

Systematic review of the effectiveness of interventions to promote mental wellbeing in primary schools

Report 3: Universal Approaches with focus on prevention of violence and bullying

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GLOSSARY TABLE

Term	Definition
American school grades	Education is divided into 3 levels: elementary school, junior high (or middle) school and high school: -Grade 1 to 5 Elementary School (6-11 years) -Grade 6 to 8 Middle School (11-14 years) -Grade 9 to 12 High School (14-18 years)
Attrition bias	Systematic differences between comparison groups in withdrawals or exclusions of participants from a study. In school based studies participants are more likely to 'drop out' because they are not in school on the days follow up measurement are made, or they have moved schools. Children who are often absent from school are not typical of the general population causing potential bias in the results
Baseline characteristics	Values of demographic mental health or other variables collected for each participant at the beginning of a trial, before the intervention is administered.
Bias	A systematic error or deviation in results or inferences from the truth. In studies of the effects of health promotion, the main types of bias arise from systematic differences in the groups that are compared (selection bias), the intervention that is provided, exposure to other factors apart from the intervention of interest (performance bias), withdrawals or exclusions of people entered into a study (attrition bias) or how outcomes are assessed (detection bias). Reviews of studies may also be particularly affected by reporting bias, where a biased subset of all the relevant data is available.
Blinding	The process of preventing those involved in a trial from knowing to which comparison group a particular participant belongs. The risk of bias is minimised when as few people as possible know who is receiving the experimental intervention and who the control intervention. Participants, caregivers, outcome assessors, and analysts are all candidates for being blinded. Full blinding is rarely possible in public health trials where, for example, teachers need to know which programmes they are implementing, children know what they are taught and parents are involved as part of the intervention. It is sometimes possible to hide from the outcome assessors which group children belong to. The terms single blind, double blind and triple blind are in common use, but are not used consistently and so are ambiguous unless the specific people who are blinded are listed.
Bullying & Violence	Bullying is a form of aggression in which one or more children repeatedly and intentionally intimidate, harass or physically harm a victim who cannot easily defend himself or herself. Violence is an act of aggression directed to another person or persons, or to property. It covers individual acts such as homicide and infliction of non-fatal injury. It may include the carrying of weapons. It usually implies physical aggression.
Cluster randomisation	A trial in which clusters of individuals (e.g. schools, classes), rather than individuals themselves, are randomised to different arms. In such studies, care should be taken to avoid unit of analysis errors.

Effect size	A dimensionless measure of effect that is typically used for continuous data when different scales are used to measure an outcome. It is usually defined as the difference in means between the intervention and control groups divided by the standard deviation of the control or both groups.
Intention to treat analysis	A strategy for analysing data from a randomised controlled trial. All participants are included in the arm to which they were allocated, whether or not they received (or completed) the intervention given to that arm. Intention-to-treat analysis prevents bias caused by the loss of participants, which may disrupt the baseline equivalence established by randomisation and which may reflect non-adherence to the protocol. The term is often misused in trial publications when some participants were excluded.
Randomised controlled trial	This is a controlled experiment research design used to test a hypothesis, seen to be superior to other methods for testing effectiveness of interventions. Those taking part are divided through a process of randomisation into experimental and control arms. There is an assumption that randomisation ensures that confounding factors are equally distributed between the two arms, allocation bias. Results can be generalisable if conditions of internal and external validity are met.
Statistically significant	A result that is unlikely to have happened by chance. The usual threshold for this judgement is that the results, or more extreme results, would occur by chance with a probability of less than 0.05 if the null hypothesis was true. Statistical tests produce a p-value used to assess this.
Targeted approaches	Interventions or programmes which are restricted to children with identifiable problems or risk factors.
Unit of analysis error	An error made in statistical analysis when the analysis does not take account of the unit of allocation. In some studies, the unit of allocation is not a person, but is instead a group of people. Sometimes the data from these studies are analysed as if people had been allocated individually. Using individuals as the unit of analysis when groups of people are allocated can result in overly narrow confidence intervals. In meta-analysis, it can result in studies receiving more weight than is appropriate.
Universal approaches	Interventions or programmes which are delivered to all children in a class or school
Whole school approaches	These are universal approaches which involve the whole school including staff and children. These approaches encompass how to use school policies, systems and structures to create an ethos and environment that promotes mental wellbeing.

EXECUTIVE SUMMARY

Objectives

This review was undertaken to support the development of NICE guidance on promoting the mental wellbeing of children in primary schools

It provides a systematic review of the published literature on the effectiveness of school based interventions that aim to promote mental wellbeing amongst children in primary education and that:

- take a universal approach
- are primarily focused on the prevention of violence or bullying

Other related reviews supporting this NICE guidance have assessed the effectiveness of

- interventions that focus primarily on the promotion of mental wellbeing and the prevention of mental health problems other than bullying or violence. (Report 1) ¹
- targeted and indicated interventions to promote mental wellbeing or prevent mental health problems (Report 2) ²

In addition, work is being undertaken to examine the cost effectiveness of these different interventions and approaches.

Background

Definition of mental wellbeing

For a description of the nature of mental wellbeing and its relationship to positive mental health and mental illness, please see Report 1² and the Scope for this review.³

To summarise mental wellbeing is regarded as encompassing:

- emotional wellbeing (including happiness life satisfaction and the opposite of depression)

¹ Systematic review of the effectiveness of interventions to promote mental wellbeing in children in primary education: Report 1: Universal Approaches Non-violence related outcomes June 2007
<http://guidance.nice.org.uk/page.aspx?o=441001>

² Mental wellbeing of children in primary education targeted/indicated activities July 2007
<http://guidance.nice.org.uk/page.aspx?o=441004>

³ Scope for NICE public health guidance on promotion of the mental wellbeing of children in primary education (2006).

- psychological wellbeing (including resilience, mastery, confidence, autonomy, attentiveness/involvement, and the capacity for personal growth and development)
- social wellbeing (good relationships with others, social skills, including conflict resolution and problem solving, emotional literacy, and the opposite of conduct disorder, delinquency, interpersonal violence and bullying)

Mental wellbeing in childhood is important for health throughout the life course. Lack of mental health, and mental illness have important consequences for social and educational attainment in primary and secondary school, and for occupational success in adulthood.

Definition of violence and bullying

For the purposes of this review a pragmatic approach has been taken to the definition of bullying and violence. We have included studies where the stated aim of the intervention was to prevent or reduce bullying or violence. The most common definitions in these studies are as follows:

- Bullying is a form of aggression in which one or more children repeatedly and intentionally intimidate, harass or physically harm a victim who cannot easily defend him or herself
- Violence is an act of aggression directed to another person or persons, or to property. It covers individual acts such as homicide and infliction of non-fatal injury. It may include the carrying of weapons. It usually implies physical aggression.

Violence and bullying are important, not only because they represent lack of mental wellbeing in violent/bullying individuals but because of the detrimental effect they have on the mental and physical health of others.

Methods

The methods for the review are based on the NICE methods for the development of public health guidance. The NICE technical team coordinated the search strategy for this and the related reviews concerned with the mental wellbeing of primary school aged children. Fifteen databases and five websites were searched for relevant reviews, randomised controlled trials, and controlled non-randomised trials that have been published since 1990. Two reviewers independently screened the titles and abstracts for the reviews and trials for relevance for this

and the related reviews. Full paper screening by two reviewers (Warwick team) was conducted to identify the studies concerned with the evaluation of universal approaches to the promotion of mental wellbeing of children in primary education, focusing on the prevention of bullying and violence. Data extraction and quality assessment of each study was undertaken independently by one reviewer and checked for accuracy by a second reviewer. Each study was graded based on the extent to which the design and execution of the study minimised the potential sources of bias. Studies were coded according to the content of the interventions and the intervention impact. A qualitative synthesis of results was undertaken. The results are presented and described in tables. See results section 4.

Review of effectiveness-

17 studies reported in 23 papers were included in this review – 11 RCTs and 6 CCTs. The studies covered a diverse range of interventions including the following alone and in various combinations:

- Changes in school ethos, policies and environment
- Teacher training in behaviour management
- Classroom-based intervention
- Parent component
- Wider community component

Results

17 studies were identified by the search to meet the inclusion criteria for the review: 11 randomised controlled trials and 6 controlled trials. The quality of these trials varies: 3/11 RCTs scored ++, 7/11 scored +, and 1/11 scored -. The quality of controlled trials varies: 2/6 scored ++, 1/6 scored + and 3/6 scored -.

6/17 trials showed a clearly positive impact, and 8/17 trials showed a possibly positive impact. The most common violence related outcomes measured were teacher-, peer- or self-reported measures of behaviour – either behaviour problems or social competence.

The length of follow-up in the identified trials varied, ranging from 4 weeks to 8 years.

All trials were conducted outside UK but with some modifications most of the interventions studied can be applied to UK population. Two trials were conducted entirely among African-American children.

Evidence statement 1

There is evidence from three out of four “moderate” quality RCTs, and two out of two good quality CCTs of the effectiveness of multicomponent programmes (See Table 9) in improving outcomes relevant to bullying, violence and mental health as measured by :

- observed aggression in the playground (Reid 1999; Eddy 2000; Stoolmiller 2000)
- child report of violence and delinquency (Flay 2004).
- one study (Sanchez 2001), the Expect Respect Programme, which focused on sexual harassment and bullying prevention) showed no effect as measured by child report of interpersonal negotiation strategies and social cognitions (Aber 1998).
- social competence (Miller 2005).
- two studies have reported positive *long term* outcomes (Eddy 2003) reporting on arrests at 3 years post intervention and Hawkins (1999) reporting violent delinquent acts and antisocial behaviour at 18 years of age.

Multicomponent programmes typically combine social skills development curriculum, teacher training in management of behaviour and parenting education.

The multi component programmes include:

- the Linking Interests of Families and Teachers (LIFT) programme (Reid 1999; Eddy 2000; Eddy 2003; Stoolmiller 2000) RCT +
- an un-named School and Community Intervention programme (Flay 2004). Quality score RCT +
- Expect Respect (Sanchez 2001) RCT +
- the Gearing Up To Success (GUTS) programme (Miller 2005) RCT-
- the Seattle Social Development Project (Hawkins 1991;1999) CCT++
- the Resolving Conflict Creatively programme (Aber 1998) CCT++

Evidence statement 2

There is evidence from a “good quality” RCT (Krug 1997) (sample size n=3899) and a “moderate” quality RCT (Vazsonyi 2004) (sample size n=4679) that the PeaceBuilders Programme is effective in improving outcomes related to violence and mental health as measured by teacher report social competence and aggressive behaviour (Vazsonyi 2004) and visits to the school nurse for injury (Krug 1997).

The main focus of the PeaceBuilders programme is on change to the school ethos and environment. It aims to incorporate prosocial values and ways of behaving among children and staff into every aspect of school life. The programme also includes peer mentoring, parent advice, behaviour management by teachers and a small classroom component. Whilst no long-term studies are available, effects have been demonstrated at 2 years post implementation, as measured by teacher reports of social competence and aggression (Krug 1997) RCT++
(Vazsonyi 2004) RCT+

Evidence statement 3

The evidence relating to curriculum only programmes such as Second Step that aim to reduce aggressive behaviour and increase prosocial behaviour suggests the possibility of short, but not longer term effectiveness.

(Grossman 1997) RCT++

(Capella 2006) RCT+

(Taub 2002) CCT-

(Shapiro 2002) CCT-

Evidence statement 4

There is some evidence that the Good Behaviour Game (GBG) was effective in the short term (van Lier 2005) and (Dolan 1993; Kellam1994; Kellam 1998). This programme involved training teachers in the implementation of a game to improve the behaviour of children, which can be played in the classroom and playground and other parts of the school. Outcomes of this programme did not show overall effectiveness at longer term follow up (at

2 and 6 years, Kellam 1994 and 1998), but there was some evidence to suggest that it could reduce violence in boys showing the highest levels of aggressive behaviour at baseline. This programme may be useful in combination with others. It was one of the components of the “LIFT programme” (see above: Reid 1999, Eddy 2000, Stoolmiller 2000). (van Lier 2005) RCT+
(Dolan 1993; Kellam1994; Kellam 1998) RCT+

Evidence statement 5

There was some evidence of short term effectiveness of the Olweus Anti Bullying programme in one trial at one year measured on the following: child report of bullying behaviour, victimisation, and peer relationships (Fekkes 2006). Effects were no longer evident at two year follow up. One poor quality CCT (Rahey 2002) showed no evidence of effectiveness 4 months after the implementation of a modified short term (12 weeks) version of this programme, based on child parent and teacher report measures of bullying behaviour.

(Fekkes 2006) RCT++
(Rahey 2002) CCT –
(Twemlow 2001) CCT+

Evidence statement 6

There was evidence from a number of studies on a range of different programmes to suggest that programmes may have:

More effect on boys than girls:

(Flay 2004) RCT+
(Dolan 1993; Kellam1994; Kellam 1998) RCT+
(Hawkins 1991;1999) CCT ++

More effect on white children than black children:

(Hawkins 1991;1999) CCT++

More effect on high risk than low risk children:

(van Lier 2005) RCT+
(Vazsonyi 2004) RCT+

(Dolan 1993; Kellam1994; Kellam 1998) RCT+

(Reid 1999; Eddy 2000; Eddy 2003; Stoolmiller 2000) RCT+

Trials included in this review

- (1) Aber JL, Jones SM, Brown JL, Chaudry N, Samples F. Resolving conflict creatively: evaluating the developmental effects of a school-based violence prevention program in neighborhood and classroom context. *Development & Psychopathology* 1998;**10**(2):187-213.
- (2) Cappella E, Weinstein R. The Prevention of Social Aggression Among Girls. *Social Development* 2006;**15**(3):434-462.
- (3) Dolan LJ, Kellam SG, Brown H, Werthamer-Larsson L, Rebok GW, Mayer LS, et al. The short-term impact of two classroom-based preventive interventions on aggressive and shy behaviors and poor achievement. *Journal of Applied Developmental Psychology* 1993;**14**:317-345.
- (4) Eddy JM, Reid JB, Fetrow RA. An elementary school-based prevention program targeting modifiable antecedents of youth delinquency and violence: Linking the Interests of Families and Teachers (LIFT). *Journal of Emotional and Behavioral Disorders* 2000;**8**(3):165-176.
- (5) Eddy JM, Reid JB, Stoolmiller M, Fetrow RA. Outcomes during middle school for an elementary school-based preventive intervention for conduct problems: Follow-up results from a randomized trial. *Behavior Therapy* 2003;**34**(4):535-552.
- (6) Fekkes M, Pijpers FI, Verloove-Vanhorick SP. Effects of antibullying school program on bullying and health complaints. *Archives of Pediatrics & Adolescent Medicine* 2006;**160**(6):638-644.
- (7) Flay BR, Graumlich S, Segawa E, Burns JL, Holliday MY. Effects of 2 Prevention Programs on High-Risk Behaviors among African American Youth: A Randomized Trial. *Archives of Pediatrics & Adolescent Medicine* 2004;**158**(4):377-384.
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- (12) Kellam SG, Rebok GW, Ialongo NS, Mayer LS. "The course and malleability of aggressive behavior from early first grade into middle school: Results of a developmental epidemiology-based preventive trial": Erratum. *Journal of Child Psychology and Psychiatry* 1994;**35**(5):259-281.

- (13) Krug EG, Brener ND, Dahlberg LL, Ryan GW, Powell KE. The impact of an elementary school-based violence prevention program on visits to the school nurse. *American Journal of Preventive Medicine* 1997;**13**(6):459-463.
- (14) Miller TW, Kraus RF, Veltkamp LJ. Character education as a prevention strategy in school-related violence. *Journal of Primary Prevention* 2005;**26**(5):455-466.
- (15) Rahey L, Craig WM. Evaluation of an Ecological Program To Reduce Bullying in Schools. *Canadian Journal of Counselling* 2002;**36**(4):281-296.
- (16) Sanchez E, Robertson TR, Lewis CM, Rosenbluth B, Bohman T, Casey DM. Preventing bullying and sexual harassment in elementary schools: The Expect Respect Model. *Journal of Emotional Abuse* 2001;**2**(2-3):157-180.
- (17) Shapiro JP, Burgoon JD, Welker CJ, Clough JB. Evaluation of the Peacemakers Program: School-based Violence Prevention for Students in Grades Four through Eight. *Psychology in the Schools* 2002;**39**(1):87-100.
- (18) Stoolmiller M, Eddy JM, Reid JB. Detecting and describing preventive intervention effects in a universal school-based randomized trial targeting delinquent and violent behavior. *Journal of Consulting & Clinical Psychology* 2000;**68**(2):296-306.
- (19) Taub J. Evaluation of the Second-Step Violence Prevention Program at a Rural Elementary School. *School Psychology Review* 2002; 31(2).
- (20) van Lier PA, Vuijk P, Crijnen AA. Understanding mechanisms of change in the development of antisocial behavior: the impact of a universal intervention. *Journal of Abnormal Child Psychology* 2005;**33**(5):521-535.
- (21) Vazsonyi AT, Belliston LM, Flannery DJ. Evaluation of a School-Based, Universal Violence Prevention Program: Low-, Medium-, and High-Risk Children. *Youth Violence and Juvenile Justice* 2004;**2**(2):185-206.
- (22) Reid JB, Eddy JM, Fetrow RA, Stoolmiller M. Description and immediate impacts of a preventive intervention for conduct problems. *American Journal of Community Psychology* 1999;**27**(4):483-517.
- (23) Twemlow SW, Fonagy P, Sacco FC, Gies ML, Evans R, Ewbank R. Creating a peaceful school learning environment: a controlled study of an elementary school intervention to reduce violence. *Am J Psychiatry* 2001;**158**(5):808-810.

1. INTRODUCTION

1.1 Aims and objectives

This review was undertaken to support the development of NICE guidance on promoting the mental wellbeing of children in primary schools.

It is the third in a series of three systematic reviews of the effectiveness of interventions to promote mental wellbeing in children in primary schools. It should be read in conjunction with the other two reports:

Report 1: Universal Approaches not Focusing on Violence or Bullying (June 2007)

<http://guidance.nice.org.uk/page.aspx?o=441001>

Report 2: Mental wellbeing of children in primary education targeted/indicated activities. July

2007 <http://guidance.nice.org.uk/page.aspx?o=441004>

The present report provides a systematic review of the published literature on the effectiveness of primary school based interventions that aim to promote mental wellbeing and prevent mental illness which

- take a universal approach
- focus primarily on the prevention of violence or bullying

Further research is being undertaken to examine the cost effectiveness of these different interventions and approaches.

1.2 Research questions

The primary research question addressed by Reports 1 and 3 combined is:

- What are the most cost-effective ways of promoting the mental wellbeing of children aged 4-11 years in schools using universal approaches?

Subsidiary research questions were:

- What type of intervention is most effective?
- What is the optimal frequency, length, and duration of an effective intervention?
- Is it better if a teacher or a specialist deliver the intervention?
- What is the role of parents in delivering/facilitating an effective intervention?
- What are the barriers to – and facilitators of – effective implementation?
- What are the most effective and appropriate interventions for different groups of children and young people (for example, from different social or ethnic groups)?
- Does the intervention lead to any adverse or unintended effects?

