



What works in preventing bullying: effective elements of anti-bullying programmes

Maria M Ttofi and David P Farrington

Institute of Criminology, Cambridge University, Cambridge, UK

ABSTRACT

This paper summarises the results of a systematic review and meta-analysis of the effectiveness of anti-bullying programmes in schools. Extensive searches were carried out in 18 databases and in 35 journals. The number of reports on anti-bullying programmes increased considerably over time. Nearly 600 reports were found, but only 59 of these (describing evaluations of 30 different programmes) were eligible for inclusion in our review because they described a high-quality evaluation. We coded the elements of the intervention in these programmes and key features of the evaluation and related these to the effects of the intervention. These types of figures have never been presented in any previous systematic review or meta-analysis of anti-bullying programmes. Our meta-analysis showed that school-based anti-bullying programmes are effective in reducing bullying and victimisation (being bullied), which were reduced by about 20–23% in experimental schools, compared with control schools. The most important programme components that were associated with a decrease in bullying were parent training, improved playground supervision, disciplinary methods, school conferences, videos, information for parents, work with peers, classroom rules and classroom management.

KEY WORDS

Systematic review; meta-analysis; anti-bullying programmes in schools; intervention components; evaluation research.

Introduction

In light of the serious short-term and long-term effects of bullying on children's physical and mental health (Ttofi & Farrington, 2008) it is understandable why school bullying has become a topic of both public concern and research efforts. Research on school bullying has expanded worldwide (Smith *et al.*, 1999), with a variety of intervention programmes being implemented (Smith, Pepler & Rigby, 2004a), and with some countries legally requiring schools to implement an anti-bullying policy (Ananiadou & Smith, 2002).

Bullying research should be designed sensitively in order to assist educationalists and policy-makers in tackling this troubling problem. Despite the marked increase in anti-bullying programmes, there is still

much that needs to be learned about how to design and implement effective interventions. The varying results of intervention research in different countries (Smith & Ananiadou, 2003; Pepler, Smith & Rigby, 2004) show the necessity to advance knowledge about the predictive efficiency of each anti-bullying programme. In particular, it is important to establish which intervention components of anti-bullying programmes correlate with effect sizes, in order to determine what are the 'active ingredients'.

A systematic review aims to comprehensively locate and synthesise research that bears on a particular question, using organised, transparent, and replicable procedures at each step in the process (Littell, Concoran & Pillai, 2008). It includes explicit criteria for inclusion or exclusion of studies in a highly structured way that aims to minimise

bias in the conclusions (Petticrew & Roberts, 2005). Systematic reviews allow for a more objective appraisal of the evidence than traditional narrative reviews. Our systematic review analyses 25 years of intervention research (from 1983 to the end of April 2008) and is based on extensive literature searches. Our meta-analysis presents a quantitative summary of effect sizes in anti-bullying programmes and standardises the evaluation results across studies with the aim of making solid inferences about what works in preventing bullying, for whom and under what circumstances.

Previous research

Many school-based intervention programmes have been devised and implemented in an attempt to reduce school bullying. The most informative single source of reports of anti-bullying programmes is the book edited by PK Smith and colleagues (2004a), which contains descriptions of 13 programmes implemented in 11 different countries. There are also some reviews containing summaries of major anti-bullying programmes (eg. Rigby, 2002; Smith, Ananiadou & Cowie, 2003; Baldry & Farrington, 2007). The most relevant existing reviews are by JD Smith, Schneider, Smith & Ananiadou (2004) who summarised effect sizes in 14 whole-school anti-bullying programmes, six of which were uncontrolled; and by Vreeman & Carroll (2007), who reviewed 26 school-based programmes, 15 of which concerned bullying, with evaluations restricted to studies published in the English language.

