEDLINE (OvidSP)

1. (Crime adj3 (prevention or control or reduc*)).ti,ab.
2. "Situational crime prevention".ti,ab.
3. ((neighborhood* or neighbourhood*) adj3 (plan* or setting* or group* or collaboration)).ti,ab.
4. ((school* or workplace or classroom* or college or universit*) adj3 (program* or policy or polic* or strateg*)).ti,ab.
5. 1 and 3
6. 1 and 4
7. (counsell* or counsel*).ti,ab.
8. (activit* adj3 (communit* or educat* or programme* or peer* or group*)).ti,ab.
9. 1 and 8
10. (peer adj3 (intervention* or help or guidance or support*)).ti,ab.
11. (mass?media or TV or television or internet or "social media" or social-media or magazine*).ti,ab.
12. 1 and 11
13. (Youth* adj3 (motivation or change)).ti,ab.

14. community-driven.ti,ab.
15. (community adj3 (leadership or empowerment or engagement)).ti,ab.
16. (support* adj3 intervention*).ti,ab.
17. (advisor* or advocacy or advocat* or peer* or mentor*).ti,ab.
18. 1 and 17
19. interrupter*.ti,ab.
20. (amnest* or cease?fire).ti,ab.
21. peer-education.ti,ab.
22. peer-to-peer.ti,ab.
23. self-enhancement.ti,ab.
24. (Plan adj1 (community or action)).ti,ab.
25. situational crime prevention.ti,ab.
26. (support adj1 (community or personal or friend* or peer* or mentor*)).ti,ab.
27. partnership work*.ti,ab.
28. (conflict adj1 mediation).ti,ab.
29. ((community or urban) adj3 (outreach or setting* or group* or collaboration or coalition or institution*)).ti,ab.
30. communities/ or neighborhoods/
31. 20 and 30
32. counseling/ or peer counseling/ or support groups/
33. 1 and 32
34. social support/ or support groups/
35. 1 and 34
36. Crime/pc [Prevention & Control]
37. peer group/
38. Mentors/
39. mentor*.ti,ab.
40. (job* adj3 (fair* or readiness or community or centre* or center*)).ti,ab.
41. (pupil adj3 referral).ti,ab.
42. ((campus or school) adj1 officer*).ti,ab.
43. (mediation or mediator*).ti,ab.
44. Health Promotion/mt [Methods]
45. 1 or 2 or 5 or 6 or 7 or 9 or 10 or 12 or 13 or 14 or 15 or 16 or 17 or 19 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 31 or 33 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44
46. (crime* or criminal*).tw.
47. (fight* or weapon* or abuse* or agression* or assault* or retaliation).tw.
48. (social* adj3 (contagion or contagious)).tw.
49. (violence or violent).tw.
50. violence/ or antisocial behavior/ or violent crime/
51. (anti?social adj1 behavio?r).tw.
52. antisocial behavior/ or criminal behavior/ or juvenile delinquency/
53. Crime/
54. 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53
55. (peer* adj5 (deviant or deviancy)).tw.
56. (youth adj5 violence).tw.
57. (victim* or offender* or re-offender* or perpetrator* or deliquent*).tw.
58. Adolescent Behavior/
59. "peer*".tw.
60. 56 and 59
61. (gang* adj3 (member* or violence or agression or behavio?r)).ti,ab.

62. (gang* adj3 (urban or rural or communit*)).ti,ab.
63. (deviant adj3 behavio?r).ab,ti.
64. Adolescent/
65. 55 or 56 or 57 or 58 or 60 or 61 or 62 or 63 or 64
66. 45 and 54 and 65

Global Health (OvidSP)