2. BACKGROUND

2.1 Definition and terminology

2.1.1 Mental wellbeing

Report 1 provides an introduction to the concepts of mental wellbeing, defining the way in which this is related to positive mental health and mental illness. In brief, mental wellbeing encompasses emotional wellbeing, which includes happiness and life satisfaction; psychological wellbeing, which includes psychological functioning and self actualisation; and social wellbeing, which includes good relationships with others, emotional intelligence and the social skills to manage conflict and problem solve. Whilst there is still some debate in the literature regarding the relative importance of emotional and psychological wellbeing to mental wellbeing, all those writing on the topic see social wellbeing and the capacity to develop and maintain mutually satisfying and enduring interpersonal relationships as an important part of the spectrum of mental wellbeing.

2.1.2 Violence and bullying

Violence and bullying interfere with the development of mutually satisfying interpersonal relationships. In biological terms these behaviours can be seen as representing the fight response to threat, where other mental health problems, e.g. depression, represent the flight or freeze response. They are important not just because they represent lack of mental

wellbeing in the violent/bullying individual but because of the detrimental effect they have on the mental and physical health of others.

Violence is studied most commonly in the guise of:

- a) bullying at schools and in the workplace;
- b) violence in the home, either as domestic violence or child abuse
- c) violence against certain sections of society e.g. minority ethnic populations, or violence in conflict zones.

It is widely recognised as a potent risk factor for mental and physical illness in the victims of violent acts. The threat of violence, and witnessing of violence perpetrated on others (as is the case with children exposed to domestic violence) are also risk factors for poor health. Violence does not therefore require physical contact or injury to be detrimental to health. Both physical and psychological bullying are recognised in the context of schools. Psychological bullying includes verbal insults, threats, name-calling and relational bullying in which victims are socially isolated from peers because of rumours spread and manipulative behaviour by other children. In the context of domestic violence and other forms of violence in the community, sexual harassment and assault are common components. Sexual harassment and assault are more common among children in secondary, rather than primary, education, but with the downward secular trend in sexual maturation, they do occur in primary school as well.

For the purposes of this review a pragmatic approach has been taken to the definition of bullying and violence. We have included studies where the stated aim of the intervention was to prevent or reduce bullying or violence. In the context of these studies, the most common definitions are as follows:

- Bullying is a form of aggression in which one or more children repeatedly and intentionally intimidate, harass or physically harm a victim who cannot easily defend him or herself (Glew 2000).

- Violence is an act of aggression directed to another person or persons, or to property. It covers individual acts such as homicide and infliction of non-fatal injury. It may include the carrying of weapons.

Whilst bullying suggests a degree of repeated and intended activity and is very rarely fatal, violence can be a one off event that may be fatal. It may also be random – that is not intentionally inflicted. Violence can also be directed at the self, as in suicide and self harm. This review excluded studies designed to reduce the incidence of self harm. Whilst psychological violence is a recognised entity, in the studies covered in this review violence was largely interpreted as physical violence or the threat of physical violence.

2.2 Prevalence

Violence and bullying are not routinely recorded and prevalence data rely largely on self report surveys. A recent study of 2377 children in North London and Herefordshire in the 1990s reported that just over 50% of children in primary schools were bullied regularly, 15%-20% bullied other children and 10% both bullied and were bullied different times (Wolke 2001). These figures suggest that bullying is more common in UK schools than those of other countries. Early surveys in Norway suggested that 1 in 7 children were bullied regularly (Smith 1999; Olweus 1993). In one recent study in the US, 20% of children reported feeling frightened at school for much of the school day (Hazler 1992). These children are likely to include those who have been the victims of violence and also children who have been affected by witnessing violence among their peers

In the UK in 2005-2006 there were 9,170 permanent exclusions from primary, secondary and special schools (0.12% of all pupils) for bullying or violence. Of these, 11% (1009) were from primary schools. In 2005, 32,688 calls were made to Childline about bullying. (Childline is a free telephone helpline widely advertised in schools which provides anonymous counselling to troubled and distressed children of any age). These numbers largely represent calls from secondary school children. Calls from primary school age children are less common.⁴

⁴ <http://www.childline.org.uk/pdfs/ChildLineAnnReview2005.pdf>

At its 2007 conference, the Association of Teachers and Lecturers reported the results of a survey of UK teachers in primary, secondary and further education which showed that 61% had been subjected to verbal threats and 34 % had been subject to physical aggression.⁵

2.3 Risk and protective factors

Violent and aggressive children and those who bully have been shown in numerous studies to be more likely to come from homes where aggression is a favoured problem-solving method and children are encouraged to fight back when challenged (see for example Glover 2000; Roberts and Morotti 2000).

Conversely, in homes where authoritative parenting is practiced (involving love, warmth and support with appropriate limit setting and non-physical discipline) children are protected against becoming either a perpetrator or victim of bullying (Olweus 1993).

Poor parenting is a well-established risk factor for mental health problems in childhood (see Report 1) particularly conduct disorder and lesser degrees of antisocial or aggressive behaviour. The latter are all key risk factors for involvement in bullying and violence both as perpetrator and as victim.

Additional risk factors for being bullied include poor social skills, special educational needs and poor physical health or disability (Olweus 1999).

Bullying is often a group process involving more than a single bully and victim. It usually occurs in the presence of peers who typically support and encourage bullying behaviour and are less commonly neutral or support the victim (Sutton and Smith 2000; Salmivalli 1999). Adults in the vicinity may also condone bullying by overlooking or ignoring bullying behaviour, or choose to prevent it by being vigilant and intervening.

School violence is embedded in the wider context of society. It is more likely to flourish where communities turn a blind eye to other forms of social violence among adults (such as, for example, domestic violence or racial attacks). At the same time, the regulation of gun

⁵ K. Barnard to S.Stewart-Brown, personal communication, 12/9/2007.

ownership, means that the number of deaths from firearms is considerably lower in the UK than in countries where such laws are lax or non-existent (WHO 2002).

The fact that bullying and violence are societal problems mean that school programmes can have only a limited impact unless these programmes reach out to the wider community. The fact that the risk factors for these problems overlap greatly with the risk factors for the wider mental health problems described in Report 1 mean that school based programmes to prevent violence and bullying are likely to have much in common with other universal mental health promotion programmes.

2.4 Mortality and morbidity associated with bullying and violence

Bullying has widespread effects on the health of victims; effects on sleep, enuresis (bed-wetting), abdominal pain, headaches, depressive symptoms, suicidal ideation and anxiety have all been reported in children and young people (Williams 1996; Rigby 1999; Dake 2003; Kaltiala-Heino 1999; Salmon 1998; Kaltiala-Heino 2000). Bullying also creates problems with school adjustment and bonding by increasing the risk of absenteeism and lowering academic achievement. Bullies themselves are at considerably increased risk of unhealthy lifestyles including alcohol and drug misuse and unprotected, promiscuous sex (Roberts and Morotti 2000).

The results of the 2007 survey of teachers and lecturers mentioned earlier, suggests that the effects of violence in schools are widespread. Ten percent of teachers reported having suffered physical harm and 35% reported mental health problems attributable to school violence.

Violence itself has obvious links to injury and death. It also impacts on the mental health of victims. although there is limited data on violence-related health problems (in the UK at least) injuries related to violence are under-reported. However, the impact of violence on mental health is widely recognised (WHO 2002; UN 2006).

2.5 Trajectory

Aggressive and bullying behaviour in children commonly tracks through into adult life. As adults, children who have bullied continue to create increased risk of health problems for their

partners, children and peers in the workplace and community (Price and Robins 1991; Caspi 1996; Moffitt 1996; Caspi 1995; Quinton 1993). Studies of the long-term impact of aggressive behaviour in childhood (addresses in Report 1) often show an association between bullying and antisocial behaviour in later life. As adults, children who bully appear to be at increased risk of mental health problems (such as depression) as well as physical health problems and unhealthy lifestyles

The experience of bullying in childhood has long-term effects on victims, impacting on self esteem, increasing the risk of depressive symptoms and social rejection, and creating risk for low social status (Olweus 1993).

2.6 Health promotion in schools

Schools have been a popular setting for implementing public health and health promotion programmes for over half a century and as bullying and violence are problems of great interest to school communities, schools are an obvious setting for prevention programmes. The social and community risk factors for these problems including the attitudes which condone or censure, the role of bystanders and the role of the victims themselves make prevention programmes of this type particularly suitable for universal approaches - those delivered to all pupils in the school. Such programmes can include the development of school policies which (for example) adopt a zero-tolerance approach to bullying, train staff to respond appropriately and encourage children to report episodes, The key role of the family in the development of aggressive behaviour has encouraged some of those developing these programmes to develop family outreach components, which help parents understand bullying and promote authoritative parenting. The potential influence of peers has encouraged the development of peer mediation programmes. The special needs of both bullies and victims make targeted programmes of interest. These can be combined with universal approaches. Alongside these components, schools have implemented curricula which aim to support the development of social skills which promoted conflict resolution and negotiation, social problem-solving and the development of mutual respect and empathy. In contrast to other programmes to promote mental health in schools, which have (on the whole) started from a model of classroom instruction and evolved to encompass multi-component approaches, programmes to prevent bullying have tended to begin with policy development (often involving

parents as well as teachers) teacher training and development or adoption of curriculum components. Curriculum components are often used to promote wider aspects of mental health as a second step.

Because of their multicomponent nature and the need for school-wide policies and procedures, bullying and violence prevention programmes fit well into the framework of the Health Promoting School initiative.

2.7 UK Government policy on bullying and violence prevention in schools.

The Green Paper Every Child Matters (HM Government 2003) and the 2004 Children Act have stimulated considerable progress in the coordination and integration of services for children and young people supporting the development of the Change for Children Agenda. This specifies that all developments in policy for children and young people must demonstrably contribute to five aspects of wellbeing identified by children as important to themselves, as well as policy makers. As these five aspects include both staying safe and being healthy tackling bullying and violence is important in the context of implementation of this initiative.

From an NHS point of view, the key policy documents relating to children's mental health and wellbeing are:

- the National Service Framework for Children, Young People and Maternity Services (the children's NSF) (Department of Health 2004) . The NSF is an integral part of the Change for Children programme.
- Choosing Health: making healthy choices the easier choices (Department of Health 2004). This is the most recent policy guidance on public health in England. It identifies the childhood antecedents of adult health problems. It singles out emotional health and wellbeing and the building of effective relationships as areas for intervention, and schools as an important setting for the delivery of programmes to achieve this.

Key policies and documents relevant to the prevention of bullying and violence in schools also include:

- Promoting Children's Mental Health within Early Years and School Settings (DfES 2001),
- Mental health and social exclusion (SEU 2004)

- Report on promoting emotional health and wellbeing in schools (OFSTED 2005)
- Bullying – A Charter for Action (DfES 2003), and a 2003 Ofsted report on effective action in secondary schools
- Healthy living blueprint for schools (DfES 2004)
- National Healthy School Status – A guide for schools (DfES 2005)

SEAL, a programme to promote the Social and Emotional Aspects of Learning currently implemented in many English schools, contributes to bullying prevention by promoting the skills children need to relate to each other in healthier ways. It offers a whole-school framework for promoting the social and emotional aspects of learning including: self-awareness, managing feelings, motivation, empathy and social skills. Primary SEAL is a universal programme that provides curriculum work for all children; and is organised into seven themes, which can be covered within a school year. Each theme is designed for a whole-school approach and resources are organised at four levels: Foundation Stage, Years 1 and 2, Years 3 and 4 and Years 5 and 6.

2.8 Existing reviews of violence and bullying prevention programmes in schools

A number of systematic reviews have been published which are relevant to the prevention of violence and bullying in schools. Most of these existing systematic reviews are broadly based, covering both primary and secondary schools and both universal and targeted programmes.

Among the reviews of at least reasonable quality that focus on school programmes is the meta-analysis conducted by Wilson et al (2003). This review covered 221 studies and demonstrated both an overall impact and a similar level of impact for a range of different programmes; effect sizes were found of the order of 0.1 for universal interventions and 0.3 for targeted or indicated populations. Conclusions of the review included a differential impact on high and low risk children, with greater impact on those at high risk. In terms of age, very young children (aged 5 y and below) and older children (aged 14 and above) appeared more susceptible to the effects of programmes. Schneekner et al. (2002) reviewed 16 studies of cognitive and behavioural approaches to violence prevention. They found both types of approach could be effective, and flagged up the importance of the qualifications and training of the programme leaders. They also found effects favouring multi-setting approaches and primary rather than secondary prevention. A recent review from the Cochrane collaboration

(Mytton J et al updated in 2006) identified 56 trials and reported a Standardised Mean Difference of 0.41 with effects maintained in seven studies reporting twelve months follow up. Effects were significant in primary and secondary schools, in targeted and universal programmes and in mixed sex and boys only groups. More recently, Vreeman (2007) reviewed studies of programmes to decrease bullying in schools. She found that whole school approaches are more likely to be effective than curriculum-only programmes and also found some evidence to support mentoring and the involvement of social workers in schools. Smith (2003) has provided a narrative syntheses of the effects of whole school approaches which adopt the Olweus Programme model and which have been generally been evaluated in non-controlled studies. He found that in spite of the promising initial results of the Olweus programme in Norway (which had been reported in a pre- and post test non-controlled study) subsequent studies have yielded non-significant outcomes on self-report measures of victimisation. Smith (2004) also undertook a systematic review of whole school anti-bullying programmes that included approaches other than the Olweus programme. The 2004 review (which included a small number of RCTs) is also reported disappointing results. However, studies in which programme implementation was systematically monitored were noted to produce stronger effects than those in which it was not.

2.9 The need for guidance

Programmes to prevent bullying and violence form an integral part of programmes to promote mental health and wellbeing. They were excluded from the previous reviews delivered in June 2007 owing to time constraints. This review completes the research necessary to produce guidance for which the needs are set out in report 1.

3. METHODOLOGY

3.1 Search strategy

The search strategy was developed by the NICE technical team, the Warwick team and the NICE Collaboration Centre for Information (the Centre for Reviews and Dissemination at York University- CRD). A single search strategy was designed and undertaken to support all reviews that NICE commissioned to inform the development of guidance on the promotion of mental wellbeing among children in primary education:

- universal approaches (including violence/bullying prevention interventions)
- targeted/indicated activities
- cost effectiveness reviews

The literature search for the development of reviews was carried out by CRD in January 2007.

The search strategy used for Medline is provided as an example in the Appendix. The subject headings used in this strategy were adapted for the searches conducted in the other databases. The following databases and websites were searched between 3 and 11 June 2007.

Table 1 Databases searched (1990 to date)

Bibliographic databases	Websites	Economic databases
MEDLINE EMBASE ERIC CINALH Sociological Abstracts ASSIA Psycinfo Cochrane Database of Systematic Reviews DARE CENTRAL SIGLE	CASEL EPPI Centre Community Guide (Guide to community preventive services) Search Institute Joseph Rowntree Trust	Health Economics Evaluation Database (HEED) NHS EED (NHS Economics Evaluation Database) Econlit

Bibliographies of reviews and studies known to the research team and provided through personal communication were searched to identify additional studies that might be suitable for inclusion. .

3.2 Inclusion and exclusion criteria for the review of violence and bullying prevention programmes

3.2.1. Population

Studies were eligible for inclusion if they included children aged between 4 and 11 years and were based in the following primary education settings:

- state sector maintained schools and independent schools
- special education environments

Studies covering children aged over 11 years and children not in school were excluded. Where studies spanned primary and secondary school age groups they were included if the mean age was below 12 years, or more than 50 percent of the children were under the age of 12.

3.2.2 Interventions

Studies were eligible for inclusion if they adopted universal approaches concerned with prevention of violence and bullying.

3.2.3 Comparators

Studies were eligible for inclusion if they compared the intervention of interest against a no intervention control or against another intervention approach.

3.2.4 Outcomes

Studies were eligible for inclusion if they reported changes measures relating to aggression, violence and bullying or in other aspects of mental wellbeing.

3.2.5 Excluded studies

This review excluded studies that were:

- concerned with universal approaches to promotion of mental wellbeing (not specifically with prevention of violence and bullying); and
- concerned with improving the mental wellbeing of primary school aged children through targeted or indicated approaches alone.

Two related reviews (Report 1 and Report 2 of this series) cover these types of interventions (see <http://guidance.nice.org.uk/page.aspx?o=441001>).

3.2.6 Exclusion criteria

- Out of range of primary school age (i.e. 12 years of age or older). (If the analysis combined different age groups, the study was included if 50% or more of the participants were in the primary school age-range or if the mean age of the students was over 12 years).
- Studies that did not include an independent control group (e.g. time series analyses)
- Trials published in any other language other than English
- Trials carried out in developing countries. Countries were designated as either 'developed' or 'developing' according to the World Bank and IMF classifications.
- Trials published before 1990.

3.2.7 Study design

Primary studies (RCTs and CRTs) that compared a school-based intervention against no intervention or another type of intervention were considered for inclusion in this study.

Systematic reviews were considered for the purpose of identifying potentially relevant primary studies.

3.2.8 Data extraction

Data relating to both study design and quality were extracted by one reviewer and independently checked for accuracy by a second reviewer. Disagreements were resolved through discussion and if necessary by a third reviewer. These data are presented in tables in the Appendices.

3.4 Quality assessment strategy

One reviewer assessed the quality of individual studies and coded studies according to the schema (Tables 2, 8, 9) The second reviewer independently checked the accuracy of the quality assessment. Disagreements were resolved through consensus and if necessary a third reviewer was consulted. The quality of the studies was assessed according to the criteria set out in the NICE Centre for Public Health Excellence Methods Manual. The process of grading studies, including the grading criteria, is described in full in section 4.

Quality criteria of the included studies

1. The study addressed an appropriate and clearly focused question
2. The assignment of participants to intervention groups is reported as randomised (if RCT)
3. An adequate allocation concealment method is used
4. Investigators are kept 'blind' about intervention allocation
5. The intervention and control groups are similar at the start of the trial
6. The only difference between groups is the intervention under investigation (pragmatic⁶ trials can get full marks)
7. All relevant outcomes are reported/measured using valid/tested scores
8. Percentage of the participants or clusters recruited into each arm of the study dropped out before the study was completed? [Those with drop out rates of 30% were routinely downgraded].
9. The use of ITT analysis
10. If the study is carried out at more than one site, are the results comparable across sites?
11. Reporting the power of trials to detect a difference (study will not be downgraded for not stating the power if the sample size was considered large enough)
12. Adequate cluster analyses and subgroups stated. Two problems recur frequently in this literature a) failure to take into account design effects in the analysis – so randomised at the

⁶ Pragmatic trials are trials which compare interventions as offered in routine practice rather than in centres of excellence; they do not aim to tease out the relative effectiveness of different components or delineate the 'placebo' from the intervention effect. Here, we are interested in the combined effect of the intervention and attention because the quantity and quality of the attention is part of the intervention. These trials therefore differ from pharmaceutical trials in which researchers seek to identify the most active chemical ingredient. Placebo effects include those in which subjects gain from positive attention from researchers.

level of the school and analysed at the level of the individual – this can overestimate the effect size and b) unplanned, ‘post-hoc’ subgroup analyses.