These two prior reviews are of high quality. However, neither carried out a full meta-analysis calculating weighted mean effect sizes and correlations between study features and effect sizes. Another meta-analytic review was published by Ferguson, San Miguel, Kilburn & Sanchez (2007). However, this included searches in one database only, for articles published between the years 1995 and 2006, with studies that included both bullying and aggressive behaviour as outcome measures. We must emphasise that our research aims to review programmes that are explicitly designed to reduce bullying and that explicitly measure bullying.

In the present systematic and meta-analytic review, we go way beyond the existing body of research by: a) doing much more extensive searches for evaluations, such as hand-searching all volumes of 35 journals from 1983 up to the end of April 2008; b) searching for international evaluations in

18 electronic databases and in languages other than English; c) carrying out more extensive meta-analyses (including correlating effect sizes with programme components and study features); and d) focusing only on programmes that are specifically designed to reduce bullying and not aggressive behaviour. The interested reader should consult our report to the Swedish National Council on Crime Prevention (Ttöfi, Farrington & Baldry, 2008) for a more detailed technical description of our systematic review.

Criteria for inclusion or exclusion of studies

We aimed to review only the highest quality evaluations. We used the following criteria for inclusion of studies in our systematic review.

- a. The study described an evaluation of a programme designed specifically to reduce school bullying and/or victimisation (being bullied).
- b. The study included a clear definition of bullying that was concordant with existing definitions used in bullying research (Farrington, 1993; Olweus, 1993). Bullying was defined as including physical, verbal, or psychological attack or intimidation that is intended to cause fear, distress, or harm to the victim, and an imbalance of power, with a more powerful child (or children) oppressing less powerful ones.
- c. Bullying was measured using individual self-report questionnaires by students.
- d. The effectiveness of the programme was measured by comparing students who received it (the experimental condition) with students who did not receive it (the control condition). We require that there must have been some control of extraneous variables in the evaluation (establishing the equivalence of conditions) by (i) randomisation, or (ii) pre-test measures of bullying, or (iii) choosing some kind of comparable control condition. Because of low internal validity, we exclude uncontrolled studies that only had before and after measures of bullying in experimental schools or classes. However, we include studies that controlled for age (age-cohort designs).
- e. Published and unpublished reports of research conducted in developed countries between 1983 and the present are included.
- f. It was possible to measure the effect size. The main measure of effect size is the odds ratio.
- g. The minimum initial sample size (total in experimental and control conditions) was 200.

We set this minimum for the following reasons: First, larger studies are usually better-funded and of higher methodological quality. Second, we are very concerned about the frequently-found negative correlations between sample size and effect size (eg. Farrington & Welsh, 2003; Jolliffe & Farrington, 2007). We think that these correlations might reflect publication bias. Smaller studies that yield statistically significant results may be published, whereas those that do not may be left in the file drawer. In contrast, larger studies (often funded by some official agency) are likely to be published irrespective of their results. Excluding smaller studies reduces problems of publication bias and therefore yields a more accurate estimate of the true effect size. Third, we think that larger studies are likely to have higher external validity or generalisability. Fourth, attrition (eg. between pre-test and post-test) is less problematic in larger studies. A study with 100 children that suffers 30% attrition will end up with only 35 boys and 35 girls: these are very small samples (with associated large confidence intervals) for estimating the prevalence of bullying and victimisation. In contrast, a study with 300 children and 30% attrition will end up with 105 boys and 105 girls: these are much more adequate samples. Smaller studies will be included in the review that we are preparing for the Campbell Collaboration.

Included evaluations of anti-bullying programmes

A total of 593 reports that were concerned with bullying prevention, as indicated by either the title or the abstract, were included in our systematic review. All reports were categorised based on a relevance scale that we constructed (*Table 1*).

Most reports recommended or described anti-bullying programmes rather than evaluating them. Of the evaluation reports, many were excluded from the present review because they had no control condition or no outcome data on bullying (category 4) or small numbers or no self-report outcome measures (category 5).

The number of reports concerned with anti-bullying programmes increased markedly over time. In the latest five-year time period (2003–April 2008), the number of studies in each category doubled since the previous five-year period. It is very encouraging that the highest quality controlled studies were most prevalent in the latest time period (Ttofi *et al.*, 2008).