1.   (crime* or criminal*).tw.
2.   (fight* or weapon* or abuse* or agression* or assault* or retaliation).tw.
3.   social contagion.tw.
4.   (violence or violent).tw.
5.   violence/ or antisocial behavior/ or violent crime/
6.   (anti?social adj1 behavio?r).tw.
7.   Crime/
8.   1 or 2 or 3 or 4 or 5 or 6 or 7
9.   (peer* adj5 (deviant or deviancy)).tw.
10. youth violence.tw.
11. (offender* or re-offender* or perpetrator*).tw.
12. (offender* or re-offender* or perpetrator* or deliquent*).tw.
13. "peer*".ab,ti.
14. 10 and 13
15. (gang* adj3 (member* or violence or agression or behavio?r)).ti,ab.
16. (gang* adj3 (urban or rural or communit*)).ti,ab.
17. (deviant adj3 behavio?r).ab,ti.
18. 9 or 10 or 11 or 12 or 14 or 15 or 16 or 17
19. (Crime adj3 (prevention or control or reduc*)).ti,ab.
20. "Situational crime prevention".ti,ab.
21. ((neighborhood* or neighbourhood*) adj3 (plan* or setting* or group* or collaboration)).ti,ab.
22. ((school* or workplace or classroom* or college or universit*) adj3 (program* or policy or polic* or strateg*)).ti,ab.
23. (counsell* or counsel*).ti,ab.
24. (activit* adj3 (communit* or educat* or programme* or peer* or group*)).ti,ab.
25. (peer adj3 (intervention* or help or guidance or support*)).ti,ab.
26. (mass?media or TV or television or internet or "social media" or social-media or magazine*).ti,ab.
27. (Youth* adj3 (motivation or change)).ti,ab.
28. community-driven.ti,ab.
29. (community adj3 (leadership or empowerment or engagement)).ti,ab.
30. (support* adj3 intervention*).ti,ab.
31. (advisor* or advocat* or advocacy or peer* or mentor*).ti,ab.
32. 19 and 31
33. interrupter*.ti,ab.
34. (amnest* or cease?fire).ti,ab.
35. peer?education.ti,ab.
36. peer-to-peer.ti,ab.
37. self-enhancement.ti,ab.
38. (Plan adj1 (community or action)).ti,ab.
39. situational crime prevention.ti,ab.
40. (support adj1 (community or personal or friend* or peer* or mentor*)).ti,ab.

41. partnership work*.ti,ab.
42. (conflict adj1 mediation).ti,ab.
43. ((community or urban) adj3 (outreach or setting* or group* or collaboration or coalition or institution*)).ti,ab.
44. communities/ or neighborhoods/
45. mentor*.ti,ab.
46. (job* adj3 (fair* or readiness or community or centre* or center*)).ti,ab.
47. ((campus or school) adj1 officer*).ti,ab.
48. (mediation or mediator*).ti,ab.
49. 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48
50. 8 and 18 and 49

PsycEXTRA (OvidSP)

1. (crime* or criminal*).tw.
2. (fight* or weapon* or abuse* or agression* or assault* or retaliation).tw.
3. social contagion.tw.
4. (violence or violent).tw.
5. violence/ or antisocial behavior/ or violent crime/
6. (anti?social adj1 behavio?r).tw.
7. antisocial behavior/ or criminal behavior/ or juvenile delinquency/
8. Crime/
9. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8
10. (peer* adj5 (deviant or deviancy)).tw.
11. youth violence.tw.
12. (offender* or re-offender* or perpetrator*).tw.
13. (offender* or re-offender* or perpetrator* or deliquent*).tw.
14. "peer*".ab,ti.
15. 11 and 14
16. (gang* adj3 (member* or violence or agression or behavio?r)).ti,ab.
17. (gang* adj3 (urban or rural or communit*)).ti,ab.
18. (deviant adj3 behavio?r).ab,ti.
19. 10 or 11 or 12 or 13 or 15 or 16 or 17 or 18
20. (Crime adj3 (prevention or control or reduc*)).ti,ab.
21. "Situational crime prevention".ti,ab.
22. ((neighborhood* or neighbourhood*) adj3 (plan* or setting* or group* or collaboration)).ti,ab.
23. ((school* or workplace or classroom* or college or universit*) adj3 (program* or policy or polic* or strateg*)).ti,ab.
24. (counsell* or counsel*).ti,ab.
25. (activit* adj3 (communit* or educat* or programme* or peer* or group*)).ti,ab.
26. 20 and 24
27. (peer adj3 (intervention* or help or guidance or support*)).ti,ab.
28. (mass?media or TV or television or internet or "social media" or social-media or magazine*).ti,ab.
29. 20 and 28
30. (Youth* adj3 (motivation or change)).ti,ab.
31. community-driven.ti,ab.
32. (community adj3 (leadership or empowerment or engagement)).ti,ab.
33. (support* adj3 intervention*).ti,ab.