Table 2 Quality coding strategy

Code	NICE quality criteria	Additional criteria
++	All or most of the criteria have been fulfilled. Where they have not been fulfilled the conclusions of the study or review are thought very unlikely to alter.	-At least 8 out of 12 for RCTs or 7 out of 10 in CCTs questions are well covered or adequately addressed -and attrition rate must be less than 30%
+	Some of the criteria have been fulfilled. Those criteria that have not been fulfilled or not adequately described are thought unlikely to alter the conclusions.	-At least 5 of the criteria have been well covered or adequately addressed -and attrition rate must be less than 50%
-	Few or no criteria fulfilled. The conclusions of the study are thought likely or very likely to alter.	- Any trial explicitly reporting attrition rate higher than 50%

3.5 Assessing applicability

All of the studies that were considered in this report were conducted outside of the UK. Applicability to the UK setting was therefore considered for each individual study by examining the populations and the interventions that were implemented as well as the relevant political and environmental contexts in which each trial was conducted. The extent to which each of these factors could be transferred to the UK-context was then considered, and graded according to the following statements based on the NICE Methods Manual. Applicability was graded according to the criteria (A B, C or D). These are shown in Table 3.

Table 3 Applicability coding: Code Description

Code	Code Description
a	Intervention has been delivered in UK settings
b	Intervention has been delivered in similar populations but might need adaptation
c	Intervention is has been delivered in specific cultural groups represented in the UK population but might need adaptation
d	Intervention has been delivered in an entirely different population to UK

Decisions about which grade to assign to studies were made taking into account setting, population, study quality and whether there was an adequate description of the intervention

which would make replication possible. However, it should be acknowledged that there may be still a certain amount of subjectivity about the applicability grading.

3.6 Methods of analysis and synthesis

The interventions evaluated by the studies were classified according to the intervention type (Table 4) and also according to the focus or aim of the intervention (Table 5). The combination of codes enabled the grouping of included interventions into different typologies.

Table 4 Coding for typology of interventions

Intervention code	Intervention type
1	Changes to the <u>school</u> ethos / environment
2	<u>Children</u> receiving either a) Additions or changes to the curriculum b) Changes in behaviour management c) Intervention outside the classroom e.g. in small groups, in playground or at summer camps
3	<u>Parent</u> component a) Parenting support b) Parenting information and advice sent home to parents c) Involvement of parents in intervention development/management (parental involvement)
4	<u>Wider</u> community component

It was also possible to group studies according to the focus of the classroom intervention.

Table 5 Classifications of the included studies according to the focus/and the aim of interventions

Code	Focus of intervention
I	Knowledge and awareness, response to bullying , bully proofing programme
II	Teaching social competence skills, conflict resolution, problem solving
III	Anger management skills
IV	Others

The potential for using forest plots to summarise the effects of interventions was considered. The great heterogeneity in interventions as well as in study outcomes and measurement instruments rendered the use of forest plots inappropriate for this review. Quantitative synthesis was also precluded by intervention and study heterogeneity. A narrative synthesis was therefore undertaken. The results of all studies were coded according to the framework presented in (Table 6).

Table 6 Coding frame for intervention impact

Code	Code Description
A	Positive impact (At least half of the outcome measures proved significantly positive in favour of the intervention)
B	Possible positive impact (some, but less than half of, the measures proved significantly positive in favour of the intervention)
C	Impact unlikely (no findings in favour of the intervention)
D	Negative impact (significant findings in favour of the control group; i.e. the intervention proved harmful compared with the control)

3.7 Summary of study identification

The initial search results were downloaded using Reference Manager and were sorted into three separate databases: These were categorised as ‘trials’, ‘reviews’, and ‘other primary studies’. Relevant systematic reviews were assessed by the Warwick Team to identify any additional potentially relevant primary studies. A total of 3687 trial studies and 1637 reviews abstracts were downloaded. Two members of the NICE technical team conducted the initial screening by referring to the study titles and abstracts and by using the specific screening criteria that have been set for this review (See Appendix 6). Any disagreements were resolved through discussion.

The Warwick Team identified a small number of papers through reference tracking, or consultation with experts, which had not been identified in the initial electronic search results. Some of these papers were subsequently found within the ‘other primary studies’ file as the titles and abstracts did not contain the relevant key words (e.g. controlled trial) and others had not been indexed in the bibliographic databases. It was judged that the latter database might include other potentially useful intervention papers. This database with ‘other primary studies’ covered non trial evaluations and contained over 35,000 results. It was agreed that the “other primary studies” file should be scrutinised to identify any further relevant intervention studies. This involved a search in Reference Manager using the following keywords in the titles and abstracts:

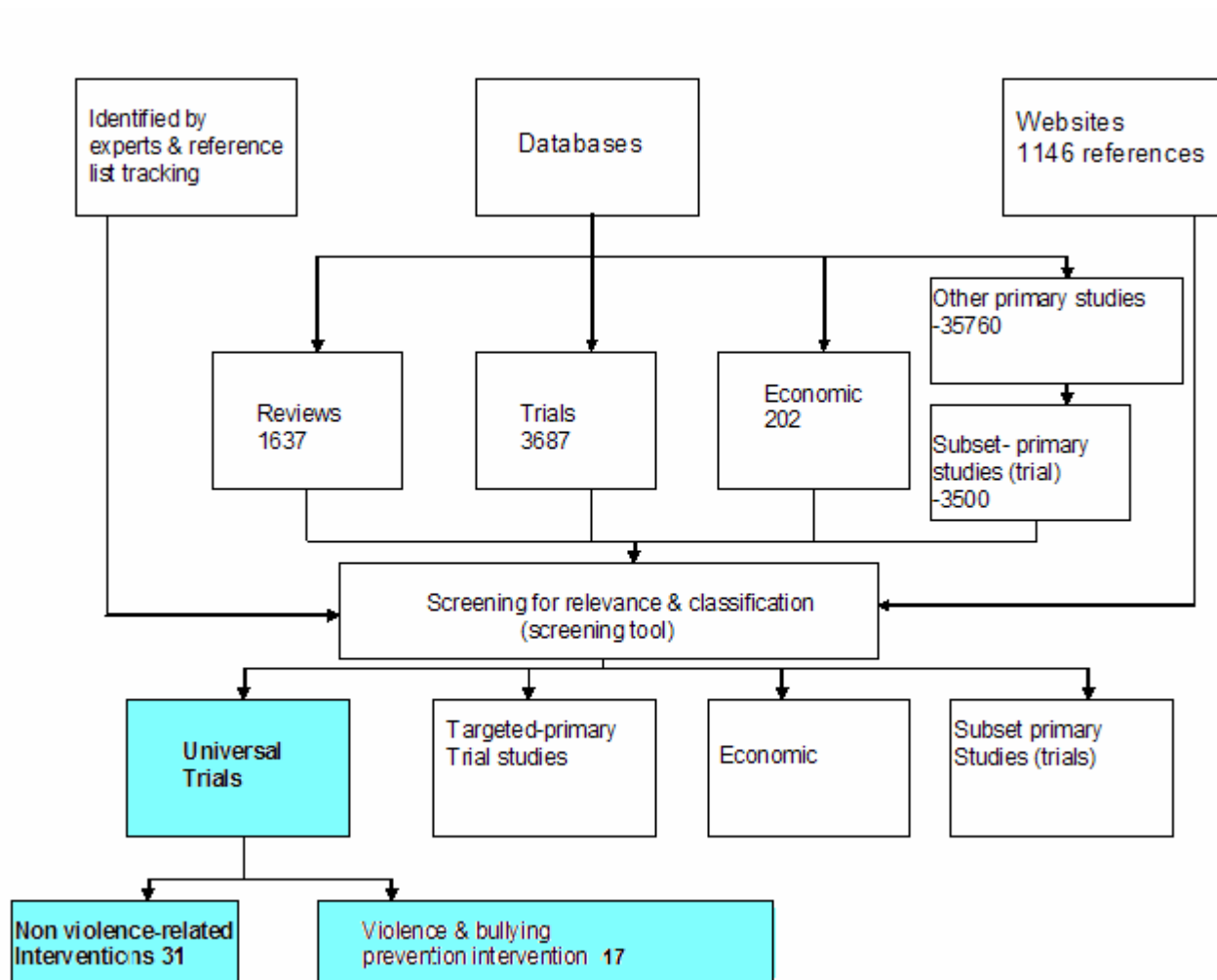
- o Intervention\$

- o Strateg\$
- o Initiative\$
- o Program\$
- o Evaluat\$
- o Effect\$
- o Impact\$.

A small number of additional studies were identified in this way. A final full paper screening was conducted by the Warwick team.

Following these screening processes, 17 studies were found to meet the inclusion criteria for the review (see Figure 1)

Figure 1. Process of studies identification



4 RESULTS

4.1 Quantity of the evidence available

The search strategies identified 17 trials reported in 23 papers that met the criteria for inclusion. All trials were conducted in the USA apart from two from Netherlands and one from Canada.

There were 11 randomised controlled trials and 6 controlled non randomised trials with an overall sample size for the combined RCT studies totalling 17,268, and over 6,600 participants in the CT studies.

4.2 Details of the included trials

See Appendices 1-3.

4.2.1 Populations and settings

The review was restricted to interventions that were offered to ALL students in a class or school (universal approaches). In one study (Capella 2006) the intervention was offered in a girls school and was therefore restricted to girls. Six programmes were offered throughout primary school years, and three each in 1st, 2nd and/or 3rd grade, 4th 5th and/or 6th grade and 1st and 5th grade. Two interventions were trialled in predominantly Afro American Schools (Flay 2004 Miler 2005).

If participants outside the age range were included in a trial they were included in this review rather than in a review of mental health promotion interventions for secondary school children due to be commissioned by NICE shortly if the average age of participants was or appeared to be <12 years of age or if more than half of the children were in primary school.

4.2.2 Outcome measures

In this review, we extracted outcomes measuring violence together with related or proxy measures of aggression such as antisocial behaviour or social skills. Some of the studies in the review examined outcomes relating to academic achievement or health related lifestyles

like drug or alcohol misuse. We did not extract the latter data since the review focused on violence and its contribution to mental health.

The most common violence related outcomes measured were teacher, peer or self-reported measures of behaviour – either behaviour problems or social competence. These outcomes were also the most common in the companion review of Universal Approaches to Mental Health Promotion in Schools not focusing on violence and bullying (Report 1). They are pertinent in both settings because (in the case of behaviour problems) they are measures of poor mental health (or mental wellbeing in the case of social competence scales), and are also key risk factors for violent behaviour.

In several trials observations of children's behaviour were made, sometimes by teachers and sometimes by independent observers. Other studies reported child report of self victimisation or victimisation of peers, or children's knowledge of bullying. A few studies reported event based data such as exclusions or expulsions from school due to violence, or visits to the school nurse for injury. Two studies with long term follow up reported on arrests and court appearances for delinquency.

This review was restricted to interventions designed to reduce bullying or violence. Since one of the ways in which violence affects public health is to impact negatively on the health of others, most interventions had, at least implicitly, dual aims -preventing violence and also preventing its collateral damage. Whilst in some interventions the implicit aim was to prevent collateral damage relating to physical violence as in Second Step (Grossman 1997), in other studies (particularly the multicomponent studies) violence and bullying were regarded as part of a spectrum of mental health problems, which prevented the development of population mental wellbeing. In these studies, the promotion of the mental health of aggressive children, their victims and peers and in some cases the school staff was part of the aim. Thus, some trials reported both mental health and violence related outcomes, often in different papers. Where this was the case, the papers reporting on violence outcomes have been included in this review, and those reporting mental health outcomes in the companion review (Report 1). Two of the four trials in which this occurred (Reid 1999; Eddy 2000, Stoolmiller 2000; Eddy 2003, reporting on the Linking the Interests of Families and Teachers (LIFT) intervention) and Hawkins 1991 and 1999 (reporting on the Seattle Social Development Project) were among

the small number of good quality long-term studies. The other two trials in which this occurred (Dolan 1993; Kellam 1994; Kellam 1998; and van Lier 2005), were moderate quality studies both reporting on the effectiveness of the Good Behaviour Game. Kellam (1998) reported long term outcomes. If the results of the two reviews of universal preventive interventions are considered together, it is important to discount this 'double counting'.

4.2.3 Details of the interventions

Several of the interventions in this review were evaluated in two trials, but none were evaluated in three or more: PeaceBuilders programme (Krug 1997; Vazsonyi 2004,) Second Step programme in two (Grossman 1997 and Taub 2002) and Good Behaviour Game (van Lier 2005; and Dolan 1993 Kellam 1994 and Kellam 1998). One study (Rahey 2002) examined an intervention which included components of two programmes the Olweus Bullying Prevention Programme which was evaluated in (Fekkes 2006) and the Peacemakers programme (evaluated in Shapiro 2002 see below) One study (Shapiro 2002) investigated the effectiveness of a programme called Peacemakers. This was different from the PeaceBuilders programme referred to above and also from the Peacemakers (Johnson 1995) programme included in the companion review (Report 1).

Several of the interventions studied included targeted as well as universal components. Rahey (2002) included group sessions for high risk children; Twemlow (2001) psychiatric referral; Sanchez (2001) and group counselling of individual children with problems; Miller (2005) summer camps for the third most high risk children; Shapiro (2002) remediation sessions for high risk children.

In general, the interventions in this review could be allocated to one of four types (see Table 9) which also presents the components of the intervention, together with the applicability and impact and the quality of the study.

There are four types of interventions: (see Table 9)

- **Curriculum-only interventions** (Capella 2006, Grossman 1997 and Taub 2002, Shapiro 2002).

The Second Step programme (Grossman 1997 and Taub 2002) involved 30 manualised lessons of 35 minutes covering empathy training, impulse control and anger management with role play. Teachers received a two-day training in the delivery of the curriculum. The third study in this group (Capella 2006) investigated a social aggression prevention programme for girls only. This was delivered to small groups of girls outside the classroom but in school hours by graduate psychology students after 3 hours training. It covered social problem solving and prosocial behaviour and included role play and games. The fourth study (Shapiro 2002) investigated a primarily curriculum based programme called **Peacemakers**. This was not entirely confined to the classroom, because peers were trained to mediate in conflict situations and teachers encouraged to reinforce the classroom lessons outside the curriculum.

- **School and classroom behaviour management programmes with or without school-wide policy development** (van Lier 2005; and Dolan 1993, Kellam 1994 and Kellam 1998; Krug 1997, Vazsonyi 2004)

This group included the **Good Behaviour Game** (GBG) (van Lier 2005; and Dolan 1993, Kellam 1994 and Kellam 1998) which was trialled in the USA and the Netherlands. In classes implementing the Good Behaviour Game, children are divided into teams which are rewarded points for behaving according to certain pro-social rules. In the USA studies, children transgressing these rules were also penalised, but in the Netherlands a positive reward system operated alone. The game is played for a short time in class at the beginning of the intervention. The time is gradually increased and extended to the playground setting, so children start to internalise the rules. Teachers receive 40 hours of training and on site coaching at the beginning of the intervention. The game can be restricted to certain classes and there is not necessarily a school wide component. This game was also included in one of the major multi-component interventions included in this review - the **Linking Interests of Families and Teachers (LIFT)** programme (see below) where it was played in the playground but not in class.

The **PeaceBuilders** programme (Krug 1997; Vazsonyi 2004) is a broader programme in which the whole school is involved. Children and staff learn five principals of prosocial behaviour and are encouraged to stick to them at all times in various ways including cues, prompts and praise; some of this learning is undertaken in the classroom, but the classroom component is small. Staff role model appropriate behaviour and a common language develops. Peer mentors are trained to help children manage conflict. Parents are engaged in the programme in some manifestations through notes sent home reporting on good behaviour and encouraging parents to praise. Teachers have 5 hours of training at the beginning of the programme and 2 hours of coaching on site each week for 8 -12 weeks.

- **Whole School bullying prevention programme** (Fekkes 2006; Rahey 2002; Twemlow 2001).

This represents an intermediate group with elements of the first, second and fourth groups. Programmes have a small curriculum element, a strictly enforced discipline policy and in some cases a targeted intervention for problem children. In the **Olweus Programme** (Fekkes 2006), all staff and parents who choose get involved in policy development which describes clear rules to address bullying. Recess times are well supervised. Children receive a curriculum of lessons designed to help them recognise and deal with bullying behaviour. Questionnaires were administered to assess the level of bullying at regular intervals. In Tremlow (2001) the classroom component consisted of physical education and was designed to teach self regulation skills. Teachers and children were mentored and psychiatric referral was available for problem children. In Rahey (2002) the curriculum component was psycho-educational and delivered by graduate students and there was a peer mediation component modelled on the Peacemakers programme. Problem children were offered group sessions.

- **Multicomponent Programmes, involving parent education a taught curriculum and teacher training in behaviour management.**

The six remaining studies (Eddy 2000; Reid 1999; Stoolmiller 2000; Eddy 20030); (Flay 2004; Hawkins 1991 and 1999, Aber 1998; Miller 2005; Sanchez 2001) evaluated complex multicomponent interventions all of which included a significant element of parenting

education. Each also had a major curriculum component. The first five of these studies evaluating the **Linking Interests of Families and Teachers (LIFT)** programme, the **School Community Intervention, Seattle Social Development Programme**, the **Resolving Problems Creatively Programme** and the **Gearing Up To Success (GUTS)** programme are theory driven interventions with a major element of teacher training. While the LIFT and GUTS programmes were implemented over a relatively short time (10 weeks) the other programmes were implemented over a year or more. Expect Respect (Sanchez 2001) incorporated all the above elements including parental involvement in policy development and support services in the community for families experiencing domestic violence.

Whilst it is clear from the above that there was some overlap between interventions designed to reduce violence or bullying and those aiming to promote mental health, there were also some differences. The Second Step programme (see below) focuses primarily on the prevention of physical violence, giving the impression that its development was inspired by the need to prevent serious injury and death both in school and later in life. The Olweus Bullying Prevention Programme (see below) focuses exclusively on physical and psychological bullying. The literature on these interventions suggests a whole systems approach, in which the mental health needs of bullies, victims and peers are recognised. Trials of these two interventions all appear in this review and not the companion review. The multicomponent intervention studies (see below) give the impression of more holistic goals covering both negative effects of violence and bullying but also recognising to a greater extent the potential for the promotion of mental wellbeing. It was these trials that were most likely to report both mental health and violence outcomes and to be included in both this and the companion review.

4.3. Quality assessment

4.3.1 Quality of the trials of wellbeing in school children

Details of study quality are shown in Tables (2, 7, 8, 9).

Out of 11 RCTs, only two trials reported randomisation methods. Double blinding is impossible in school-based trials, but assessor blinding is possible.. No studies reported the latter.

Baseline characteristics about age, gender, ethnic origin were reported in most RCTs but the range of details varied between trials (Table 7).

In all studies in this review, children were allocated to intervention and control conditions on the basis of the class or school that they were attending. In cluster designs such as these, independence of subjects cannot be assumed and analyses should be conducted taking school and class effects into account. If this is not done, impact may be over-investigated. 2/11 RCTs and 0/6 CCTs reported taking the cluster design of the study into account in the analyses.

Ideally, trials should analyse data including children who should have received the intervention but did not in the intervention group and vice versa (intention to treat analysis). In these school based studies in which interventions lasted at minimum several months, all children will have been exposed to some of the intervention.