As shown in *Table 1*, only 59 reports (concerning 30 different anti-bullying programmes) were eligible for inclusion in the present review (category 6). These were divided into four categories of research design: randomised experiments, before and after quasi-experimental designs, other quasi-experimental designs, and age-cohort designs. In this article only one published report for each programme is listed in *Figures 1 and 2*; this specifies the earliest publication of the evaluation of the programme (for a full list of references to all 30 studies, see Ttofi *et al.*, 2008).

Analysis of effect sizes for bullying and victimisation

The measure of effect size that we have used is the weighted mean odds ratio (OR) with its associated 95% confidence interval (CI). Where the CI includes the chance value of 1.0, the OR is not statistically significant. The calculation of the OR and its associated CI are explained in the technical appendix accompanying our report to the Swedish National Council on Crime Prevention (Ttofi *et al.* 2008).

Table 1: Relevance scale

Category 1: minor relevance; recommendations for integration of survey results into anti-bullying policies; and/or talk generally about the necessity for bullying interventions [n = 87; 14.7%].
Category 2: weak relevance; talking more specifically about anti-bullying programmes [description of more than one anti-bullying programme]; and/or reviews of anti-bullying programmes; and/or placing emphasis on suggestions/recommendations for reducing bullying [n = 242; 40.8%].
Category 3: medium relevance; description of a specific anti-bullying programme [n = 94; 15.9%].
Category 4: strong relevance; evaluation of an anti-bullying programme, but not included because it has no experimental versus control comparison, or no outcome data on bullying [n = 78; 13.2%].
Category 5: included in the Campbell review; evaluation of an anti-bullying programme that has an experimental and control condition. Sample size may be < 200; teacher and peer nominations may also be included as outcome measures [n = 17; 2.9%].
Category 6: included in the Swedish review; evaluation of an anti-bullying programme that has an experimental and control condition. Sample size > 200 and individual self-reported bullying only is taken as outcome measure [n = 59; 9.9%].

What works in preventing bullying: effective elements of anti-bullying programmes

Over all measures of bullying, the weighted mean OR was between 1.41 and 1.43, indicating a substantial effect of these programmes on bullying. To give a concrete example, if there were 20 bullies and 80 non-bullies in the experimental condition and 26 bullies and 74 non-bullies in the control condition, the OR would be 1.41. Hence, OR = 1.41 can correspond to 30% more bullies in the control condition (or conversely 23% fewer bullies in the experimental condition).

With regard to victimisation, over all studies, the weighted mean OR was between 1.33 and 1.35, indicating significant effects of these programmes on victimisation (being bullied). To give a further illustrative example, if there were 20 victims and 80 non-victims in the experimental condition, and 25 victims and 75 non-victims in the control condition, then OR = 1.33. Hence, our values of the OR correspond to 25% more victims in the control condition (or conversely, 20% fewer victims in the experimental condition).

Key elements of the programme

Each anti-bullying programme included a variety of intervention elements. In order to investigate the relationship between intervention elements and effect size in a comparable way, all elements were dichotomised (in order to produce roughly equal groups of studies, as much as possible). *Figure 1* shows the elements of the intervention for each study. In constructing this Figure, we consulted the evaluators of the various programmes, and sent them our coding of the elements of the intervention. By mid-July 2008, we had received feedback on 24 out of 30 programmes and relevant changes were made to the coding where appropriate. For instance, even though Bauer, Lozano & Rivara (2007) included an anti-bullying video, this anti-bullying method was implemented in only two out of seven intervention schools, so we did not code this element as included in

this programme. In *Figures 1 and 2*, studies are organised according to research design.