34. (advisor* or advocacy or advocat* or peer* or mentor*).ti,ab.
35. 20 and 34
36. interrupter*.ti,ab.
37. (amnest* or cease?fire).ti,ab.
38. peer-education.ti,ab.
39. peer-to-peer.ti,ab.
40. self-enhancement.ti,ab.
41. (Plan adj1 (community or action)).ti,ab.
42. situational crime prevention.ti,ab.
43. (support adj1 (community or personal or friend* or peer* or mentor*)).ti,ab.
44. partnership work*.ti,ab.
45. (conflict adj1 mediation).ti,ab.
46. ((community or urban) adj3 (outreach or setting* or group* or collaboration or coalition or institution*)).ti,ab.
47. communities/ or neighborhoods/
48. counseling/ or peer counseling/ or support groups/
49. social support/ or support groups/
50. mentor*.ti,ab.
51. (job* adj3 (fair* or readiness or community or centre* or center*)).ti,ab.
52. ((campus or school) adj1 officer*).ti,ab.
53. (mediation or mediator*).ti,ab.
54. 20 or 21 or 22 or 23 or 25 or 26 or 27 or 29 or 30 or 31 or 32 or 33 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53
55. 9 and 19 and 54

PsycINFO (OvidSP)

1. (crime* or criminal*).tw.
2. (fight* or weapon* or abuse* or agression* or assault* or retaliation).tw.
3. social contagion.tw.
4. (violence or violent).tw.
5. violence/ or antisocial behavior/ or violent crime/
6. (anti?social adj1 behavio?r).tw.
7. antisocial behavior/ or criminal behavior/ or juvenile delinquency/
8. Crime/
9. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8
10. (peer* adj5 (deviant or deviancy)).tw.
11. youth violence.tw.
12. (offender* or re-offender* or perpetrator*).tw.
13. (offender* or re-offender* or perpetrator* or deliquent*).tw.
14. "peer*".ab,ti.
15. 11 and 14
16. (gang* adj3 (member* or violence or agression or behavio?r)).ti,ab.
17. (gang* adj3 (urban or rural or communit*)).ti,ab.
18. (deviant adj3 behavio?r).ab,ti.
19. 10 or 11 or 12 or 13 or 15 or 16 or 17 or 18
20. (Crime adj3 (prevention or control or reduc*)).ti,ab.
21. "Situational crime prevention".ti,ab.
22. ((neighborhood* or neighbourhood*) adj3 (plan* or setting* or group* or collaboration)).ti,ab.