Overall only 3/11 RCTs were rated high quality scoring [++], the rest: 6/11 scored [+]. and 1 scored [-]. Out of the 6 controlled trials, two scored [++], one scored [+] and three scored [-].

Studies were coded for quality according to the NICE scope. We have used this coding scheme in preference to Jadad's scale, which is commonly used in health technology assessment of clinical trials of pharmaceutical treatment. Jadad's scale was considered unsuitable for use in this review as double blinding is impossible, most trials used no treatment as the control arm and the maximum points the included RCTs could score was therefore 3/5.

Several studies carried out apparently post hoc subgroup analyses, some reporting the trial as positive if subgroups showed change.

4.3.2 The main limitations to trial quality were:

Randomisation: In the great majority of studies randomisation was undertaken at the level of the school or classroom, but only in two studies (see above) was cluster design taken into account in the analyses.

Concealment of allocation:

No trial reported details of concealed allocation in design of the study.

Blinding: None of the trials reported blinding. Blinding of participants is not possible in school based mental health promotion interventions, although the assessors can be blind to treatment groups.

Active control/placebo control: almost all trials used “no intervention” as a control arm..

Baseline differences: In RCTs 9/11 studies reported some baseline description of the two arms. 4/6 CCTs reported some baseline characteristics (see Table 7).

Attrition rate: The extent of loss to follow up was stated in 7/11 RCTs and was either not reported or not clear in the remainder. Loss to follow up was high in some studies ranging from 7% to 63%. In 4/11 RCTs the loss to follow up was reported or calculated as less than 30%. In CCTs 3/6 had loss to follow up less than 30%.

Analysis methods: Allocation to control or intervention group was made on the basis of school or class but very few studies took this cluster design effect into account in the analysis. Most trials did not undertake an intention-to-treat analysis.

Table 7 Quality assessment of RCTs

Codes: [√√√] Well covered, [√√] Adequately covered [0] Poorly covered/ Not addressed / Not reported /Not clear/ Not applicable (Criteria 1-12 stated below)

Trial	1	2	3	4	5	6	7	8	9	10	11	12	Quality Rating
Cappella 2006	√√√	√√√	0	0	√√√	√√	0	0	0	√√	√√√	0	+
Dolan 1993 also (Kellam 1994 Kellam 1998)	√√√	√√√	0	0	√√√	√√	0	0	0	√√√	√√√	0	+
Eddy 2000 also (Reid 1999 Stoolmiller 2000 Eddy 2003)	√√√	√√√	0	0	√√√	√√√	√√	0	0	√√√	√√√	0	+
Fekkes 2006	√√√	√√√	0	0	√√√	√√	√√	1/14 schools in intervention and 2/35 in the control were lost to FU	0	√√√	√√√	0	++
Flay 2004	√√√	√√√	0	0	√√√	0	√√√	0	0	√√√	√√√	0	+
Grossman 1997	√√√	√√√	0	0	√√√	√√	√√	17.8%	0	√√√	√√√	0	++
Krug 1997	√√√	√√√	0	0	√√	√√	√√	18.7%	0	√√	√√√	0	++
Miller 2005	√√√	√√√	0	0	0	0	0	0	0	0	0	0	-
Sanchez 2001	√√√	√√√	0	0	√√	√√	0	0	0	0	√√√	0	+
van Lier 2005	√√√	√√√	0	0	√√	0	0	27.7%	0	√√√	√√	0	+
Vazsonyi 2004	√√√	√√√	0	0	0	√√	0	0	0	√√	√√√	0	+

Quality criteria of the included studies

1. The study addressed an appropriate and clearly focused question
2. The assignment of participants to intervention groups is reported as randomised (if RCT)
3. An adequate allocation concealment method is used
4. Investigators are kept 'blind' about intervention allocation
5. The intervention and control groups are similar at the start of the trial
6. The only difference between groups is the intervention under investigation (pragmatic⁷ trials can get full marks)
7. All relevant outcomes are reported/measured using valid/tested scores
8. Percentage of the participants or clusters recruited into each arm of the study dropped out before the study was completed? [Those with drop out rates of 30% were routinely downgraded].

9. The use of ITT analysis

10. If the study is carried out at more than one site, are the results comparable across sites?

11. Reporting the power of trials to detect a difference (study will not be downgraded for not stating the power if the sample size was large enough)

12. Adequate cluster analyses and subgroups stated. Two problems recur frequently in this literature a) failure to take into account design effects in the analysis – so randomised at the level of the school and analysed at the level of the individual – this can overestimate the effect size and b) unplanned, 'post-hoc' subgroup analyses.

Table 8 Quality assessment of controlled trials

Codes: [√√√] Well covered, [√√] Adequately covered

[0] Poorly covered/ Not addressed / Not reported /

[NA] Not applicable

Trial	1	2	3	4	5	6	7	8	9	10	11	12	Quality Rating
Aber 1998	√√√	NA	NA	0	√√√	√√	√√√	16% at time 1 20% at time 2	0	√√√	√√√	0	++
Hawkins 1991 Hawkins 1999	√√√	NA	NA	0	√√√	√√	√√	20%	0	√√	√√	0	++
Rahey 2002	√√√	NA	NA	0	0	√√	√√	0	0	0	0	0	-
Shapiro 2002	√√√	NA	NA	0	0	√√	√√	0	0	0	0	√√	-
Taub 2002	√√√	NA	NA	0	√√	√√	0	23%	0	0	0	0	-
Twemlow 2001	√√√	NA	NA		√√	√√	0	0		√√√	√√√	0	+

Quality criteria of the included studies

1. The study addressed an appropriate and clearly focused question

2. The assignment of participants to intervention groups is reported as randomised (if RCT)

3. An adequate allocation concealment method is used

4. Investigators are kept 'blind' about intervention allocation

5. The intervention and control groups are similar at the start of the trial

6. The only difference between groups is the intervention under investigation (pragmatic⁸ trials can get full marks)

7. All relevant outcomes are reported/measured using valid/tested scores

8. Percentage of the participants or clusters recruited into each arm of the study dropped out before the study was completed? [Those with drop out rates of 30% were routinely downgraded].

9. The use of ITT analysis

10. If the study is carried out at more than one site, are the results comparable across sites?

11. Reporting the power of trials to detect a difference (study will not be downgraded for not stating the power if the sample size was large enough)

12. Adequate cluster analyses and subgroups stated. Two problems recur frequently in this literature a) failure to take into account design effects in the analysis – so randomised at the level of the school and analysed at the level of the individual – this can overestimate the effect size and b) unplanned, 'post-hoc' subgroup analyses.

4.4 Intervention Impact

All but two of the 17 studies included in this review showed some intervention effects. The two studies which did not; the Expect Respect Programme (Sanchez 2001) and the Bully Proof Your School (Rahey 2002) reported a raised incidence of self victimisation and peer victimisation on at least some children's reports following intervention. As part of the intervention had been to raise awareness of what constituted bullying this increase could be regarded as evidence of effectiveness. However it could also represent an adverse effect of the intervention. Sanchez (2001) undertook a qualitative study alongside the quantitative evaluation and this data suggested increased awareness rather than increased bullying as the reason for the increase. In Rahey (2002) the increase was confined to the younger children and reports from older children showed a decline in victimisation.

Among the other studies, most showed only possible positive effects – that is less than half the outcomes significantly favoured the intervention groups. CCTs more less likely than RCTs to deliver positive results with 3 out of 5 of the remaining studies being graded A on impact. In contrast only two out of ten remaining RCTs were graded A on impact. Both the latter were good quality RCTs (Krug 1997; Eddy 2000). In contrast, good quality CCTs (Hawkins 1991,1999 and Aber 1998) reported outcomes classified as B.

Most studies reported only short term outcomes, for example at the end of the term or year in which children had been exposed to the intervention. Four studies reported at more than one time. Grossman (1997) (Second Step) reported immediately after a ten week intervention and then at six months. Dolan 1993 and colleagues (GBG) reported at one, two and six years; Fekkes 2006 (the Olweus Programme) at one and two years, the LIFT programme (Eddy 2000; Reid 1999; Stoolmiller 2000; Eddy 2003) after the term in which the intervention had been implemented and at three years; and Hawkins (1991;1999) reported at immediate follow up after one year and when treatment and control children were 18 years of age. In some of these studies, there was a difference between short term and long term results. In some of studies employing whole school approaches, certain intervention effects (eg changes in school ethos and management of bullying and behaviour throughout the school, were intended to carry on beyond the end of curriculum teaching (Fekkes 2006). In others (Dolan 1993; Kellam 1994; Kellam 1998) and colleagues it is not clear from study reports whether the good behaviour game principles were intended to be internalised in the school.

4.4.1 Typology of interventions

(Table 9 shows summary of typology of intervention, focus of classroom component, applicability, impact and study quality scores)

4.4.1.1 Primarily or solely classroom-based interventions

The four studies evaluating primarily classroom interventions (two of which covered the Second Step programme (Grossman 1997; Taub 2002), one a programme restricted to girls and taught in small groups outside the classroom (Capella 2006), and one the Peacemakers programme (Shapiro 2002) showed some short term benefits with the two poor quality CCTs (Taub 2002; Shapiro 2002) showing the most positive results. The one study which examined outcomes at more than one time (Grossman 1997) showed effects immediately but less effect at six months; at the latter time the differences no longer reached conventional levels of significance. Taub (2002) reported results at one year, Capella (2006) after the one term of interventions and Shapiro (2002) after three years. The outcomes were teacher-reported child behaviour problems, child social skills and child attitudes to guns and violence. These programmes show some promise, but need further evaluation because of the low quality of studies showing positive results.

4.4.1.2 School and classroom behaviour management programmes

One of the PeaceBuilders evaluations, a good quality RCT (Krug 1997) reported results classified as positive and a moderate quality RCT (Vazsonyi 2004) as possibly positive. Neither of these studies reported results at more than one time, but outcomes were measured at 2 years in the Vazsonyi trial and at one year in Krug, suggesting lasting effects. These were amongst the largest studies in the review including more than 4000 children in both studies. Krug (1997) reported on trends in injuries seen by the school nurse and Vazsonyi on teacher and peer report behaviour and social competence. This programme has elements which make it more than just a behaviour management programme with clear whole school components. All children and staff learn the five principles for PeaceBuilders, there are changes to the school environment and in some guises, peer mediators are trained to support conflict resolution, and parents receive advice on Peace Building at home. The programme, once well established in the school could have continued over the duration of these studies and beyond.

The two studies of the Good Behaviour Game, one a moderate quality RCT (van Lier 2005) and one a moderate quality CCT (Dolan 1993; Kellam 1994; Kellam 1998) reported possibly positive results, however the latter also reported at 2 and 6 years. At the latter time, results were no longer significantly positive overall. Interaction effects were reported with significant change in high-risk groups. van Lier (2005) reported peer nominations of antisocial behaviour and self-victimisation; Dolan and colleagues reported teacher observation and peer ratings of aggressive behaviour. The GBG is a more restricted intervention than the PeaceBuilders with a focus on stopping children behaving in problem ways using peer pressure and praise. Results are suggestive of impact but do not prove it. It may be that this intervention is useful as one component of a wider programme as in the LIFT programme – (see below).

4.4.1.3 Bullying prevention programmes

One good quality RCT (Fekkes 2006) and two CCTs one moderate (Twemlow 2001) and one poor quality (Rahey 2002) evaluated primarily bullying prevention programmes. The first and the last of these studies evaluated the Olweus anti bullying programme as implemented in the Netherlands (Fekkes 2006) and US (Rahey 2002). These trials both used children's self-reports of victimisation and bullying. Twemlow 2001 reported discipline referrals. One of these interventions had involved parents in policy formulation (Fekkes 2006) but none had a parenting education component. In Rahey's (2002) study the intervention appeared to have only been partially implemented the programme. The good quality CCT (Twemlow 2001) reported positive results, the poor quality CCT (Rahey 2002) no effect and the good quality RCT (Fekkes 2006) positive results at one year, but negative at 2 years. In theory, the Olweus programme is one which should be integrated into the life of the school and continue for a long time. In practice Fekkes (2006) found that in the second year, when support for the programme was withdrawn, there was a decline of anti-bullying measures in the intervention schools.

4.4.1.4 Multicomponent programmes involving parenting education

Three moderate quality RCTs + (Flay 2004); (Sanchez 2001); (Eddy 2000; Reid 1999; Stoolmiller 2000; Eddy 2003) evaluated multicomponent interventions and two good quality CCTs (Hawkins 1991 and 1998 and Aber 1998) and. There was a major focus on parenting in these programmes in addition to curriculum components aimed at teaching children social

skills. In one of the interventions trialled by Miller (2005) , children with highest levels of aggression (one third of participants) took part in summer camps which aimed at strengthening ties between staff and children and developing children's self-esteem. Some interventions included further components. Flay (2004) involved community outreach and the support from community organisations and businesses. The Expect Respect programme (Sanchez 2001) offered individual and group counselling to children and offered parents seminars and adjunctive information on community based services and on domestic violence.

All reported interventions with the exception of Flay (2004) trained teachers in behaviour management approaches. Two of these studies aimed at transforming the ethos of the whole school (Sanchez 2001; Flay 2004). Although in one of the major studies the intervention lasted only 1 term (the LIFT programme, Eddy 2003)], most interventions were longer term Aber (1998) 2 years; Sanchez (2001) 3 years; Hawkins (1991, 1999) 1st to 5th grade, Flay (2004) 5th to 8th grade. Miller (2005) reported on a 6-week programme.

These multicomponent interventions reported the most positive outcomes found through this review. Eddy (2003) in a good quality (but relatively small sample) RCT reported A impact results for the LIFT programme at completion and at three year follow-up. In a good quality CCT, Hawkins (1991, 1999) reported B impact results for the Seattle Social Development Project at completion and when participating children were 18 years of age. Both these long-term evaluations included the use of objective measures (such as arrests and violent and delinquent acts).

The other studies (with the exception of Sanchez 2001) all reported B level impact. One (Flay 2006) reported differential effects in boys and girls (see following section). Sanchez (2001) focused on bullying awareness which included a component on sexual harassment. This intervention focused more on developing children's awareness than on skills development and teachers were taught how to impart the curriculum but not trained in behaviour management. This trial reported an actual increased incidence in episodes of victimisation from child self-report which the authors concluded showed greater awareness of what constitutes bullying, but could also be a sign that the intervention had a negative impact. The only large study in this group was Aber (1998) which evaluated the Resolving Conflict Creatively Programme with 5000 children in a good quality CCT with possibly positive results.

In this group, one study (Flay 2004) compared two different interventions with control. The interventions were (i) curriculum component and (ii) an enhanced version, involving the curriculum component, whole school interventions, parenting support and community engagement. Although the study reported effects only in boys, the combined intervention was more effective. In another sparsely reported study (Miller (2005) compared (i) a curriculum component with (ii) combined curriculum and parenting component. In both groups, one third of all children – those deemed to be at highest risk – also took part in a summer camp which aimed at strengthening children's bonds to school and developing their self-esteem.. Miller (2005) reported a dose response relationship in terms of effect on social competence (self esteem and bonds with teachers) with the most intensive intervention (curriculum, parent education and summer camp) being most effective and the least intensive (curriculum only) the least.

Table 9 Typology of intervention, focus of classroom component, applicability, impact and study quality scores

Author/ Year	Typology of Interventions	Aim of the classroom interventions	Applicability Score Table (See Table 3) a,b,c,d	Impact Score (see Table 6) A,B,C,D	Quality score (see Tables 2,7,8) ++, +, -
Curriculum-only programmes					
Social Aggression Prevention Programme Cappella 2006	2c	II	b	B	RCT +
Second Step Grossman 1997	2a	I, III	b	B immediate C at 6 months	RCT ++
Second Step Taub 2002	2a	II	b	A	CCT -
Peace Makers Shapiro 2002	1, 2a	I, II, III	b	A	CCT -
School and classroom behaviour management programmes					
Good Behaviour Game (GBG) van Lier 2005	2b, 2c	II	b	B	RCT+
Good Behaviour Game (GBG) USA	2b, 2c	II	b	B at one year	RCT +

Author/ Year	Typology of Interventions	Aim of the classroom interventions	Applicability Score Table (See Table 3) a,b,c,d	Impact Score (see Table 6) A,B,C,D	Quality score (see Tables 2,7,8) ++, +, -
Dolan 1993; Kellam 1994; Kellam 1998				C at 2 and 6 years	
PeaceBuilders Krug 1997	1, 2a 2b, 2c, 3b	I, IV	b	A	RCT++
PeaceBuilders Vazsonyi 2004	1, 2a, 2b,2c, 3b	II	b	B	RCT +
Bullying prevention programmes					
Olweus Programme Fekkes 2006	1,2a,2c,3c	I	b	B at one year C at two years	RCT++
Bully Proof your School (modified from Olweus Programme) Rahey 2002	1,2a	I, II	b	C	CCT-
Social systems psychodynamic approach to violence prevention Twemlow 2001	1, 2a, 2b,2c	I, II	b	A	CCT+
Multicomponent programme involving parent education					
Linking the Interests of Families and Teachers (LIFT) Eddy 2000 Reid 1999 Stoolmiller 2000 Eddy 2003	2a, 2b,2c 3a	II, IV	b	A immediate A at 3 years	RCT+
Social Development Curriculum (SDC) and School Community Intervention Flay 2004	SCI 1, 2a 3a, 3c, 4 SDC 2a	II	b	A for SCI in boys (C) in girls B for SDC B in boys C in girls	RCT +
Expect Respect Sanchez 2001	1,2a, 2b,3a,3c 4	I	d	C	RCT+
Gearing Up to Success (GUTS) Miller 2005	2a, 2c, 3a	II	b	B	RCT -
Seattle Social Development Programme Hawkins 1991 Hawkins 1999	2a,2b, 3a	II, IV	b	B at immediate B at 18 years	CCT++
Resolving Conflict Creatively (RCCP)	2a,2b,3a	II	b	B	CCT++

Author/ Year	Typology of Interventions	Aim of the classroom interventions	Applicability Score Table (See Table 3) a,b,c,d	Impact Score (see Table 6) A,B,C,D	Quality score (see Tables 2,7,8) ++, +, -
Aber 1998					

4.4.2 Differential gender effects

Several studies reported greater effects in boys than girls. (Flay 2006; Dolan 1993; Hawkins 1991; Hawkins 1999). In one of these studies (Flay 2006) the comment was made that the curriculum did not really address the type of violent behaviour and bullying most commonly seen in girls. The focus on boys behaviour may be contributing to an interest in developing girls only programme as evaluated by Capella (2001).

4.4.3 Differential effects by ethnicity

Hawkins (1991;1999) in the Seattle Social Development Project reported differential effects by ethnicity. On subgroup analysis, intervention impact was found only in white children.

4.4.4 Differential effects by risk group

Several studies (Vazsonyi 2004; van Lier 2005; Dolan 1993; Eddy 2003) reported differential effects according to risk status with high-risk children particularly boys showing greater effects from the intervention. In some of these studies, results were only positive in these subgroups and the trials showed no overall effect.

4.5. Applicability to UK population

All trials but one scored B on applicability score, showing the need for interventions to be adapted to UK cultural and demographic settings (See Table 3, 9). Trials scored C (Flay 2004, Miller date) on applicability if 80% or more of participants were African American.