Element 1 (whole-school anti-bullying policy) involves the presence of a formal anti-bullying policy in the school. In many schools, as indicated by researchers, such a policy was already in effect. *Element 2* (classroom rules) refers to the use of rules against bullying that students were expected to follow. In many programmes, these rules were the result of co-operative group work between the teachers and the students, usually after some extent of exposure of the students to the philosophy or messages of the anti-bullying programme. In many cases the rules were written on a notice that was displayed in a distinctive place in the classroom. *Element 3* (school conferences) refers to the organisation of school assemblies during which children were informed about bullying. In many programmes, these conferences were organised after the pre-test data collection and aimed to inform students about the extent of bullying in their school. This was perceived as a way of sensitising students about bullying and as a means of announcing the formal beginning of the intervention programme in the school. *Element 4* (curriculum materials) refers to the use of materials about bullying during classroom lessons. Some programmes involved a new curriculum whereas in others teachers incorporated anti-bullying materials into the regular curriculum.

Element 5 (classroom management) refers to an emphasis on classroom management techniques in detecting and dealing with bullying. *Element 6* (co-operative group work) refers to the co-operation among different professionals (usually among teachers and some other professional groups) in working with bullies and victims of bullying. *Elements 7 and 8* (work with bullies and victims) concern individualised work, not offered in the classroom, with children involved in bullying as victims or perpetrators. In most programmes, this service was offered by professionals, such as psychologists, who collaborated with teachers in the school. *Element 9* (work with peers) refers to the

(legend for Figure 1)

Note: 1 = whole school anti-bullying policy; 2 = classroom rules; 3 = school conferences providing information about bullying to pupils; 4 = curriculum materials; 5 = classroom management; 6 = co-operative group work among experts [eg. among teachers, counsellors and interns]; 7 = work with bullies; 8 = work with victims; 9 = work with peers [eg. peer mediation; peer mentoring; peer group pressure as bystanders]; 10 = information for teachers; 11 = information for parents; 12 = increased playground supervision; 13 = disciplinary methods; 14 = non-punitive methods [eg. 'Pikas' or 'No Blame Approach']; 15 = restorative justice approaches; 16 = school tribunals/school bully courts; 17 = teacher training; 18 = parent training; 19 = videos; 20 = virtual reality environments/computer games; EP = educational presentations to parents; MP = meetings with parents; CP = consultation for parents; IN = information nights; A full reference list for all studies can be obtained direct from the authors.