23. ((school* or workplace or classroom* or college or universit*) adj3 (program* or policy or polic* or strateg*)).ti,ab.
24. 20 and 22
25. 20 and 23
26. (counsell* or counsel*).ti,ab.
27. (activit* adj3 (communit* or educat* or programme* or peer* or group*)).ti,ab.
28. 20 and 27
29. (peer adj3 (intervention* or help or guidance or support*)).ti,ab.
30. (mass?media or TV or television or internet or "social media" or social-media or magazine*).ti,ab.
31. 20 and 30
32. (Youth* adj3 (motivation or change)).ti,ab.
33. community-driven.ti,ab.
34. (community adj3 (leadership or empowerment or engagement)).ti,ab.
35. (support* adj3 intervention*).ti,ab.
36. (advisor* or advocacy or advocat* or peer* or mentor*).ti,ab.
37. 20 and 36
38. interrupter*.ti,ab.
39. (amnest* or cease?fire).ti,ab.
40. peer-education.ti,ab.
41. peer-to-peer.ti,ab.
42. self-enhancement.ti,ab.
43. (Plan adj1 (community or action)).ti,ab.
44. situational crime prevention.ti,ab.
45. (support adj1 (community or personal or friend* or peer* or mentor*)).ti,ab.
46. partnership work*.ti,ab.
47. (conflict adj1 mediation).ti,ab.
48. ((community or urban) adj3 (outreach or setting* or group* or collaboration or coalition or institution*)).ti,ab.
49. communities/ or neighborhoods/
50. 39 and 49
51. counseling/ or peer counseling/ or support groups/
52. 20 and 51
53. social support/ or support groups/
54. 20 and 53
55. mentor*.ti,ab.
56. (job* adj3 (fair* or readiness or community or centre* or center*)).ti,ab.
57. (pupil adj3 referral).ti,ab.
58. ((campus or school) adj1 officer*).ti,ab.
59. (mediation or mediator*).ti,ab.
60. 20 or 21 or 24 or 25 or 26 or 28 or 29 or 31 or 32 or 33 or 34 or 35 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 50 or 52 or 54 or 55 or 56 or 57 or 58 or 59
61. 9 and 19 and 60

Social Policy & Practice (OvidSP)

1. (crime* or criminal*).tw.
2. (fight* or weapon* or abuse* or agression* or assault* or retaliation).tw.
3. social contagion.tw.
4. (violence or violent).tw.
5. (anti?social adj1 behavio?r).tw.

6. 1 or 2 or 3 or 4 or 5
7. (Crime adj3 (prevention or control or reduc*)).ti,ab.
8. "Situational crime prevention".ti,ab.
9. ((neighborhood* or neighbourhood*) adj3 (plan* or setting* or group* or collaboration)).ti,ab.
10. ((school* or workplace or classroom* or college or universit*) adj3 (program* or policy or polic* or strateg*)).ti,ab.
11. 7 and 9
12. 7 and 10
13. (counsell* or counsel*).ti,ab.
14. (activit* adj3 (communit* or educat* or programme* or peer* or group*)).ti,ab.
15. 7 and 14
16. (peer adj3 (intervention* or help or guidance or support*)).ti,ab.
17. (mass?media or TV or television or internet or "social media" or social-media or magazine*).ti,ab.
18. 7 and 17
19. (Youth* adj3 (motivation or change)).ti,ab.
20. community-driven.ti,ab.
21. (community adj3 (leadership or empowerment or engagement)).ti,ab.
22. (support* adj3 intervention*).ti,ab.
23. (advisor* or advocat* or advocacy or peer* or mentor*).ti,ab.
24. 7 and 23
25. interrupter*.ti,ab.
26. (amnest* or cease?fire).ti,ab.
27. peer?education.ti,ab.
28. peer-to-peer.ti,ab.
29. self-enhancement.ti,ab.
30. (Plan adj1 (community or action)).ti,ab.
31. situational crime prevention.ti,ab.
32. (support adj1 (community or personal or friend* or peer* or mentor*)).ti,ab.
33. partnership work*.ti,ab.
34. (conflict adj1 mediation).ti,ab.
35. ((community or urban) adj3 (outreach or setting* or group* or collaboration or coalition or institution*)).ti,ab.
36. mentor*.ti,ab.
37. (job* adj3 (fair* or readiness or community or centre* or center*)).ti,ab.
38. (pupil adj3 referral).ti,ab.
39. ((campus or school) adj1 officer*).ti,ab.
40. (mediation or mediator*).ti,ab.
41. 8 or 11 or 12 or 13 or 15 or 16 or 18 or 19 or 20 or 21 or 22 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40
42. (peer* adj5 (deviant or deviancy)).tw.
43. youth violence.tw.
44. (victim* or offender* or re-offender* or perpetrator* or deliquent*).tw.
45. "peer*".ab,ti.
46. 43 and 45
47. (gang* adj3 (member* or violence or agression or behavio?r)).ti,ab.
48. (gang* adj3 (urban or rural or communit*)).ti,ab.
49. (deviant adj3 behavio?r).ab,ti.
50. 42 or 43 or 44 or 46 or 47 or 48 or 49
51. 6 and 41 and 50