4.6 Reported barriers/facilitators

Several barriers were reported for the GBG programme (Dolan 1993; Kellam 1994; Kellam 1998). Few teachers were willing to commit themselves to individualised behaviour modification strategies. This was attributed to the 40 hours of training for participating teachers. Other major deterrents reported were lack of reinforcement options, the amount of planning and record keeping and the need for management skills.

With respect to the LIFT programme (Eddy 2000; Reid 1999; Stoolmiller 2000; Eddy 2003). reported the programme as low cost (although no cost or cost effectiveness analyses are provided) and simple and that teachers reported being satisfied.

Twemlow (2001) reported that Twemlow's anti-violence programme was of low cost but no cost or cost effectiveness analysis reported.

4.7 Adverse effects

As reported above, two studies (Sanchez 2001; Rahey 2002) described an increase in self and peer victimisation reports as a result of the intervention. It is not clear whether these represent true adverse effects.

4.8 Research questions and answers

4.8.1 What are the most effective ways of preventing violence and bullying in schools?

The results of this review suggest that multicomponent programmes involving curriculum elements together with parenting education and teacher training in management of problem behaviour and development of social skills, are the most effective types of programmes. Programmes aiming to change the school ethos, with curricular elements and teacher training in behaviour management (like the PeaceBuilders programme) were also effective.

No studies evaluated whole school approaches together with all the other components of the multicomponent programmes for example parenting education.

4.8.2 What intervention content is most effective?

Few trials compared one approach with another. Of the two that did (Flay 2006, Miller 2005) both showed the interventions with more components performed better and that the curriculum only components performed less well.

4.8.3 What is the frequency length and duration of effective interventions?

One of the effective multicomponent interventions (the LIFT programme) involved a curriculum taught over one term and a parenting intervention lasting the same length of time. Other effective interventions were all of longer duration, some lasting throughout primary school. The LIFT evaluation involved a relatively small number of children around 200 and these impressive results need replicating in other studies.

4.8.4 Is it better if a teacher or specialist delivers the intervention?

No studies compared these two approaches. The great majority of interventions were delivered by teachers.

4.8.5 What is the role of parents?

Parenting education was an important component of the multicomponent interventions. Parents were involved in policy development in some of the effective interventions.

4.8.6 What are the barriers to and facilitators of effective intervention?

Parents in some studies (Eddy 2003) were paid a considerable sum of money to be involved in the research (\$100 for participating in the first two assessments and \$75 for each follow up)

4.8.7 Does the intervention lead to any adverse or unintended effects?

While two studies reported increases in victimisation incidents there are good reasons why this may have occurred and these results are unlikely to represent adverse effects.

5. DISCUSSION

This review presents results from 23 papers on 17 intervention studies found after an extensive electronic search carried out at the beginning of 2007, and follow-up of references in all the literature known the research team. Follow-up identified a small number of studies which had not been identified in the original search. It instigated further searching of titles and abstracts rejected in the original screening and led to the identification of further studies. It is recognised that there are limitations in the coding of school health promotion literature in databases, with consequent difficulties in capturing all relevant articles and papers through electronic searches.

Further limitations were imposed in this study by the time frame in which this review was undertaken. At the time of publication, at least two additional studies (Flannery 2003; Alasker 2001) were presented to the evaluating team; Flannery (2003) was a large RCT trial demonstrating changes in social competence, aggression and prosocial behaviour following one year of the Peace Builder programme. Alasker (2001) was a controlled trial of a prevention programme for victimisation in kindergarten. A summary of these two trials was included in Appendix 7.

Two issues need particular consideration with regard to the interpretation of the findings of this review. First while some of the interventions included targeted approaches alongside universal interventions, the review was restricted to studies of interventions with a universal component. Violence and bullying are systems problems as bystanders are involved, who either encouraging or censoring violent practices and witnessing violence has an effect on them too. Both bullies and victims play a part in the dynamic of bullying and a significant proportion of children play both roles in different circumstances. This makes universal approaches particularly well-suited to the prevention of school bullying and violence. However, it is important to note that studies of evaluations that target either bullies or victims and do not have a universal component would have been excluded from this review.

The second issue that needs to be considered is the overlap between this review and the companion review (Report 1) published in June 2007 dealing with studies of evaluations of mental health promotion in schools that did not have a focus on violence or bullying. The

decision to undertake two reviews was taken on pragmatic grounds; it was not possible to review all the studies in the time allowed for initial presentation of results, so a decision was taken to delay the review of studies relating to interventions that focused on violence and bullying. Ideally all studies would have been included in one review. The current approach has resulted in the presentation of four interventions in both reviews with mental health outcomes reported in one and violence prevention outcomes reported in the second. As behaviour problems and antisocial behaviour are indicators of both mental health and violence some violence focused studies not included in the companion review (Report 1) show outcomes that are relevant to both. The element of double counting particularly of multicomponent studies needs to be born in mind in interpreting the results. This group of studies presents most effective results and includes two which show positive long-term outcomes. That said, the studies which are included in this review (and are not included in Report 1, the companion review) support the primary conclusions of Report 1.

The main contribution of this review to the evidence base is the inclusion of studies relating to the PeaceBuilders programme. These do show a clear positive impact and the evidence would be further strengthened by addition of the missing studies referred to above (and in particular, Flannery 2003 and Alasker 2001). The PeaceBuilders programme, while covering several components, differs from the multicomponent programmes which have also been shown to be effective in this and the companion review, in several respects. The emphasis is primarily on school culture and ethos with the focus on changing values, attitudes and behaviours relating to the way both staff and students treat each other. Peer mentors take responsibility for supporting these changes alongside staff. These are very much whole-school programmes. The classroom content of the programme is small and whilst 'notes' are sent home there is less effort on supporting good parenting at home than in most multicomponent programmes. Putting the PeaceBuilders approach together with the components of the multicomponent programmes including parenting education, teacher training and additions to the curriculum is very likely to enhance effectiveness.

Whole school programmes, like PeaceBuilders if they are effective in changing values would have enduring impact on the school culture, so the 'intervention' would not normally have an end point. Long-term evaluation would need to track these children through into secondary schools. Whole school interventions that do not change school ethos and values are unlikely to

show sustainable changes (see for example Fekkes (2006) evaluation of the Olweus programme). Other trials, particularly those for first grade children that included whole school approaches evaluated at one year or earlier, might not have captured the full effect of the intervention. over the five or six years children were at that school.

The extent of change to the school ethos and environment occurring in the other studies is difficult to assess from the study reports. Some of these programmes could have had an enduring effect on staff attitudes and behaviour towards children. The Good Behaviour Game is an example worth considering here. Teachers who discover positive discipline to work much better than negative discipline are unlikely to revert to negative behaviour management strategies. However these ‘side effects’ are not the focus of reporting of results. The LIFT programme is important in this respect. This relatively small study stands out from the other multicomponent programme because both the curriculum and the parenting component were offered to children and parents over one term (first and fifth grade in some schools and fifth grade in others). However this evaluation adopted the Good Behaviour Game in the playground. Together these components may have had a whole school effect that continued to influence the development of the children in the school throughout their time at the school. This study was also one in parents were paid a considerable sum for involvement in the programme. This study needs replicating before it can be assumed that short-term multicomponent programmes are effective.

Two other issues are worthy of comment in the results of this review. The first is the finding in several of the studies that interventions impacted differentially on high-risk children, particularly boys. In some studies it was only the high-risk children in which results suggested impact. This finding could be attributable to ceiling effects in the outcome measures. If the outcomes focus on violent behaviour and if most children do not exhibit this most of the time, changes would only be observed in children who have major violence problems. Such trials would not capture for example improvements in mental health related to violence reduction in children who were victims or bystanders affected by seeing the violence. Nor would they capture improvements in violent behaviour in children who rarely behave this way.

The second issue worthy of comment is the differential effects of the results by gender.

Several studies reported more effect in boys than girls. Externalising, overt violent and

aggressive behaviour is more common in boys than girls. They latter are more likely to exhibit covert emotional violence and relational bullying. As the authors of one of these studies commented, differential effects may well be due to the extent to which programmes focus on overt aggressive behaviour. Programmes may need to be developed which also take the violent behaviour demonstrated by girls into account . The one programme in this review which was developed in a girls-only school is interesting in this respect.

Evidence statement 1

There is evidence from three out of four “moderate” quality RCTs, and two out of two “good quality” CCTs of the effectiveness of multicomponent programmes (See Table 9) in improving outcomes relevant to bullying, violence and mental health as measured by :

- observed aggression in the playground (Reid 1999; Eddy 2000; Stoolmiller 2000),
- child report of violence and delinquency (Flay 2004).
- one study (Sanchez 2001), the Expect Respect Programme, which focused on sexual harassment and bullying prevention) showed no effect as measured by child report of interpersonal negotiation strategies and social cognitions (Aber 1998);
- social competence (Miller 2005).
- two studies have reported positive *long term* outcomes (Eddy 2003) reporting on arrests at 3 years post intervention and Hawkins (1999) reporting violent delinquent acts and antisocial behaviour at 18 years of age.

Multicomponent programmes typically combine social skills development curriculum, teacher training in management of behaviour and parenting education. The multi component programme include:

- the Linking Interests of Families and Teachers (LIFT) programme (Reid 1999; Eddy 2000;Eddy 2003; Stoolmiller 2000) RCT +
- an un-named School and Community Intervention programme (Flay 2004). Quality score RCT +
- Expect Respect (Sanchez 2001) RCT +
- the Gearing Up To Success (GUTS) programme (Miler 2005) RCT-

- the Seattle Social Development Project (Hawkins 1991;1999) CCT++
- the Resolving Conflict Creatively programme (Aber 1998) CCT++

Evidence statement 2

There is evidence from a “good quality” RCT (Krug 1997) (sample size n=3899) and a “moderate” quality RCT (Vazsonyi 2004) (sample size n=4679) that the PeaceBuilders Programme is effective in improving outcomes related to violence and mental health as measured by teacher report social competence and aggressive behaviour (Vazsonyi 2004) and visits to the school nurse for injury (Krug 1997). The main focus of the PeaceBuilders programme is on change to the school ethos and environment. It aims to incorporate prosocial values and ways of behaving among children and staff into every aspect of school life. The programme also includes peer mentoring, parent advice, behaviour management by teachers and a small classroom component. Whilst no long-term studies are available, effects have been demonstrated at 2 years post implementation, as measured by teacher reports of social competence and aggression

(Krug 1997) RCT++
(Vazsonyi 2004) RCT+

Evidence statement 3

The evidence relating to curriculum only programmes such as Second Step that aim to reduce aggressive behaviour and increase prosocial behaviour suggests the possibility of short, but not longer term effectiveness.

(Grossman 1997) RCT++
(Capella 2006) RCT+
(Taub 2002) CCT-
(Shapiro 2002) CCT-

Evidence statement 4

There is some evidence that the Good Behaviour Game (GBG) was effective in the short term (van Lier 2005) and (Dolan 1993; Kellam1994; kellam 1998). This programme involved training teachers in the implementation of a game to improve the behaviour of children which can be played in the classroom and playground and other parts of the school. Outcomes of this programme did not show overall effectiveness at longer term follow up (at 2 and 6 years, Kellam 1994 and 1998), but there was some evidence to suggest that it could reduce violence in boys showing the highest levels of aggressive behaviour at baseline. This programme may be useful in combination with others. It was one of the components of the “LIFT programme” (see above: Reid 1999, Eddy 2000, Stoolmiller 2000).

(van Lier 2005) RCT+

(Dolan 1993; Kellam1994; Kellam 1998) RCT+

Evidence statement 5

There was some evidence of short term effectiveness of the Olweus Anti Bullying programme in one trial at one year measured on the following: child report of bullying behaviour, victimisation, and peer relationships (Fekkes 2006). Effects were no longer evident at two year follow up. One poor quality CCT (Rahey 2002) showed no evidence of effectiveness 4 months after the implementation of a modified short term (12 weeks) version of this programme, based on child parent and teacher report measures of bullying behaviour.

(Fekkes 2006) RCT++

(Rahey 2002) CCT –

(Twemlow 2001) CCT+

Evidence statement 6

There was evidence from a number of studies on a range of different programmes to suggest that programmes may have:

More effect on boys than girls:

(Flay 2004) RCT+

(Dolan 1993; Kellam1994; Kellam 1998) RCT+

(Hawkins 1991;1999) CCT ++

More effect on white children than black children:

(Hawkins 1991;1999) CCT++

More effect on high risk than low risk children:

(van Lier 2005) RCT+

(Vazsonyi 2004) RCT+

(Dolan 1993; Kellam1994; Kellam 1998) RCT+

(Reid 1999; Eddy 2000; Eddy 2003; Stoolmiller 2000) RCT+

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7 APPENDICES

Appendix 1a Details of the RCTs

Study details/ Quality grading (++, +, -)	Population(s)	Intervention(s)	Comparator(s)	Outcome measure(s) reported/	Duration of intervention Length and / Follow up
<p>Cappella 2006 USA</p> <p>Objective(s) To evaluate pre and immediately post-intervention (assessment of short term impact) for prevention of social aggression</p> <p>Sample size n= 134 from six schools</p> <p>Quality grading +</p> <p>Typology (2c)</p>	<p>Girls primary school children drawn from ethnically diverse urban district in northern California</p> <p>Baseline: All fifth grade girls eligible to participate from six public schools. 80% of parents consented. 134 girls took part in the study (Int and Cnt group sizes not specified)</p> <p>Mean age 10.5 yrs Medium/low SES 37% eligible for free school meals 26% white 25% African American 24% Hispanic 19% Asian American</p> <p>5th grade girls from six public schools randomly assigned with classrooms to the social aggression prevention program (SAPP) and comparison reading club (RC)</p>	<p>Social Aggression Prevention Programme (SAPP). Small group programme during school hours, but out of class 4-7 girls with leader Groups met for 10 weeks in 40 min sessions. Aim to increase prosocial behaviours and social problem solving skills- role play, modelling, games and collaboration</p> <p>Graduates students in clinical psychology & women experienced in counselling elementary children led SAPP groups Attended 3 hr intervention training. Leaders were paid. Data collection before and after: self report, peer report and teacher report instruments</p>	<p>Reading Club (RC) Teachers or experienced tutors led RC groups Matched SAPP in structure but not context or goals</p>	<p>Multiple reporters: Peers & teachers report on student behaviour; student report on own social problem-solving Measures designed for this study</p> <p>-Empathic cognition and behaviour -Social problem solving -Social behaviour -Reading achievement Peer nomination instrument -Programme implementation quality</p>	<p>10 weeks Intervention 2-4 week follow up data collection</p> <p>i.e. only immediate short term impact</p>

Study details/ Quality grading (++, +, -)	Population(s)	Intervention(s)	Comparator(s)	Outcome measure(s) reported/	Duration of intervention Length and / Follow up
<p>Dolan 1993 Kellam 1994 Kellam 1998</p> <p>USA Objective(s) Comparison of the Good Behaviour Game and Mastery of Learning Game</p> <p>Sample size total n= 864 from 19 Baltimore elementary schools</p> <p>Quality grading + Typology 2b, 2c</p>	<p>First grade children of varied population in eastern half of Baltimore City in the US Treatment 1: GBG 182 C 107. Treatment 2: ML 207 C 156. Control: 212 students. Age: 1st grade Sex: M=49% Ethnicity: Treatment White 29% African Am 64% Other 7%</p>	<p>-Good Behaviour Game (GBG) with Mastery Learning and no-treatment controls, as in Kellam (1994)</p> <p>-GBG aims to reduce aggressiveness and shy behaviour. It is a classroom team- based behaviour management strategy that promotes good behaviour by rewarding teams that do not exceed maladaptive behaviour standards. -The goal of the intervention is to encourage students to manage their own and their team-mates' behaviour through activities and through mutual self interest. During the first week the GBG was played three times each week for 10 min; the time increased by 10 min every 3 weeks up to max of 3 hours -Points were given to the team for precisely defined aggressive behaviour. The teacher assigned a checkmark on the blackboard next to the name of a team whenever one of its members displayed one of the specified inappropriate or disruptive behaviours. Rewards were delivered immediately after the game. -40 hours training for teachers -ML designed to improve poor reading, which is an antecedent for later depressive symptoms.</p>	<p>Internal controls: non intervention classes in intervention schools External controls Classes in non intervention schools matched for achievement, SES and ethnicity</p>	<p>-Teacher Observation of Classroom Adaptation-revised (TOCA-R)</p> <p>-Peer Assessment Inventory</p> <p>NB Mental health outcome relating to Mastery of Learning Programme reported in companion review</p>	<p>Dolan 1993 reported at one year after start of intervention. Kellam 1994 reported two years after start of this two year intervention. Kellam 1998 Reported six years after start of intervention</p>
<p>Eddy 2000 Reid 1999 Stoolmiller 2000 Eddy 2003 USA Objective(s)</p>	<p>12 primary school first and fifth graders from high juvenile crime areas in Oregon metropolitan</p>	<p>Linking the Interests of Families and Teachers (LIFT)- Three components: -Classroom based child social & problem solving and skills training, 20 1-hr sessions spread across a 10-week period.</p>	<p>No intervention control schools received \$2000</p>	<p>Outcomes measured at end of intervention: observed aggressive play in playground.</p>	<p>Intervention lasted 10 weeks</p> <p>Fu at end of intervention and</p>

Study details/ Quality grading (++, +, -)	Population(s)	Intervention(s)	Comparator(s)	Outcome measure(s) reported/	Duration of intervention Length and / Follow up
<p>-Evaluating the LIFT (Linking Interests of Families and Teachers) programme targeting modifiable antecedents of youth delinquency and violence Sample size n= 6 schools; 214 students</p> <p>Quality grading+</p> <p>Typology 2a 2b, 2c 3a</p>	<p>Four schools from high youth crime areas randomly chosen as intervention schools and two as control schools: Half of the intervention schools received intervention in 1st grade and half in 5th grade. This study examined 5th grade intervention students only 25% of the families receive government benefits 47% of students get free lunch</p> <p>Schools had an average 13% arrest rate</p> <p>For the long term follow up: significant differences in mother, father, ethnic minority, father age</p>	<p>-Playground based behaviour modification (modified Good Behaviour Game) -Group delivered parenting support for basic good discipline and key parenting skills. Parent instructors meet with the groups of 10 to 15 families once a week for 6 weeks</p> <p>Each session for parents:</p> <ol style="list-style-type: none"> review of the results of the home practice lecture, discussion and role play presentation of home practice for the following weeks. Videotaped scenarios are used in several sessions Newsletter and telephone helpline for parents who did not attend <p>Parents paid \$75-100 for data collection</p> <p>Independent observers checked intervention fidelity 95% of the planned programme was delivered.</p> <p>GBG utilizes groups that are created at the beginning of the LIFT</p>		<p>At 3 year FU Arrests. Also looked at patterned alcohol consumption; smoking; consumption of marijuana</p> <p>NB End of intervention outcomes reported with other mental health outcome in companion review</p>	3 year later
<p>Fekkes 2006 Netherlands</p> <p>Objective(s) To evaluate the effects of anti-bullying school intervention in</p>		<p>-Netherlands Anti-Bullying Programme, which adapts the Olweus Bullying Prevention Programme and no-treatment control. -Intervention delivered by trained teachers (2 days training sessions for teachers) -The programme has school-wide, classroom and individual components. (i)</p>	No intervention control	<p>-Bullying behaviour -Depression -Psychosomatic Symptoms -Delinquency by a 7-items scale -Satisfaction with</p>	Intervention 1 year FU immediate and 1 year later