Figure 1: Key features of intervention
STUDY: ☒ ELEMENTS: √

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Randomised experiments																				
Baldry & Farrington, 2004	N	Y	Y	Y	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	Y	N
Cross <i>et al.</i> , 2004	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N	Y	N
De Rosier, 2004	N	N	N	Y	N	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N
Fekkes <i>et al.</i> , 2006	Y	Y	Y	Y	N	N	N	N	N	Y	Y	Y	Y	N	N	N	Y	N	N	Y
Frey <i>et al.</i> , 2005	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N	N	N	N	N	Y	N	Y	N
Hunt, 2007	Y	Y	Y	Y	Y	N	N	N	N	Y	Y	Y	N	N	N	N	N	N	N	N
Jenson & Dieterich, 2007	N	N	Y	Y	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N
Rosenbluth <i>et al.</i> , 2004	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N	N	N	N	Y	EP	N	N
Salmivalli <i>et al.</i> 2009	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	N	Y	IN	Y	Y
Before/after experimental-control comparisons																				
Andreou <i>et al.</i> , 2007	N	Y	N	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	Y	N	N	N
Bauer <i>et al.</i> , 2007	Y	Y	Y	Y	Y	N	Y	Y	N	Y	Y	Y	N	N	N	N	Y	N	N	N
Ciucci & Smorti, 1998	N	N	Y	N	N	Y	N	N	Y	Y	N	N	N	N	N	N	Y	N	N	N
Melton <i>et al.</i> , 1998	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	Y	N	Y	N
Menard <i>et al.</i> , 2008	Y	Y	N	Y	Y	Y	N	N	N	Y	Y	N	N	N	N	N	Y	CP	N	N
Bergen 2 [1997–1998]	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N	N	Y	MP	Y	N
Pepler <i>et al.</i> , 2004	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	N	N	Y	IN	N	N
Rahey & Craig, 2002	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	Y	IN	N	N
Rican <i>et al.</i> , 1996	N	Y	N	Y	Y	N	N	N	N	Y	N	N	Y	N	N	N	N	N	Y	N
Stevens <i>et al.</i> , 2000	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	N	Y	Y	N	Y	MP	Y	N
Whitney <i>et al.</i> , 1994	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	N	Y	N	N	N	N	Y	N
Other experimental-control comparisons																				
Evers <i>et al.</i> , 2007	N	N	N	N	N	N	N	N	N	Y	Y	N	N	N	N	N	N	N	Y	Y
Galloway & Roland, 2004	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	Y	N	N	N
Ortega <i>et al.</i> , 2004	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N	N	Y	N	N	N
Raskauskas, 2007	Y	Y	N	Y	Y	Y	N	N	N	Y	Y	N	N	N	N	N	N	N	Y	N
Age-cohort designs																				
Ertesvag & Vaaland, 2007	Y	Y	Y	N	Y	N	Y	Y	N	Y	Y	Y	N	N	N	N	Y	IN	Y	N
Bergen 1 [1983–1985]	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N	N	Y	MP	Y	N
Oslo 1 [1999–2000]	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N	N	Y	MP	Y	N
National Norway [2001–2007]	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N	N	Y	MP	Y	N
Oslo 2 [2001–2006]	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N	N	Y	MP	Y	N
Salmivalli <i>et al.</i> , 2004	Y	Y	N	Y	Y	N	Y	Y	N	Y	N	N	N	Y	N	N	Y	N	Y	N

What works in preventing bullying: effective elements of anti-bullying programmes

formal engagement of peers in tackling bullying. This could involve the use of several strategies such as peer mediation (students working as mediators in the interactions among students involved in bullying) and peer mentoring, which was usually offered by older students.

Elements 10 and 11 (information for teachers and parents): many programmes offered information for teachers and parents, but it was not possible for us to assess the quality of the information provided. For instance, many programmes reported the presence of a manual that teachers could consult in the implementation of the intervention, but the extent to which this manual was structured is sometimes difficult for us to assess. The same can be said about the information provided to parents. It was clear to us that programmes differed a lot in the quality of this information. In some programmes parents were provided with newsletters regarding the anti-bullying initiative in their school, while in others parents were given guides on how to help their child deal with bullying as well as information about the anti-bullying initiative implemented in their school. However, the overall information that we had regarding this element of the intervention did not allow us to differentiate among different levels of its implementation across programmes.

Element 12 (improved playground supervision): some anti-bullying programmes aimed to identify 'hot-spots' or 'hot-times' of bullying (mostly during playtime or lunchtime) and provided improved playground supervision of children. *Element 13* (disciplinary methods): some programmes emphasised punitive methods in dealing with bullying situations. *Elements 14 and 15* (non-punitive methods): A few programmes included restorative justice approaches and other non-punitive methods such as the 'Pikas method' and the 'No Blame' approach in dealing with children involved in bullying (eg. Ortega *et*

al, 2004; Whitney *et al*, 1994). *Element 16* (school tribunals and bully courts) was not used to any great extent in any of the present studies. Bully courts were offered as an optional element within the Sheffield UK programme (Smith *et al*, 2004b), but no school actually established one.

Element 17 (teacher training): This was coded as present or absent. We also coded both the duration (number of meetings among experts and teachers) as well as the intensity (number of hours) of this training (see later). Again, we sent emails to the evaluators of the different programmes and asked for their advice. Some researchers were responsive and offered us adequate information on both the duration and the intensity of teacher training to the extent that we could be confident about our accuracy in coding these elements. For other programmes, however, we could not code one or both of these features of teacher training. *Element 18* (parent training): This refers to the organisation of information nights/educational presentations for parents and/or teacher-parent meetings during which parents were given information about the anti-bullying initiative in the school. *Elements 19 and 20* (videos and virtual reality computer games): some programmes utilised technology in their materials such as the use of anti-bullying videos or virtual reality computer games to raise students' awareness about bullying and how to deal with it.