PubMed

((((((("Adolescent Behavior"[Mesh]) OR "Adolescent"[Mesh]) OR ((((((("peer deviancy"[Title/Abstract]) OR peer directed agression[Title/Abstract]) OR youth violence[Title/Abstract]) OR peer[Title/Abstract]) OR gang*[Title/Abstract]) OR (("deviant behavior" OR "deviant behaviour") AND Title/Abstract)))) AND (((((((((violence[Title/Abstract]) OR violent[Title/Abstract]) OR anti-social behaviour[Title/Abstract]) OR anti-social behavior[Title/Abstract]) OR "antisocial"[Title/Abstract]) OR (((((((((crime*[Title/Abstract]) OR criminal*[Title/Abstract]) OR fight*[Title/Abstract]) OR weapon*[Title/Abstract]) OR abuse*[Title/Abstract]) OR agression*[Title/Abstract]) OR assault*[Title/Abstract]) OR retaliation[Title/Abstract])) OR (((("Violence"[Mesh:noexp]) OR "Social Behavior Disorders"[Mesh:noexp]) OR "Juvenile Delinquency"[Mesh]) OR "Crime"[Mesh:noexp]))) AND (((((((((((((((((((((((((prevention[Title/Abstract]) OR control[Title/Abstract]) OR reduction[Title/Abstract])) AND crime[Title/Abstract])) OR (((((((prevention[Title/Abstract]) OR control[Title/Abstract]) OR reduction[Title/Abstract])) AND crime[Title/Abstract])) AND ((((((plan*[Title/Abstract]) OR setting*[Title/Abstract]) OR group*[Title/Abstract]) OR collaboration[Title/Abstract])) AND ((neighborhood[Title/Abstract]) OR neighbourhood[Title/Abstract])))) OR (((((((prevention[Title/Abstract]) OR control[Title/Abstract]) OR reduction[Title/Abstract])) AND crime[Title/Abstract])) AND ((((((program*[Title/Abstract]) OR policy[Title/Abstract]) OR polic*[Title/Abstract]) OR strateg*[Title/Abstract])) AND (((((school*[Title/Abstract]) OR workplace[Title/Abstract]) OR classroom*[Title/Abstract]) OR college[Title/Abstract]) OR universit*[Title/Abstract])))) OR ((counsel*[Title/Abstract]) OR counsell*[Title/Abstract])) OR (((((((communit*[Title/Abstract]) OR educat*[Title/Abstract]) OR programme*[Title]) OR peer*[Title/Abstract]) OR group*[Title/Abstract])) AND activit*[Title/Abstract])) OR (((((intervention*[Title/Abstract]) OR help[Title/Abstract]) OR guidance[Title/Abstract]) OR support*[Title/Abstract])) AND peer[Title/Abstract])) OR (((((((((mass media[Title/Abstract]) OR TV[Title/Abstract]) OR television[Title/Abstract]) OR internet[Title/Abstract]) OR social media[Title/Abstract]) OR social-media[Title/Abstract]) OR magazine*[Title/Abstract])) AND ((((((prevention[Title/Abstract]) OR control[Title/Abstract]) OR reduction[Title/Abstract])) AND crime[Title/Abstract]))) OR ((youth motivation[Title/Abstract]) OR youth change[Title/Abstract])) OR community-driven[Title/Abstract]) OR (((community leadership[Title/Abstract]) OR community empowerment[Title/Abstract]) OR community engagement[Title/Abstract])) OR ((support*[Title/Abstract]) AND intervention*[Title/Abstract])) OR (((advisor*[Title/Abstract] OR advocacy[Title/Abstract] OR advocat*[Title/Abstract] OR peer*[Title/Abstract] OR mentor*[Title/Abstract])) AND ((((prevention[Title/Abstract]) OR control[Title/Abstract]) OR reduction[Title/Abstract])) AND crime[Title/Abstract]))) OR interrupter*[Title/Abstract]) OR (((peer-education[Title/Abstract]) OR peer-to-peer[Title/Abstract]) OR self-enhancement[Title/Abstract])) OR ((community plan[Title/Abstract]) OR action plan[Title/Abstract])) OR situational crime prevention[Title/Abstract]) OR (((((community support[Title/Abstract]) OR personal support[Title/Abstract]) OR peer support[Title/Abstract]) OR mentor support[Title/Abstract]) OR friend support[Title/Abstract])) OR (((partnership work[Title/Abstract]) OR conflict mediation[Title/Abstract]) OR outreach[Title/Abstract])) OR (("Counseling"[Mesh:noexp]) AND ((((prevention[Title/Abstract]) OR control[Title/Abstract]) OR reduction[Title/Abstract])) AND crime[Title/Abstract]))) OR ((("Crime/prevention and control"[Mesh:noexp]) OR "Peer Group"[Mesh]) OR "Mentors"[Mesh])) OR ((job fair[Title/Abstract]) OR job readiness[Title/Abstract])) OR ((((campus officer[Title/Abstract]) OR school officer[Title/Abstract]) OR mediator[Title/Abstract]) OR mediation[Title/Abstract])))) AND (((((((((((((((((((((((((((prevention[Title/Abstract]) OR control[Title/Abstract]) OR reduction[Title/Abstract])) AND crime[Title/Abstract])) OR (((((((prevention[Title/Abstract])