Study details/ Quality grading (++, +, -)	Population(s)	Intervention(s)	Comparator(s)	Outcome measure(s) reported/	Duration of intervention Length and / Follow up
<p>elementary school</p> <p>Sample size n= 50 elementary schools of n=3816 students Quality grading ++</p> <p>Typology 1,2a, 2c, 3b</p>		<p>School-wide components include the administration of an anonymous questionnaire to assess the nature and prevalence of bullying; establishment of clear rules against bullying'; regular questionnaire measuring bullying behaviour; supervision of recess</p> <p>(ii) Classroom components include a curriculum of lessons on bullying behaviour and social skills</p> <p>(iii) involvement of parents in the anti-bullying policy of the school through parent meetings and information sent home on how to handle bullying.</p>		school life	
<p>Flay 2004 USA Objective(s) To evaluate the effects of the Aban Aya Youth Project</p> <p>Sample size n= Twelve schools of Total n= 582 children</p> <p>Quality grading +</p> <p>Typology CCI: 1, 2a, 3a, 3c, 4</p> <p>SDC: 2a</p>	<p>5th-8th grade students in 12 schools, including those who transferred in (data of students who transferred out also included) For inclusion, schools needed:</p> <p>minimum 80% African American students, less than 10% Hispanic students, Ethnicity, SES and sex specified only for intervention groups.</p> <p>Sex: M= 52.1% F= 35.6%</p>	<p>Two interventions compared. with control: Both aimed at reducing aggression/problem behaviour and delinquent behaviour</p> <p>Interventions designed for classrooms with majority African American students and included elements of self and cultural pride</p> <p>. Social Development curriculum (SDC) : 16-21 lessons per year in grades 5 through 8 focusing on social competence skills as well as stress management empathy and interpersonal relationships to prevent violence, provocative behaviour and delinquency, managing situations of high risk behaviours</p> <p>School/community intervention (SCI) included SDC+ school climate (integrating</p>	Health enhancement curriculum (HEC) of equal intensity focusing on nutrition, physical activity and general health	<p>Student self reports of violence, provocative behaviour, school delinquency. Also reported on , substance use and sexual behaviours (intercourse and condom use)</p>	<p>Intervention continued from grade 5 through to 8 grade</p> <p>Evaluation annually until completion of programme</p>

Study details/ Quality grading (++, +, -)	Population(s)	Intervention(s)	Comparator(s)	Outcome measure(s) reported/	Duration of intervention Length and / Follow up
	<p>SES: (School lunches) Free: 82.3% Reduced price: 11.6% Full price: 11.6%</p> <p>Neighbourhood poverty / neighbourhood homicide:</p> <p>Low homicide/low poverty: 32.3% Medium hom/med poverty: 39.8% High poverty/high homicide: 27.9%</p>	<p>taught skills into school environment, parenting support and activities to strengthen family and community ties (linking parents and schools with local businesses .</p> <p>University based health educators delivered curriculum in all 3 conditions Teachers received 4 hour workshop</p>			
<p>Grossman 1997 USA Objective(s) Examine the effect of the Second Step Programme</p> <p>Sample size n=12 Urban and suburban elementary schools Total: 790</p> <p>Quality grading ++ Typology 2a</p>	<p>12 urban and suburban elementary schools in Washington</p> <p>T: 372 C: 418</p> <p>Age: 2nd and 3rd grade</p> <p>Ethnicity: White: 79% Other 21%</p> <p>Sex: M= 53%</p> <p>SES: School lunches: mentioned that both T and C groups similar proportion of school lunches, but % not specified.</p>	<p>The <u>Second Step</u> programme as in Taub (2001) above. 30 lessons of 35 minutes twice a week covering empathy training impulse control anger management. Discussion role play No home intervention component in this trial. Teachers 2 day training Schools received funds ? amount Intervention fidelity monitored on two occasions</p>		<p>Teacher rating of: School Social behaviour (SSBS) Achenhach Child Behaviour Checklist (CBCL) Parent rating Child Behaviour Check List (CBCL) Parent Child Rating Scale Observer rating: Social Interaction Observation System</p> <p>-</p>	<p>At end of interventions (20 weeks) and 6 months later</p>

Study details/ Quality grading (++, +, -)	Population(s)	Intervention(s)	Comparator(s)	Outcome measure(s) reported/	Duration of intervention Length and / Follow up
<p>Krug 1997 USA Objective(s) To evaluate the PeaceBuilders programme.</p> <p>Sample size n=4 elementary schools in Tucson, Arizona of n=students Total: 3899</p> <p>Quality grading ++ Typology 1,2a,2b, 2c, 3b</p>	<p>Primary school children T = 2393 C: 1506</p> <p>Ethnicity: T, C White: 35% 37% Hispanic: 55% 43% Nat Am: 5% 15% Other: % 5%</p> <p>Sex: not specified</p> <p>SES (% School lunches) t = 71%, C = 73%</p>	<p>-PeaceBuilders. involves a cultural change and the whole school in its implementation.</p> <p>The PeaceBuilders program has five guiding principles: praising people; avoiding put-downs; seeking wise friends; noticing and correcting hurts, and righting wrongs. For example, teachers might ask children to think about how they are going to be PeaceBuilders that day. Children act as PeaceCoaches to one another. Children's prosocial behaviour is praised and reinforced. Parents are encouraged to build PeaceBuilders homes with the use of Home Notes.</p>	no-treatment control	Visits to school nurses for injury or illness for one year before and during the first year of implementation	Evaluation during the year that the programme was implemented.
<p>Miller 2005 USA Objective(s) Effectiveness of Gearing Up to Success (GUTS) Programme"</p> <p>Sample size n=9 Rural elementary School cluster 303</p> <p>Quality grading</p>	<p>Rural elementary schools Predominantly African American</p>	<p>Gearing Up to Success (GUTS) is a protocol driven character education and problem behaviour prevention programme to reduce risk factors and strengthen protective factors relative to violence and bullying.</p> <p>GUTS is composed of (i) a school based character education programme (ii) a six week summer camp provided for the one third highest risk children . (No further information provided in article) and (iii) the Duke Family Power Program: eight session cognitive-behavioural training programme for parents (no further information provided).</p>	Usual care (standard curriculum)	<p>Social competence (no information as to how measured) Also measured academic achievement</p>	<p>Not stated but reported 1 summer Not clear</p>

Study details/ Quality grading (++, +, -)	Population(s)	Intervention(s)	Comparator(s)	Outcome measure(s) reported/	Duration of intervention Length and / Follow up
- Typology 2a, 2c, 3a		One group received the GUTs programme together with the summer camp Second group received GUTs and summer camp and parent training			
Sanchez 2001 USA Objective(s) Evaluation of "Expect Respect Project" Sample size n=12 elementary schools: 6 intervention, 6 control (matched pairs) of students n= Baseline: 1243 eligible Quality grading + Typology 1,2a, 2b,2c, 3a,3c,4	5 th grade students 747 completed survey at 3 points in time (48% in intervention schools) 362 (48%) intervention 48% males 33% low SES 58% white, Native American or Asian American 16% African American 26% Hispanic	Expect Respect Model-prevention of bullying and sexual harassment with a focus on dating violence Whole school approach including policy development with parental involvement: 5 components: - classroom education bullyproof curriculum -5th grade- 12 weekly sessions - all staff training - policy and procedure development -parent education on ways to respond to bullying at home and school -support services were available in the community for help for those who had been bullied or experienced domestic violence.	No intervention control	27 item questionnaire covering Children's knowledge, awareness of and response to bullying and sexual harassment at school.	3 year programme, Results based on analysis in first year of implementation
van Lier 2005 Netherlands Objective(s) Effectiveness of Good Behaviour Game Programme Sample size n=13 elementary schools of	Mean age 6.9 yrs 36% low SES 69% white 10% Turkish 9% Moroccan 5% Surinam, 7% other Composition remained for 2 yr intervention period for 90.4% of	Good Behaviour Game in first and second grades. The GBG (here adapted for the Dutch context) is a team-based management strategy. GBG takes place in three phases, from brief activities in the classroom that have immediate rewards, to longer structured play activities in unpredictable contexts that have deferred rewards. Adapted for Dutch context by removing some punitive aspects. Teachers trained and coached in their	No intervention control	Peer nominations of antisocial behaviour , friends' antisocial behaviour, peer rejection and self victimisation Mental health outcomes at 2 years in this trial	2 yr for (grade 2&3) Intervention 4 yr assessment

Study details/ Quality grading (++, +, -_)	Population(s)	Intervention(s)	Comparator(s)	Outcome measure(s) reported/	Duration of intervention Length and / Follow up
students n= Baseline: 744 Quality grading + Typology 2b, 2c	children	classrooms during 10 60 min observation sessions training		are reported in companion review	
Vazsonyi 2004 USA Objective(s) Evaluation of "PeaceBuilders Programme" Sample size n=8 elementary school units of students n=4679 Quality grading + Typology 1, 2a, 2b, 2c, 3b	Urban schools from kindergarten through fifth grade	-PeaceBuilders- school wide violence prevention program for elementary schools (K-5). -Set of strategies part of school everyday day routine: -way of life of students, staff and families. Includes: common language & principles, models for positive behaviour, cues and symbols, prompts for transfer across settings, new materials. -Wider context involved: peer mentoring, home notes to parents, marketing to families, training of community volunteers, mass media. 5-hour teacher training with 2 hours on site coaching per week for 8-12 weeks.	No intervention control conditions	Social competence- teacher report – Walker McConnell Scale of social competence Aggressive behaviour- teacher report form-Achenbach Child Behaviour checklist Prosocial behaviour child report Aggressive behaviour –youth self report- subscales of child behaviour checklist	Intervention established during one term Evaluation at two years

Appendix 1b Details of the Controlled trials

Study details	Population(s)	Intervention(s)	Comparator(s)	Outcome measure(s) reported/ Main finding(s)	duration of intervention Length and / Follow up
<p>Aber 1998 USA Objective(s) Effectiveness of Resolving Conflict Creatively Programme (RCCP)</p> <p>Sample size n=15 schools Total: 5053 children</p> <p>Quality grading ++ Typology 2a,2b,3a</p>	<p>Elementary schools in 4 districts in NYC</p> <p>Age: 2nd – 6th grade</p>	<p>i) The Resolving Conflict Creatively Program (RCCP) and no-treatment controls, delivered by teachers and peer mediators.</p> <p>ii) The RCCP is a school-based intervention that aims at a) reducing violence and violence-related behaviour, b) promote caring and cooperative behaviour, c) teaching children life skills in conflict resolution and d) promote a positive climate for learning in the classroom and school. The programme involves a curriculum, which is implemented by teachers who have been trained by RCCP staff, and later by peer mediators. Although the curriculum is divided into lessons, teachers have flexibility in how these lessons are delivered.</p> <p>iii) Teachers receive 25 hours introductory training and classroom observation and instruction. Advanced training of 5 hours</p>	<p>Usual care (standard curriculum)</p>	<p>Child report: questionnaire and home interview covering : -</p> <p>Social cognitions: (aggressive fantasies, hostile attributional bias)</p> <p>Interpersonal negotiation strategies</p> <p>Psychological symptomatology: (conduct disorders)</p> <p>Risk status: (depression, academic achievement)</p> <p>Classroom normative beliefs about aggression</p> <p>Neighbourhood risk factors: (poverty, violence)</p>	<p>2 years</p>

Study details	Population(s)	Intervention(s)	Comparator(s)	Outcome measure(s) reported/ Main finding(s)	duration of intervention Length and / Follow up
		iv) Parent training – no details given. v) Targeted intervention for high risk youth vi) Full programme including targeted component implemented in only a quarter of schools in second year . vii) Parent training in a quarter of schools in both years and a quarter in second year			
Hawkins 1999 Hawkins 1991 USA Objective(s) Evaluation of the long term effects of the multi- component prevention programme implemented in Hawkins 1991 but violating the randomised design In Hawkins 1991 Sample size n=8 Seattle elementary	Primary school children in Seattle Age: 1 st -6 th grades SES: School lunches T=84.6% C=86.8% Sex: T C M 46.1% 50.3% Ethnicity (children): T C White 54% 47.1%	Teachers in treatment schools were trained for 5 days each year in (i) classroom management skills (ii) cognitive social skills training and (iii) interactive teaching methods. Cognitive social skills taught using the 'Interpersonal Cognitive Problem Solving' (ICPS) programme. The programme teaches children to control impulsive behaviour and think through alternative, pro-social solutions to problems. Half children (full intervention group) received the	No intervention	In Hawkins 1991 CBCL Teacher report form In Hawkins 1999 Aggressive Externalising antisocial behaviour -Internalising antisocial behaviour School disciplinary action reports Expulsions and exclusions Violent delinquent acts self reported arrests, juvenile courts delinquency convictions	Hawkins 1991 Duration of programme 2 years Impact assessed at end of intervention Hawkins 1999 Intervention lasted from 1 st to 6 th grade Data collected at start of 5 th grade and 8 years later age 18 yrs “ year outcomes reported under Hawkins 1991 in RCT section

Study details	Population(s)	Intervention(s)	Comparator(s)	Outcome measure(s) reported/ Main finding(s)	duration of intervention Length and / Follow up
<p>schools of students n=458</p> <p>In Hawkins 1999 Follow up, Sample size students n=643</p> <p>Quality grading ++ Typology 2a,2b, 3a</p>	<p>African Am 31.2% 32.4% Hispanic 2.1% 1.7% Native Am 6% 2.3% Asian 15.6% 16.5%</p>	<p>curriculum in 1st grade. All children (full and late intervention) received 4 hours additional teaching in 6th grade</p> <p>Seven consecutive weekly sessions of parent training were based on the 'Catch em Being Good' (Hawkins et al, 1987) model. Full intervention children's parents offered this in 1st and 2nd grades This includes skills in monitoring and supervising children's behaviour, using consistent discipline practise, effective communication skills and involving children in family activities.</p> <p>Parents of all "intervention" children offered 5 session course aiming to teach effective family management skills "Catch Em Being Good programme"</p>			
<p>Rahey 2002 Canada Objective(s) Bully proof your school (modified)</p> <p>Sample size n=5th grade students in 12 schools</p>	<p>Primary school children in grades 1-8</p>	<p>12 week intervention called 'Bully proofing your school'-based on Olweus programme</p> <p>Components:</p> <p>Psycho-educational program for each classroom implemented by graduate</p>	<p>No intervention control</p>	<p>Parent teacher and self reports of: Bullying victimisation Children's isolation Children's perception of school safely CBCL – parent and child</p>	<p>12 week programme evaluated 4 months after start</p>

Study details	Population(s)	Intervention(s)	Comparator(s)	Outcome measure(s) reported/ Main finding(s)	duration of intervention Length and / Follow up
Quality grading - Typology 1,2a,2c		<p>psychology students with training in the manual</p> <p>Peer mediation program-based on Peacemakers program</p> <p>8 Group sessions for children referred for involvement in bullying and victimization focusing on social skills</p> <p>Teacher program -3 meetings to discuss bullying and intervention approaches</p> <p>No description of school wide policy development</p>			
<p>Shapiro 2002 USA Objective(s) Effectiveness of PeaceMakers Programme</p> <p>Sample size n= 1822 pre-test and 1567 post test</p> <p>Quality grading - Typology 1, 2a,2c</p>	<p>Primary school children 4-5th Grades Midwest urban public schools</p>	<p>Peacemaker Program: primary prevention component delivery by teachers 17 lessons over 4 months: - conflict resolution and anger management programme curriculum delivered by teachers. Remedial component delivered by school psychologist and counsellors with referred students.</p> <p>Teacher encouraged to 'infuse ' program content into the school environment</p>	No intervention treatment	<p>Attitudes towards Guns and Violence Questionnaire (AGVO)</p> <p>Knowledge of psychosocial skills</p> <p>Teacher report Aggressive Behaviour Checklist (ABC)</p>	<p>Programme implemented in first term of 4 and 5 grades</p> <p>Follow up in 8 grade</p>

Study details	Population(s)	Intervention(s)	Comparator(s)	Outcome measure(s) reported/ Main finding(s)	duration of intervention Length and / Follow up
		- Teachers -6 hour training High implementation of curriculum - teacher report questionnaire; less infusion techniques			
<p>Taub 2002 USA Objective(s) Evaluation of Second Step Programme Sample size n=2 rural elementary schools of students n= Total: 289 children in intervention school 331 children in control school</p> <p>Quality grading - Typology 2a</p>	<p>Grades 1-6 in New England rural communities.</p> <p>40% eligible for free or reduced school meals</p>	<p>The Second Step programme delivered by teaches in schools (no home intervention, which is sometimes a part of this programme; see Grossman (1997) below).</p> <p>Programme 30 mins twice a week teaches children socio-emotional skills aimed at reducing behaviour, increasing impulse control and developing social competence. At the time, the programme consisted of (i) teacher training (2 days plus 6 hrs in school) and (ii) a curriculum for children. The curriculum contains lessons in three units: (i) empathy training (ii) impulse control and problem-solving for effective solutions to conflict and (iii) anger management. Children learn through role playing, modelling the skill to the teachers, practising skills, feedback and reinforcement</p>	No intervention treatment	<p>Teacher report School Social Behaviour Scale (SBSS) : - antisocial behaviour and school competence</p> <p>Observation of classroom behaviour</p>	<p>Programme implemented and embedded in school curriculum Evaluation at 1 year</p>

Study details	Population(s)	Intervention(s)	Comparator(s)	Outcome measure(s) reported/ Main finding(s)	duration of intervention Length and / Follow up
		for appropriate skill use.			
<p>Twemlow 2001 USA Objective</p> <p>Evaluation of peaceful school learning environment</p> <p>Sample size n=2 schools matched for demographic characteristics Student n= 220</p> <p>Quality grading + Typology 1, 2a, 2b, 2c</p>	Inner city elementary schools	<p>Manual based antiviolence programme. The programme consists of four components</p> <ul style="list-style-type: none"> -zero tolerance for behavioural disturbances -discipline plan -Physical education plan design to teach self regulation skills -Mentoring programme for adults and children <p>Traditional medical assessment from psychiatrist</p> <p>teacher in service training for the intervention both intervention and control schools received \$1500</p>	Traditional medical assessment from psychiatrist	27 serious disciplinary infractions and suspensions monitored	Implemented over 1 year and actively supported over 3 years. FU over 3 years