We also coded other features of the intervention programmes (see *Figure 2*). In order to investigate the relationship between evaluation features and effect size in a comparable way, all features were dichotomised (in order to produce roughly equal groups, as much as possible). For instance, we coded the number of elements included in a programme out of 20, dichotomised into 10 or less versus 11 or more. Olweus (2005) reported a 'dose-response' relationship between the number of components implemented in a school and the effect on bullying.

(legend for Figure 2)

Note: N.C. = Number of intervention components [A = 10 or less; B = 11 or more]; T.O. = Theoretical Orientation [C = based/ inspired by Olweus; D = different from Olweus]; D.C. = Duration of intervention for children [E = 240 days or less; F = 270 days or more]; I.C. = Intensity of intervention for children [G = 19 hours or less; H = 20 hours or more]; D.T. = Duration of intervention for teachers [I = 3 day meetings or less; J = 4 day meetings or more]; I.T. = Intensity of intervention for teachers [K = 14 hours or less; L = 15 hours or more]; O.M. = Outcome measure [M = means, prevalence, other measures; N = 2 or more times per month]; S.S. = Sample size [O = 1499 or less; P = 1500 or more]; P.D. = Publication date [Q = 2003 or before; R = 2004 or later]; A.A. = Average age [S = 10 or less; T = 11 or more]; I.L. = Location of intervention [U = in Norway; V = elsewhere in Europe; W1 = in the USA; W2 = other than Europe and the USA]; M.D. = Methodological design [Y = randomised experiment or before/after experimental-control comparison; Z = other experimental-control comparison or an age-cohort design] X = not an intervention element; ■ = missing value; O.R.B = Odds ratio for bullying; O.R.V = Odds ratio for victimisation; Ø = Odds ratio for bullying and/or victimisation not measured: A full reference list for all studies can be obtained direct from the authors.