OR control[Title/Abstract]) OR reduction[Title/Abstract])) AND crime[Title/Abstract])) AND ((((((plan*[Title/Abstract]) OR setting*[Title/Abstract]) OR group*[Title/Abstract]) OR collaboration[Title/Abstract])) AND ((neighborhood[Title/Abstract]) OR neighbourhood[Title/Abstract])))) OR (((((((prevention[Title/Abstract]) OR control[Title/Abstract]) OR reduction[Title/Abstract])) AND crime[Title/Abstract])) AND ((((((program*[Title/Abstract]) OR policy[Title/Abstract]) OR polic*[Title/Abstract]) OR strateg*[Title/Abstract])) AND (((((school*[Title/Abstract]) OR workplace[Title/Abstract]) OR classroom*[Title/Abstract]) OR college[Title/Abstract]) OR universit*[Title/Abstract])))) OR ((counsel*[Title/Abstract]) OR counsell*[Title/Abstract])) OR (((((((communit*[Title/Abstract]) OR educat*[Title/Abstract]) OR programme*[Title]) OR peer*[Title/Abstract]) OR group*[Title/Abstract])) AND activit*[Title/Abstract])) OR ((((((intervention*[Title/Abstract]) OR help[Title/Abstract]) OR guidance[Title/Abstract]) OR support*[Title/Abstract])) AND peer[Title/Abstract])) OR (((((((((mass media[Title/Abstract]) OR TV[Title/Abstract]) OR television[Title/Abstract]) OR internet[Title/Abstract]) OR social media[Title/Abstract]) OR social-media[Title/Abstract]) OR magazine*[Title/Abstract])) AND ((((((prevention[Title/Abstract]) OR control[Title/Abstract]) OR reduction[Title/Abstract])) AND crime[Title/Abstract])))) OR ((youth motivation[Title/Abstract]) OR youth change[Title/Abstract])) OR community-driven[Title/Abstract]) OR (((community leadership[Title/Abstract]) OR community empowerment[Title/Abstract]) OR community engagement[Title/Abstract])) OR ((support*[Title/Abstract]) AND intervention*[Title/Abstract])) OR (((advisor*[Title/Abstract] OR advocacy[Title/Abstract] OR advocat*[Title/Abstract] OR peer*[Title/Abstract] OR mentor*[Title/Abstract])) AND (((((prevention[Title/Abstract]) OR control[Title/Abstract]) OR reduction[Title/Abstract])) AND crime[Title/Abstract]))) OR interrupter*[Title/Abstract]) OR (((peer-education[Title/Abstract]) OR peer-to-peer[Title/Abstract]) OR self-enhancement[Title/Abstract])) OR ((community plan[Title/Abstract]) OR action plan[Title/Abstract])) OR situational crime prevention[Title/Abstract]) OR (((((community support[Title/Abstract]) OR personal support[Title/Abstract]) OR peer support[Title/Abstract]) OR mentor support[Title/Abstract]) OR friend support[Title/Abstract])) OR (((partnership work[Title/Abstract]) OR conflict mediation[Title/Abstract]) OR outreach[Title/Abstract])) OR (("Counseling"[Mesh:noexp]) AND ((((((prevention[Title/Abstract]) OR control[Title/Abstract]) OR reduction[Title/Abstract])) AND crime[Title/Abstract]))) OR ((("Crime/prevention and control"[Mesh:noexp]) OR "Peer Group"[Mesh]) OR "Mentors"[Mesh])) OR ((job fair[Title/Abstract]) OR job readiness[Title/Abstract])) OR ((((campus officer[Title/Abstract]) OR school officer[Title/Abstract]) OR mediator[Title/Abstract]) OR mediation[Title/Abstract])))) AND (pubmednotmedline[sb] OR (pubstatusnihms OR pubstatuspmcsd AND publisher[sb]))