Appendix 2a Findings of RCTs

Trial	Findings	Reported adverse effect	Reported Barriers/ Facilitators/ Advantages/ disadvantages of the programme	Impact A,B,C,D Table (see (6, 9))	Applicability** a,b,c,d Table (3)
Cappella 2006	<p>-No main effect for teacher report Empathy/ Behaviour/Aggression</p> <p>- Significant main effect for 1 of 5 self report Social Problem Solving $p < .05$</p> <p>- No main effect on Social Behaviour of peer or teacher-reported prosocial behaviour</p> <p>- Reading achievement improved significantly more in the control than intervention group $p < .05$</p> <p>Significant interactions reported indicating that the intervention may have been beneficial for some subgroups of students</p>	Not reported	Not reported	B	b
Dolan 1993 Kellam 1994 Kellam 1998	<p>Dolan 1993 Sort term impact:</p> <p>Analysis of covariance for GBG : Boys& Girls analysed separately: Boys: significant reduction in aggressive behaviour by teacher rating compared with external not internal controls $p < .05$ and for internal not internal external controls by peer rating $p < .01$</p> <p>Girls: significant reduction in aggressive behaviour by teacher rating compared with internal but not external $p < .05$. No effects on peer rating</p> <p>Boys Significant reduction in shy behaviour by teacher rating compared with internal but not external controls ; no effects for peer rating.</p> <p>Girls Significant reductions in teacher rated shy behaviour compared with external (>0.01) and internal (>0.001) controls but significant reduction cf external (>0.05) and internal (>0.001) controls on one of 3 peer ratings.</p>	Not reported	<p>-Few teachers are willing to commit themselves to individualized behaviour modification strategies.</p> <p>-40 hr training for teachers who participated</p> <p>-Major deterrents are a lack of reinforcement options and the amount of planning, record keeping, the need for management skills.</p>	B at 1 year C at 2 and 6 years	b

Trial	Findings	Reported adverse effect	Reported Barriers/ Facilitators/ Advantages/ disadvantages of the programme	Impact A,B,C,D Table (see (6, 9))	Applicability** a,b,c,d Table (3)
	<p>Kellam 1994, Kellam 1998</p> <p>Long term impact at 2 and 6 years :tested separately by gender in analysis of covariance (ANCOVAS), first comparing the total of boys and then the total of girls who received the GBG to the ML internal controls then to no treatment controls.</p> <p>No significant main effect in either sex.</p> <p>Analyses including level of aggression at base line showed significant effect on the most aggressive boys.</p>				
<p>Eddy 2000, Reid 1999 Stoolmiller 2000 Eddy 2003</p>	<p>Intervention fidelity 95%</p> <p>-Participant satisfaction was high 94% will recommend LIFT</p> <p>-drop out was low 7%, but only 28% parents attended all six parents training session</p> <p>-only 5% refused to participate in a home visit (Stoolmiller 2000)</p> <p>Significant effects were found on observed physical aggression in the playground immediately post intervention ($P<.001$ ES 0.22) . Strongest effects were noted in children who were most aggressive at the outset of the programme. Change in behaviour of children with initial low aggression were relatively trivial (Eddy 2000)</p> <p>Over the three years following the intervention, intervention children significantly less likely than control group children to show an increase in the severity of hyperactivity impulsivity and inattentiveness as perceived by teachers (effect size reported as 1.5, but no statistics or quantitative results presented).</p> <p>(Eddy 2003)</p> <p>- Cox regression analysis on time to first arrest. Significant effect (>0.05) favouring intervention group (RR control: int 1.55;). Also reported on patterned alcohol use ,smoking or marihuana use.</p>	Not reported	<p>Advantages:</p> <ul style="list-style-type: none"> -Low cost -Simple -Straightforward -Theoretically sound -Teachers reported being satisfied 	A immediate and a at three years	b

Trial	Findings	Reported adverse effect	Reported Barriers/ Facilitators/ Advantages/ disadvantages of the programme	Impact A,B,C,D Table (see (6, 9))	Applicability** a,b,c,d Table (3)
Fekkes 2006	<p>-4/10 measures showed a significantly positive effect on the reduction of victimisation $p < .01$, bullying behaviours $< .05$, and on improvement of self-reported peer relationships $< .05$, at the end of Year 1. RR of being bullied 0.75, 95% CI (0.57-0.98).</p> <p>-No effect on children's delinquent behaviour, psychosomatic complaints of overall satisfaction with school life.</p> <p>- The positive effects seem limited in the first year if the intervention -At follow up two year later, there were no significant differences between intervention and control schools.</p>	Not reported	-Non significant outcomes in the second year may be explained by the decline of anti-bullying measures in the second year of programme	B at one year C at two years	b
Flay 2004	<p>Different effects in boys and girls</p> <p>In girls no effect of either intervention</p> <p>In boys:</p> <p>SDC Significant reduction in violence ($> .05$ ef .31) but not delinquency or provoking behaviour.</p> <p>SCI significant effect on violence ($> .02$, ef 0.41), provoking behaviour ($> .03$ ef .41) school delinquency ($> .002$ ef .61).</p> <p>Effects also reported on substance used sexual intercourse and condom use.</p> <p>SDI sign more effective than SDC in analysis with all outcomes combined</p>		Programme did not address aggressive behaviours common in girls	<p>A for SCI in boys (C) in girls</p> <p>B for SDC B in boys C in girls</p>	c
Grossman 1997	<p>Two out of four direct observation measures sign favoured intervention group (> 0.05) at immediate FU and two out of four marginally favoured at 6 months (> 0.06, 0.09)</p> <p>No differences on parent or teacher ratings of social skills or behaviour)</p>		-	<p>B immediate C at 6 months</p>	b
Krug 1997	<p>Visits to nurses for all reasons $p < .001$ in favour of int.</p> <p>Visits to nurses for injuries only $p < .001$ in favour of int.</p> <p>Visits to nurses for confirmed fighting-related injuries $p < .004$ in favour of int.</p> <p>Visits to nurses for non-fighting-related injuries $p < .001$ in favour of int.</p> <p>Visits to nurses for unconfirmed, possible fighting episodes</p>	-	-	A	b

Trial	Findings	Reported adverse effect	Reported Barriers/ Facilitators/ Advantages/ disadvantages of the programme	Impact A,B,C,D Table (see (6, 9))	Applicability** a,b,c,d Table (3)
	n/s				
Miller 2005	One way ANOVA between (i) curriculum alone (ii)curriculum plus family intervention and (iii) curriculum plus family intervention plus summer camp reported to show dose response relationships on social competence scale with three component model most effective. No numbers or statistics presented	-	-	B	b
Sanchez 2001	Intervention students reported increased knowledge of what constitutes sexual harassment. Knowledge of bullying not significantly affected as students had relatively high scores at baseline. Intervention students were able to identify bullying more often and in more places at their schools after intervention, and were also more willing to take personal action on behalf of victims of bullying. Qualitative results suggest that apparent increase in incidences of bullying reported were result of awareness raising rather than an actual increase.	- described an increase in self and peer victimisation	-	C	b
van Lier 2005	Sign lower relational bullying but not antisocial behaviour on peer nomination Significantly lower self victimisation reports of both overt and relational bullying. Reductions associated with becoming friends with non deviant peers and reduction in peer rejection. Effect sizes: 1.2 Reduction in antisocial behaviour 1.1.Peer rejection Greatest reductions in antisocial behaviour among intervention children who followed high trajectory re model	-	-	B	b

Trial	Findings	Reported adverse effect	Reported Barriers/ Facilitators/ Advantages/ disadvantages of the programme	Impact A,B,C,D Table (see (6, 9))	Applicability** a,b,c,d Table (3)
Vazsonyi 2004	Significant effect for teacher report social competence and aggression but not prosocial behaviour favouring intervention (0.05). No sign effect for aggression or prosocial behaviour on youth self report. Results indicated differential effectiveness of the intervention by level of risk. Most significant decreases in aggression and increases in social competence were reported for both boys and girls classified as high risk, rather than medium or low risk, at baseline.	-	-	B	b

Appendix 2b Findings of controlled trials

Trial	Findings	Reported adverse effect	Reported Barriers/ Facilitators/ Advantage(s) of the programme	Impact A,B,C,D Table (See Tables 6,9)	Applicability a,b,c,d Table (3)
Aber 1998	<p>-There was an overall increase in levels of aggression in both treatment and control schools over the 2 year period of the study. However, the programme had some effect on decreasing the level of aggressive behaviour in the intervention schools in some classrooms.</p> <p>-Overall an increase in children's aggression in both T and C schools at T1 and T2. However, increase in aggression slower in T schools.</p> <p>-Increase in aggression was slower in children whose teachers (i) had received a moderate amount of training in RCCP and (ii) had high number of teaching hours , $p < .01$</p> <p>- Classroom normative belief about aggression for both attributional bias and interpersonal negotiation strategies $p < .001$</p> <p>- Aggressive fantasies and conduct problem $p < .01$</p> <p>-Aggressive negotiation strategies $p < .001$</p> <p>-Lower socially competent strategies $p < .001$</p>	-	-	B	b
Hawkins 1991 Hawkins 1999	<p>Hawkins 1991 4-5 years post initial intervention and immediately post late intervention: Results analysed separately for boys and girls</p> <p>Two out of 10 scales on CBCL showed significant difference favouring interventions for boys (Aggression $p < .05$ Externalising behaviour $p < .01$). Effect limited to white boys on subgroup analysis.</p> <p>One out of 10 scales showed sign lower rates of self-</p>	-	-	B at immediate B at age 18 years	b

Trial	Findings	Reported adverse effect	Reported Barriers/ Facilitators/ Advantage(s) of the programme	Impact A,B,C,D Table (See Tables 6,9)	Applicability a,b,c,d Table (3)
	<p>destructive behaviour in girls $p < .01$ in favour of int no effect on aggressive behaviour; effect limited to white girls in subgroup analyses but not black .</p> <p>Hawkins 1999 follow up to the age of 18 y 2 out of 7 behaviours favoured int group: reported violent delinquency acts $p = .04$ and school misbehaviour $p = .02$</p> <p>Late intervention in grade 5 and 6 did not significantly affect results Effects on health risk behaviours and academic performance in adolescence also reported</p>				
Rahey 2002	<p>Intervention did not lead to a reduction in bullying in the short term (four months after completion).</p> <p>Intervention students reported lower levels of victimisation, peer isolation and perceptions of school safety of older children (grades 3 – 8).</p> <p>Increased rates of victimisation among younger children (grades 1 and 2).</p>	-- described an increase in self and peer victimisation	-	C	bb
Shapiro 2002	<p>Significant reductions in teacher-reported disciplinary incidents for aggressive behaviour $p < .0001$; use of school mediation services $p < .05$; and suspension for violent behaviour of intervention students $p < .01$- Intervention students reported increased knowledge of psychosocial skills $p < .05$ and decreased scores for aggressive behaviour.</p> <p>-Intervention was not associated with change in student's self reported attitudes to guns and violence.</p>	-	-	A	b

Trial	Findings	Reported adverse effect	Reported Barriers/ Facilitators/ Advantage(s) of the programme	Impact A,B,C,D Table (See Tables 6,9)	Applicability a,b,c,d Table (3)
Taub 2002	<p>Teacher ratings showed significant effect on children's social competence $p < .01$ and reduction in anti-social behaviour $p < .05$ in favour of intervention</p> <p>These findings were not confirmed by independent observational ratings, which found some improvement in social competence but no reduction in antisocial behaviours.</p>	-	-	A	b
Twemlow 2001	Significant reduction in discipline referrals $p < .02$ and increase in scores on standardized academic achievement measures	-	A low cost antiviolence intervention	A	b

Appendix 3 Included studies analysed in this systematic review

1. Aber JL, Jones SM, Brown JL, Chaudry N, Samples F. Resolving conflict creatively: evaluating the developmental effects of a school-based violence prevention program in neighborhood and classroom context. *Development & Psychopathology* 1998;**10**(2):187-213,.
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Appendix 4 Excluded studies and reasons

Author, Year	Reason for Exclusion
<ol style="list-style-type: none"> 1. Barrett P, Turner C. Prevention of anxiety symptoms in primary school children: preliminary results from a universal school-based trial. <i>British Journal of Clinical Psychology</i> 2001;40(Pt 4):399-410. 2. Battistich V, Schaps E, Watson M, Solomon D. Prevention Effect of the Child Development Project: Early Finding From an Ongoing Multisite Demonstration Trial. <i>Journal of Adolescent Research</i> 1996;11(1):12-35. 3. Boyle MH, Cunningham CE, Heale J, Hundert J, McDonald J, Offord DR, et al. Helping children adjust - A Tri-Ministry Study: I. Evaluation methodology. <i>Journal of Child Psychology & Psychiatry & Allied Disciplines</i> 1999;40(7):1051-1060. 4. Catalano RF, Mazza JJ, Harachi TW, Abbott RD, Haggerty KP, Fleming CB. Raising Healthy Children through Enhancing Social Development in Elementary School: Results after 1.5 Years. <i>Journal of School Psychology</i> 2003;41(2):143-164. 5. Dubow EF, Schmidt D, McBride J, Edwards S, Merk FL. Teaching Children to Cope With Stressful Experiences: Initial Implementation and Evaluation of a Primary Prevention Program. <i>Journal of Clinical Child Psychology</i> 1993;22(4):428-440. 6. Elias MJ, Gara MA, Schuyler TF, Branden-Muller LR, Sayette MA. The promotion of social competence: longitudinal study of a preventive school-based program. <i>American Journal of Orthopsychiatry</i> 1991;61(3):409-417. 7. Greenberg MT, Kusche CA, Cook ET, Quamma JP. Promoting emotional competence in school-aged children: The effects of the PATHS curriculum. <i>Development and Psychopathology</i> 1995;7(1):117-136. 8. Han SS, Catron T, Weiss B, Marciel KK. A teacher-consultation approach to social skills training for pre-kindergarten children: Treatment model and short-term outcome effects. <i>Journal of Abnormal Child Psychology</i> 2005; 33(6):681-693. 9. Hawkins JD, Kosterman R, Catalano RF, Hill KG, Abbott RD. Promoting positive adult functioning through social development intervention in childhood: long-term effects from the Seattle Social Development Project.[erratum appears in <i>Arch Pediatr Adolesc Med.</i> 2005 May;159(5):469]. <i>Archives of Pediatrics & Adolescent Medicine</i> 2005;159(1):25-31. 10. Haynes NM, Comer JP. The effects of a school development program on self-concept. <i>Yale Journal of Biology & Medicine</i> 1990; 63(4):275-283. 11. Henderson PA. Effects of a Stress-Control Program on Children's Locus of Control, Self-Concept, and Coping Behavior. <i>School Counselor</i> 1992;40(2):125-130. 12. Initial impact of the Fast Track prevention trial for conduct problems: II. Classroom effects. Conduct Problems Prevention Research Group. <i>Journal of Consulting & Clinical Psychology</i> 1999;67(5):648-657. 13. Johnson DW, Johnson RT. Teaching students to be 	<p>Included in report 1 Universal –non violent related outcomes</p> <p>See: Systematic review of the effectiveness of interventions to promote mental wellbeing in children in primary education: Report 1: Universal Approaches Non-violence related outcomes June 2007 http://guidance.nice.org.uk/page.aspx?o=441001</p>

<p>peacemakers: Results of five years of research. <i>Peace and Conflict: Journal of Peace Psychology</i> 1995;1(4):417-438.</p> <p>14. Kellam SG, Rebok GW, Mayer LS, Ialongo N. Depressive symptoms over first grade and their response to a developmental epidemiologically based preventive trial aimed at improving achievement. <i>Development and Psychopathology</i> Vol 1994; 6(3):463-481.</p> <p>15. Lohaus A, Klein h. Coping in childhood: A comparative evaluation of different relaxation techniques. <i>Anxiety, Stress & Coping</i> 2000; 13(2):187-211.</p> <p>16. Lohaus A, Klein-Hebling J, Shebar S. Stress Management for Elementary School Children: A comparative Evaluation of Different Approaches. <i>European Review of Applied Psychology</i> 1997;47(2):157-161.</p> <p>17. McClowry SG, Snow DL, Tamis-LeMonda CS. An evaluation of the effects of INSIGHTS on the behavior of inner city primary school children. <i>Journal of Primary Prevention</i> 2005; 26(6):567-584.</p> <p>18. McDonald L, Moberg DP, Brown R, Rodriguez-Espiricueta I, Flores NI, Burke MP, et al. After-school multifamily groups: a randomized controlled trial involving low-income, urban, Latino children. <i>Children & Schools</i> 2006; 28(1):25-34.</p> <p>19. McLntyre L, Belzer EG, Jr., Manchester L, Blanchard W, Officer S, Simpson AC. The Dartmouth Health Promotion Study: a failed quest for synergy in school health promotion. <i>Journal of School Health</i> 1996; 66(4):132-137.</p> <p>20. Nelson JR, Martella RM, Marchand Martella N. Maximizing Student Learning: The Effects of a Comprehensive School-Based Program for Preventing Problem Behaviors. <i>Journal of Emotional and Behavioral Disorders</i> 2002; 10(3):136-148.</p> <p>21. Nelson JR. Designing Schools to Meet the Needs of Students Who Exhibit Disruptive Behavior. <i>Journal of Emotional and Behavioral Disorders</i> 1996;4(3):147-161.</p> <p>22. Omizo MM, Omizo SA, D'andrea MJ. Promoting Wellness Among Elementary School Children. <i>Journal of Counseling & Development</i> 1992;71(2):194-198.</p> <p>23. Rebok GW, Carlson MC, Glass TA, McGill S, Hill J, Wasik BA, et al. Short-term impact of Experience Corps participation on children and schools: results from a pilot randomized trial. <i>Journal of Urban Health</i> 2004;81(1):79-93.</p> <p>24. Reynolds M, Brewin CR, Saxton M. Emotional disclosure in school children. <i>Journal of Child Psychology & Psychiatry & Allied Disciplines</i> 2000; 41(2):151-159.</p> <p>25. Sawyer MG, MacMullin C, Graetz B, Said JA, Clark JJ, Baghurst P. Social skills training for primary school children: a 1-year follow-up study. <i>Journal of Paediatrics & Child Health</i> 1997; 33(5):378-383.</p> <p>26. Stevahn L, Johnson DW, Johnson RT, Oberle K, Wahl L. Effects of conflict resolution training integrated into a kindergarten curriculum. <i>Child Development</i> 2000;71(3):772-784.</p> <p>27. van Lier PA, Muthen BO, van der Sar RM, Crijnen AA. Preventing</p>	
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<p>disruptive behavior in elementary schoolchildren: impact of a universal classroom-based intervention. <i>Journal of Consulting & Clinical Psychology</i> 2004; 72(3):467-478.</p> <p>28. Wang J, Greathouse B, Falcinella VM. An Empirical Assessment of Self-Esteem Enhancement in A CHALLENGE Service-Learning Program. <i>Annual Meeting of the American Educational Research Association</i> 1997.</p> <p>29. Weiss B, Harris V, Catron T, Han SS. Efficacy of the RECAP intervention program for children with concurrent internalizing and externalizing problems. <i>Journal of Consulting & Clinical Psychology</i> 2003;71(2):364-374.</p> <p>30. Witt C, Becker M, Bandelin K, Soellner R, Willich SN. Qigong for schoolchildren: a pilot study. <i>Journal of Alternative & Complementary Medicine</i> 2005;11(1):41-47.</p>	
<p>A Primary Studies Included in Review (n=48)</p> <p>1 Atkins MS, et al. School-Based Mental Health Services for Children Living in High Poverty Urban Communities. Administration and policy in Mental Health and Mental Health Services 2006; 33(2).</p> <p>2 AUGUST</p> <p>a) August GJ, et al. An Integrated Components Preventive Intervention for Aggressive Elementary School Children: The Early Risers Program. <i>Journal of Consulting and Clinical Psychology</i> 2001; 69(614):626.</p> <p>b) August GJ. The Early Risers Longitudinal Prevention Trial: Examination of 3-Year Outcomes in Aggressive Children With Intent-to-Treat and As-Intended Analyses. <i>Psychology of Addictive Behaviours</i> 2002;16(4):27-39.</p> <p>c) August GJ, et al. Parcelling Component Effects of a Multifaceted Prevention Program for Disruptive Elementary School Children. <i>Journal of Abnormal Child Psychology</i> 2003;31(5):515-527.</p> <p>d) August GJ, et al. Four Years of the Early Risers Early Age Targeted Preventive Intervention: Effects on Aggressive Children's Peer Relations. <i>Behaviour Therapy</i> 2003;34(4):453-470.</p> <p>3 Barkley R, et al. Multi-method Psycho-educational Intervention for Preschool Children with Disruptive Behaviour: Preliminary Results at Post-treatment. <i>Journal of Child Psychiatry</i> 2000;41(3):319-332.</p> <p>4 Barrera M, et al. Early Elementary School Intervention to Reduce Conduct Problems: A Randomized Trial with Hispanic and Non-Hispanic Children. <i>Prevention Science</i> 2002; 3(2):83-94.</p> <p>5 Bernstein GA, et al. School-Based Interventions for Anxious Children. <i>Journal of American Academy of Child Adolescent Psychiatry</i> 2005;44(11):1118.</p> <p>6 Bloomquist ML, August GJ, Ostrander R. Effects of a school-based cognitive-behavioural intervention for ADHD children. <i>Journal of Abnormal Child Psychology</i> 1991;19(5):591-605.</p> <p>7 Braswell L, August G, Bloomquist M, Realmuto G, Skare S, Crosby R. School-based secondary prevention for children with disruptive behaviour: Initial outcomes. <i>Journal of Abnormal Child Psychology</i> 1997;25:197-208. Ref ID: 1666</p>	<p>Included in report 2 Targeted review</p> <p>See: Mental wellbeing of children in primary education targeted/indicated activities July 2007 http://guidance.nice.org.uk/page.aspx?o=441004</p>