Figure 2: Key features of evaluation

STUDY: ✕ ELEMENTS: √	N.C.	T.O.	D.C.	I.C.	D.T.	I.T.	O.M.	S.S.	P.D.	A.A.	I.L.	M.I.D.	O.R.B	O.R.V
Baldry & Farrington, 2004	A	D	E	G	X	X	M	O	R	T	V	Y	1.14	1.69
Cross <i>et al</i> , 2004	B	D	F	G	I	K	M	P	R	S	W2	Y	0.77	1.07
De Rosier, 2004	A	D	E	G	X	X	M	O	R	S	W1	Y	0.87	1.04
Fekkes <i>et al</i> , 2006	A	C	F	H	I	■	M	P	R	S	V	Y	1.12	1.25
Frey <i>et al</i> , 2005	A	D	E	G	■	K	M	O	R	S	W1	Y	1.04	1.09
Hunt, 2007	A	D	E	G	X	X	M	O	R	T	W2	Y	1.46	1.26
Jenson & Dieterich, 2007	A	D	F	H	X	X	M	O	R	S	W1	Y	1.17	1.63
Rosenbluth <i>et al</i> , 2004	B	C	E	G	I	L	M	P	R	T	W1	Y	0.99	0.70
Salmivalli <i>et al</i> , 2009	B	D	F	H	J	L	N	P	R	S	V	Y	1.47	1.66
Andreou <i>et al</i> , 2007	A	D	E	G	J	L	M	O	R	S	V	Y	1.75	1.48
Bauer <i>et al</i> , 2007	B	C	E	G	J	K	M	P	R	T	W1	Y	○	1.01
Ciucci & Smorti, 1998	A	D	F	■	I	■	M	O	Q	S	V	Y	1.20	1.21
Melton <i>et al</i> , 1998	B	C	F	H	■	■	M	P	Q	T	W1	Y	1.52	1.06
Menard <i>et al</i> , 2008	A	D	F	G	■	L	M	P	R	T	W1	Y	1.64	1.22
Bergen 2 [1997–1998]	B	C	E	H	J	L	N	P	R	T	U	Y	1.79	1.43
Pepler <i>et al</i> , 2004	B	C	F	■	J	K	M	O	R	S	W2	Y	1.69	0.94
Rahey & Craig, 2002	B	D	E	G	I	■	M	O	Q	S	W2	Y	1.19	0.79
Rican <i>et al</i> , 1996	A	C	E	■	X	X	M	O	Q	S	V	Y	2.52	2.43
Stevens <i>et al</i> , 2000	B	C	E	G	■	L	M	O	Q	T	V	Y	○	○
Whitney <i>et al</i> , 1994	B	C	F	■	X	X	M	P	Q	S	V	Y	2.12	1.26
Evers <i>et al</i> , 2007	A	D	■	G	X	X	M	O	R	T	W1	Z	2.15	2.33
Galloway & Roland, 2004	A	D	F	■	J	L	M	O	R	S	U	Z	1.20	1.59
Ortega <i>et al</i> , 2004	B	D	F	H	J	L	N	O	R	T	V	Z	1.63	2.12
Raskauskas, 2007	A	D	E	G	X	X	M	P	R	S	W2	Z	1.20	1.35
Ertesvag & Vaaland, 2007	B	D	F	■	J	L	M	P	R	T	U	Z	1.34	1.18
Bergen 1 [1983–1985]	B	C	F	H	J	L	N	P	Q	T	U	Z	1.69	2.89
Oslo 1 [1999–2000]	B	C	F	H	J	L	N	P	R	T	U	Z	2.14	1.81
National Norway [2001–2007]	B	C	F	H	J	L	N	P	R	T	U	Z	1.78	1.59
Oslo 2 [2001–2006]	B	C	F	H	J	L	N	P	R	T	U	Z	1.75	1.48
Salmivalli <i>et al</i> , 2004	A	C	F	■	J	L	M	P	R	T	V	Z	1.31	1.30

We have also coded the following key aspects of the way the programme was implemented: a) The extent to which the programme was or was not inspired by the work of Dan Olweus (see later); b) The duration of the programme for children, dichotomised into 240 days or less versus 270 days or more; c) The intensity of the programme for children, dichotomised into 19 hours or less versus 20 hours or more; d) The duration of the teacher training, dichotomised into three days or less versus four days or more; and e) The intensity of the teacher training, dichotomised into 14 hours or less versus 15 hours or more.

Key features of the evaluation

Figure 2 also shows key features of the evaluations (eg. sample size, research design, average age etc). Research design was dichotomised into randomised experiments plus before/after experimental-control designs versus other experimental-control designs plus age-cohort designs. Other features of the evaluation that were investigated were as follows: a) Sample size (experimental plus control conditions), dichotomised into 1,500 children or more versus 1,499 children or less. b) Publication date, dichotomised into 2004 or later versus 2003 or earlier; c) Average age of the children, dichotomised into 10 or less versus 11 or more; d) Location, in the USA versus other places; e) Location in other places versus Norway; f) Location in other places versus Europe; g) Outcome measure, dichotomised into others versus a dichotomous measure of two or more times per month. This latter measure was associated with larger effect sizes than mean scores or simple prevalences.

Most importantly, *Figure 2* also shows the odds ratio effect sizes for each programme. These are given for bullying and victimisation separately. Effect sizes for bullying and victimisation were significantly correlated ($r = 0.58, p < .0001$) but some programmes had more effect on one rather than the other. As explained earlier, an OR of 1.00 indicates no effect of a programme, while larger ORs indicate successful programmes. ORs less than 1 indicate harmful programmes, but luckily there were very few of these. By comparing ORs in *Figures 1 and 2* with intervention elements, it is possible to determine what were the most successful programmes and what were their components. These types of Figures have never been presented in any previous systematic review or meta-analysis of anti-bullying programmes, and we have never seen anything like them in any published systematic review in criminology.