ProQuest
Including:
- Applied Social Science Index & Abstracts (ASSIA
- International Bibliography of the Social Sciences (IBSS)
- ProQuest Criminal Justice
- ProQuest Education Journals
- ProQuest Social Science Journals
- Social Services Abstracts
- Sociological Abstracts

((ti(communit* OR school* OR educat*) OR ab(communit* OR school* OR educat*)) AND (ti(intervention* OR mediat* OR mentor*) OR ab(intervention* OR mediat* OR mentor*)) AND

(ti(prevent* OR reduc* OR control* OR restrict*) OR ab(prevent* OR reduc* OR control* OR restrict*)) AND (ti(gang* NEAR/3 (member OR violence OR aggression OR behavio?r OR urban OR rural OR communit*) OR youth* OR group* OR juvenile* OR delinquent* OR offender* OR perpetrator*) OR ab(gang* NEAR/3 (member OR violence OR aggression OR behavio?r OR urban OR rural OR communit*) OR youth* OR group* OR juvenile* OR delinquent* OR offender* OR perpetrator*)) AND (ti(crim* OR violen* OR fight* OR "anti social behavio?r" OR aggress* OR weapon*) OR ab(crim* OR violen* OR fight* OR "anti social behavio?r" OR aggress* OR weapon*))) NOT ti(police OR policing) NOT ab(police OR policing)

EBSCOhost

Including:

- Criminal Justice Abstracts
- Psychology and Behavioural Science Collection

((ti(communit* OR school* OR educat*) OR ab(communit* OR school* OR educat*)) AND (ti(intervention* OR mediat* OR mentor*) OR ab(intervention* OR mediat* OR mentor*)) AND (ti(prevent* OR reduc* OR control* OR restrict*) OR ab(prevent* OR reduc* OR control* OR restrict*)) AND (ti(gang* N3 (member OR violence OR aggression OR behavio?r OR urban OR rural OR communit*) OR youth* OR group* OR juvenile* OR delinquent* OR offender* OR perpetrator*) OR ab(gang* N3 (member OR violence OR aggression OR behavio?r OR urban OR rural OR communit*) OR youth* OR group* OR juvenile* OR delinquent* OR offender* OR perpetrator*)) AND (ti(crim* OR violen* OR fight* OR "anti social behavio?r" OR aggress* OR weapon*) OR ab(crim* OR violen* OR fight* OR "anti social behavio?r" OR aggress* OR weapon*))) NOT ti(police OR policing) NOT ab(police OR policing)

Appendix 3: Search terms for other

sources Including:

- The Scottish Government (http://www.scotland.gov.uk/Topics/Justice/crimes)
- College of Policing catalogue (http://www.college.police.uk/)
- UK Justice (https://www.justice.gov.uk/)

youth violence **AND** mediation
youth violence **AND** peer support
youth violence **AND** mentoring