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- b) Conduct Problems Prevention Research Group. Evaluation of the First 3 Years of the Fast Track Prevention Trial with Children at High Risk for Adolescent Conduct Problems. *Journal of Abnormal Child Psychology* 2002;**30**(1):19-35.
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Self-Control and Classroom Behaviour. *Behavioural Interventions* 1999; **14**(3):147-161, 48

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<p>27 VITARO & TREMBLAY</p> <p>a) Tremblay RE, et al. Can Disruptive Boys be Helped to Become Competent? <i>Psychiatry</i> 1991;54(2):148-161</p> <p>b) Vitaro F and Tremblay R. Impact of a prevention program on aggressive children's friendships and social adjustment. <i>Journal of Abnormal Child Psychology</i> 1994;22:457-475.</p> <p>c) Tremblay RE, et al. A Bimodal Preventive Intervention for Disruptive Kindergarten Boys: Its Impact Through Mid-Adolescence. <i>Journal of Consulting and Clinical Psychology</i> 1995; 63(4):560-568.</p> <p>d) Vitaro F, et al. Prevention of School Dropout Through the Reduction of Disruptive Behaviours and School Failure in Elementary School. <i>Journal of School Psychology</i> 1999; 37(2):205-226.</p> <p>28 Waschbusch DA, et al. The Behaviour Education Support and Treatment (BEST) School Intervention Program: Pilot Project Data Examining School-wide, Targeted-School and Targeted-Home Approaches. <i>Journal of Attention Disorders</i> 2005;9(1):313-322.</p> <p>29 WEBSTER-STRATTON</p> <p>a) Webster-Stratton C, et al. Social Skills and Problem-solving Training for Children with Early-onset Conduct Problems: Who Benefits? <i>Journal of Child Psychiatry</i> 2001; 42(7):943-952.</p> <p>b) Webster-Stratton C, et al. Treating Conduct Problems and Strengthening Social and Emotional Competence in Young Children: The Dina Dinosaur Treatment Program. <i>Journal of Emotional and Behavioural Disorders</i> 2003; 11(3):130-143.</p> <p>c) Reid J, et al. Follow-Up of Children who Received the Incredible Years Intervention for Oppositional-Defiant Disorder: Maintenance and Prediction of 2-Year Outcome. <i>Behaviour Therapy</i> 2003; 34:471-491</p> <p>d) Webster-Stratton C, et al. Treating Children with Early-Onset Conduct Problems: Intervention Outcomes for Parent, Child and Teacher Training. <i>Journal of Clinical Child and Adolescent Psychology</i> 2004;33(1):105-124.</p> <p>30 Weiss B, et al. Efficacy of the RECAP Intervention Program for Children with Concurrent Internalizing and Externalizing Problems. <i>Journal of Consulting and Clinical Psychology</i> 2003;71(2):364-374.</p> <p>31 Weisz JR, et al. Brief Treatment of Mild-to-Moderate Child Depression Using Primary and Secondary Control Enhancement Training. <i>Journal of Consulting and Clinical Psychology</i> 1997; 65(4):703-707.</p>	
<p>Salmivalli, C., Kaukiainen, A., & Voeten, M.. Anti-bullying intervention: Implementation and outcome. <i>British Journal of Educational Psychology</i> 2005;75:465-487</p>	<p>Not a Controlled Trial</p>
<p>Embry DD, Flannery DJ, Vazsonyi AT, Powell KE, Atha H. Peacebuilders: a theoretically driven, school-based model for early violence prevention. <i>American Journal of Preventive Medicine</i> 1996; 12(5 Suppl):91-100.</p> <p>Huesmann LR, Maxwell CD, Eron L, Dahlberg LL, Guerra NG, Tolan PH, et al. Evaluating a cognitive/ecological program for the prevention of aggression among urban children. <i>American Journal of Preventive Medicine</i> 1996;12(5 Suppl):120-128.</p>	<p>Insufficient information/lacking data/baseline Details only</p>

<p>1. Alsaker, F. D., & Valkanover, S. (2001). 'Early diagnosis and prevention of victimization in kindergarten'. In J. Juvonen & S. Graham (Eds.), <i>Peer harassment in school: The plight of the vulnerable and victimized</i> (pp 175-195). New York: Guilford Press.</p> <p>2. Flannery DJ, Vazsonyi AT, Liao AK, Guo S, Powell KE, Atha H, et al. Initial behavior outcomes for the Peacebuilders universal school-based violence prevention program. <i>Developmental Psychology</i> 2003;39(2):292-308.</p>	<p>Late for inclusion</p>
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Appendix 5 Search Strategy

Medline search strategy

1	aggression/
2	Anger/
3	Antisocial Personality Disorder/
4	anxiety/
5	conduct disorder/
6	Crime/
7	depression/
8	juvenile delinquency/
9	mental disorders/
10	Social alienation/
11	suicide/
12	violence/
13	exp Child Abuse/
14	aggressive\$.ti,ab.
15	alienation.ti,ab.
16	anti-social behaviour.ti,ab.
17	anti-social behavior.ti,ab.
18	behavior disorder\$.ti,ab.
19	behaviour disorder\$.ti,ab.
20	behavior problem\$.ti,ab.
21	behaviour problem\$.ti,ab.
22	bullying.ti,ab.
23	conflict.ti,ab.
24	delinquency.ti,ab.
25	dysfunctional famil\$.ti,ab.
26	educational delay.ti,ab.
27	(impulsiveness or impulsivity).ti,ab.
28	isolation.ti,ab.
29	mental health problems.ti,ab.
30	parental absence.ti,ab.
31	parental permissiveness.ti,ab.
32	((peer adj influence) or (peer adj pressure)).ti,ab.
33	poor mental health.ti,ab.
34	poor parenting.ti,ab.
35	psychological problems.ti,ab.
36	exclusion.ti,ab.
37	truancy.ti,ab.
38	achievement/
39	assertiveness/
40	decision making/
41	happiness/

42	health education/
43	health promotion/
44	parent-child relations/
45	personal autonomy/
46	problem solving/
47	self concept/
48	self efficacy/
49	social adjustment/
50	social behavior/
51	anti-bullying.ti,ab.
52	(academic success or achievement).ti,ab.
53	assertiveness.ti,ab.
54	attentiveness.ti,ab.
55	autonomy.ti,ab.
56	communication skills.ti,ab.
57	conflict resolution.ti,ab.
58	(coping adj (behaviour\$ or behavior\$ or skill or skills or mechanism\$ or ability or abilities)).ti,ab.
59	discipline.ti,ab.
60	(emotional adj (adjustment or skills or learning or competence)).ti,ab.
61	empowerment.ti,ab.
62	happiness.ti,ab.
63	(health adj promoting).ti,ab.
64	good relation\$.ti,ab.
65	mental health.ti,ab.
66	parenting program\$.ti,ab.
67	parenting skill\$.ti,ab.
68	problem solving.ti,ab.
69	safe environment.ti,ab.
70	(self-confidence or self-determination or self-esteem or self-identity).ti,ab.
71	(social adj (adjustment or behaviour or behavior or skills or integration or learning)).ti,ab.
72	((well adj being) or wellbeing).ti,ab.
73	resilience.ti,ab.
74	(reduc\$ stress or minimi\$ stress).ti,ab.
75	involvement program\$.ti,ab.
76	involvement strat\$.ti,ab.
77	((promot\$ or increas\$) adj safety).ti,ab.
78	or/1-77
79	schools/
80	(pupil or pupils or schoolchildren).ti,ab.
81	((primary adj school) or (primary adj schools)).ti,ab.
82	((elementary adj school) or (elementary adj schools)).ti,ab.
83	classroom\$.ti,ab.
84	((junior adj school) or (junior adj schools)).ti,ab.
85	or/79-84
86	78 and 85
87	review.ab. or review.pt.
88	meta-analysis.ti,ab,pt.

89	(letter or editorial or comment).pt.
90	(87 or 88) not 89
91	86 and 90
92	animals/ not (humans/ and animals/)
93	91 not 92
94	limit 93 to (english language and yr="1990 - 2007")
95	clinical trial.pt.
96	(randomized or randomised).ti,ab.
97	placebo.ti,ab.
98	randomly.ti,ab.
99	trial.ti,ab.
100	or/95-99
101	86 and 100
102	animals/ not (humans/ and animals/)
103	101 not 102
104	limit 103 to (english language and yr="1990 - 2007")
105	86 not (91 or 101)
106	animals/ not (humans/ and animals/)
107	105 not 106
108	limit 107 to (english language and yr="1990 - 2007")
109	from 94 keep 1-372
110	from 104 keep 1-709
111	from 108 keep 1-3852

Appendix 6 Screening tool for studies of interventions for promoting the mental wellbeing of children

Author & date				
Checked by				
	Selection criteria	yes	no	Not clear (order a full paper)
1	Is the article concerned with evaluation of the effectiveness of approaches/interventions designed to promote the mental wellbeing of children in primary school (education settings)			
2	<p>Are the intended outcomes of the approaches /interventions clearly specified covering:</p> <p>a) Knowledge, skills of children</p> <p>b) Behaviours (eg bullying) and mental health conditions; and indicators of wellbeing</p> <p>c) Changes in parents, teachers, school support staff or other groups</p> <p>d) School systems & environment</p> <p>(note: scope definition of mental wellbeing⁹)</p>			
3	<p>Is the article based on review-level evaluative research that includes a minimum of:</p> <p>a) named database searched</p> <p>b) dates other which it was searched</p> <p>c) search term used</p>			
	<p>Is the article based on trial evaluation using</p> <p>a) randomised control design</p> <p>b) non-randomised control design</p>			
	<p>Are the approaches/interventions targeted at individual children who are 'at risk' or who have a mental health</p>			

⁹ Mental wellbeing outcomes:

- emotional wellbeing (including happiness and confidence, and the opposite of depression)
- psychological wellbeing (including autonomy, problem solving, resilience, attentiveness/involvement)
- social wellbeing (good relationships with others, and the opposite of conduct disorder, delinquency, interpersonal violence and bullying).

	condition or problem (note: this can include children in transition to primary education, or in transition to secondary education)			
	Are the approaches /interventions addressing the whole school population and covering aspects of the school systems and environment (note: includes universally offered class-room interventions)			
	Are the article/s concerned with the cost effectiveness of the approaches/interventions			
4	Are the approaches interventions Focused on children preschool, or secondary school age Set in developing countries In language other than English Focused on pharmacological interventions			
	To be included the article should meet: 1 and 2, any element of 3. It is excluded if any of 4 is met.			
5	Is the article relevant to the development the guidance: specify			

Appendix 7 Summary of trials late for inclusion

Details/finding of the trial	Flannery 2003	Alsaker 2001
Design	RCT	Controlled studies with a pretest-posttest design.
Location	USA	Switzerland
Objective	Effectiveness of PeaceBuilders Universal school-based violence prevention programme	Effectiveness of Bernese programme for early diagnosis and prevention of bullying/victimisation in kindergarten
Sample size	4128 students in eight matched schools	319 students from 16 schools
Age of participants	Elementary students of Grade K-5	Kindergarten
Typology (see Tables 4,9)	1, 2a, 2b	1, 2a, 2b
Quality grading (see Tables 2)	++	+
Population	Elementary schools grades (K-5) Hispanic (51%) Caucasian (28%) Native American (13%) African American (6%) Asian American 1.5%)	- Intervention n= 152 children (50% girls) - Control n=167 children (50.9% girls) - Age of participants 5-7 y mean 6.2 (SD) =.59 - 30.7% of children were foreign citizens
Intervention	Delayed intervention 1 year later (PBD) The Peace Builder is a universal school violence prevention programme for elementary school implemented by all staff and students. The activities are offered on daily basis in a classroom by a teacher or a staff person. The details of this programme mentioned in the included trials in this review see (Krug 1997; Vazsonyi 2004)	Bernese programme: - the basic principle of this prevention programme is to enhance teacher' capability (by the research team) of handling bully/victim problems in kindergarten children. Teachers are offered an intensive focussed supervision for approximately 4 months in eight meetings. - first meeting is for sensitization. Teachers asked to describe a situation in their kindergarten in regard to bullying, discussion follows of the type of aggression. Teachers were invited to start thinking about organising a meeting with parents in order to become sensitive to bully/victim problem - Second meeting was to discuss teachers' reports from their observations - Third meeting for discussion of teachers' behaviour positive and negative. - Fourth meeting on the role and responsibility of the so-called

Details/finding of the trial	Flannery 2003	Alsaker 2001
		non-involved children and bystanders
Comparator(s)	Immediate post-baseline intervention (PBI)	No intervention comparator
Outcome measure(s) reported and validity of the measures	The main outcomes were: -Teacher rating of child social competence - Aggressive behaviour -Prosocial behaviour - Peace Building behaviour - Social competence	- Individual child interviews -Teacher interviews - Peer nominations - Teacher rating Validity of measures were not stated
Duration of intervention Length and /Follow up	Assessment in the fall and spring of 2 consecutive school years	The intervention to enhance teachers capability of handling bully victim problems was 4 months with 8 intensive focus supervision
Findings	-In Grades K-5, intervention showed significant improvement in child social competence - Significant improvement in PeaceBuilders behaviour - Reduction in aggressive behaviour after 1 year relative to control schools. - Teacher Rating of Child Competence and aggressive behaviours: in K-2 nd grade teacher ratings were at Fall Year 2x PBI: 8.20 p <.001, social competence 4.98 p<.001 in 3 rd -5 th grade -For <i>prosocial</i> in self-report at Fall Year 2x PBI in K-2 nd grade self report were: 0.19 <.05, but NS for Peace Building. In 3 rd -5 ^t prosocial was NS but <i>Peace building</i> was 0.36 p <.01.	- A small increase in peer nominations. No significant testing done in pretest & post test for peer nominations in intervention 12.5% -13% respectively. In control: 9%-10.5% No significant testing A small decrease of victimisation in pretest & post test for peer nominations in intervention 12%- 10.5% respectively No significant testing In control: 7%-12%, No significant testing performed.
Reported adverse effect Reported	Not reported	It was reported an increase in bullying in the intervention group that is difficult to understand. The authors attributed this effect to sensitisation as teachers could have become extremely aware of less severe aggressive interaction.
barriers/Facilitators/Advantages/disadvantages of the programme	-PBD schools received compensation in year1 (\$1,000) as an incentive for not to engage in any PeaceBuilders programme related activities. -Level of implementation: 190 teachers (98%) completed time 4 assessment of their use of intervention materials in their classrooms. -Overall 93% of teachers indicated they “strongly agreed” or “agreed” with the philosophy behind the PeaceBuilders intervention -Attrition rate was low, 12% in year 1 and 17% in	Kindergarten teachers in intervention group were offered intensive focused supervision from the researchers for approximately 4 months in 8 meetings.

Details/finding of the trial	Flannery 2003	Alsaker 2001
	year 2.	
Impact of intervention (see Table 6, 9) A,B,C,D	A	B/C
Applicability (see Table 3) a,b,c,d	b	b
Authors' conclusion of the of the trials	Reductions in aggressive behaviour in Grades 3-5 were found for PBI but not PBD schools. Differential effects in Year 1 were observed for aggression and prosocial behaviour. Most effects were maintained in Year 2 for PBI schools indicating the effectiveness of application of an <i>early</i> programme	This prevention programme based on teacher counselling had an effect on reducing the number of intensity of aggressive interactions and diminishing the risk of becoming victimised. The increase in bullying in intervention may be due to teachers being sensitised to interpreting not actually bullying behaviour as bullying.
How likely may the results of this trial influence the evidence statements?	Support the results of trials of PeaceBuilders programme (Krug 1997; Vazsonyi 2004)	Unlikely to change the evidence statements

Appendix 8 Quality assessment

Trial	1	2	3	4	5	6	7	8	9	10	11	12	Quality Rating
Flannery 2003 (RCT)	√√√	√√√	0	0	√√	√√	√√	12% in year one 17% in year two	0	√√	√√√	0	++
Alasker 2002 (CCT)	√√	NA	0	0	0	√√	0	Not stated	0	0	√√	0	-

Quality criteria of the included studies

1. The study addressed an appropriate and clearly focused question
2. The assignment of participants to intervention groups is reported as randomised (if RCT)
3. An adequate allocation concealment method is used
4. Investigators are kept 'blind' about intervention allocation
5. The intervention and control groups are similar at the start of the trial

6. The only difference between groups is the intervention under investigation (pragmatic¹⁰ trials can get full marks)
7. All relevant outcomes are reported/measured using valid/tested scores
8. Percentage of the participants or clusters recruited into each arm of the study dropped out before the study was completed? [Those with drop out rates of 30% were routinely downgraded].
9. The use of ITT analysis
10. If the study is carried out at more than one site, are the results comparable across sites?
11. Reporting the power of trials to detect a difference (study will not be downgraded for not stating the power if the sample size was large enough)
12. Adequate cluster analyses and subgroups stated. Two problems recur frequently in this literature a) failure to take into account design effects in the analysis – so randomised at the level of the school and analysed at the level of the individual – this can overestimate the effect size and b) unplanned, 'post-hoc' subgroup analyses.