The Olweus Programme

As an example, the programme developed by Dan Olweus in Norway (the Olweus Bullying Prevention Programme; OBPP) was shown to be effective in five evaluations: Bergen 1 and 2, Oslo 1 and 2, and a national initiative in Norway (Olweus, 2004). The OBPP was a multi-level programme targeting the individual, the school, the classroom and the community level. Apart from mass-media publicity, the programme started with a one-day school conference during which the problem of bullying was discussed between school staff, students and parents. This signalled the formal commencement of the intervention. Two different types of materials were provided: a handbook or manual for teachers and a folder with information for parents and families. The programme also included: a) a CD-programme that was used for assessing and analysing the data obtained at the pre-test period, so that school-specific interventions could then be implemented; b) a video on bullying; c) the Revised Olweus Bully/Victim Questionnaire and d) the book *Bullying at School: What we know and what we can do* (Olweus, 1993).

The anti-bullying measures mainly targeted three different levels of intervention: the school, the classroom and the individual. At the school level, the intervention included:

- meetings among teachers to discuss ways of improving peer-relations
- staff discussion groups
- parent/teacher meetings to discuss the issue of bullying
- increased supervision in the playground and at lunchtime
- improvement of playground facilities
- a questionnaire survey
- the formation of a co-ordinating group.

At the classroom level the intervention included:

- students were given information about bullying and were actively involved in devising class rules against bullying
- classroom activities for students – such as role-playing situations that could help students learn how to deal with bullying more successfully
- class rules against bullying
- class meetings with students
- meetings with parents.

At the individual level the intervention included:

- talks with bullies and their parents and enforcement of non-hostile, non-physical sanctions

- talks with victims, providing support and providing assertiveness skills training to help them learn how to successfully deal with bullying; also, talks with the parents of victims
- talks with children not involved to make them become effective helpers.

This successful programme could be the basis of future anti-bullying initiatives. It is worth noting that the theoretical orientation of anti-bullying programmes (ie. whether they were inspired or based on the OBPP or not) was significantly associated with a decrease in bullying. These correlations do not prove a causal effect of these components on bullying but they are suggestive. Most programmes seem to be based on common sense ideas about what works in preventing bullying rather than on specific theories of bullying.

Some programmes were loosely based on a theory. For example, the Greek anti-bullying programme of Andreou, Didaskalou & Vlachou (2007) was inspired by Salmivalli's (1999) idea that bullying involves social roles and expectations that are supported by bystanders as well as by bullies and victims. Therefore, the programme

targeted all students in raising awareness about bullying and about the causes and consequences of adopting different roles. However, no anti-bullying programme was based on well-developed and tested theories of bullying such as defiance theory or reintegrative shaming theory (Ttofi & Farrington, 2008a; 2008b). Research is needed to develop and test better theories of bullying and victimisation as a basis for new intervention programmes.

Effect size versus study features

There have been few other attempts to relate effect size to programme elements (see eg. Kaminski *et al*, 2008). *Table 2* shows the programme elements and design features that were significantly (or nearly significantly in two cases) related to effect sizes for bullying. Because of insufficient variation, five of the 20 programme elements could not be investigated (curriculum materials, information for teachers, restorative justice approaches, school tribunals/bully courts and virtual reality computer games). The weighted mean OR effect sizes are also given for the different categories. In order to test whether the variation in the effect size measure is statistically significant, it is necessary to calculate

	Cat (n) OR	Cat (n) OR	QB	P
Programme elements				
Disciplinary methods	No (18) 1.30	Yes (10) 1.66	18.27	.0001
Parent training	No (17) 1.28	Yes (11) 1.59	15.55	.0001
Intensity for children	19- (11) 1.28	20+ (10) 1.65	14.85	.0001
Playground supervision	No (18) 1.29	Yes (10) 1.60	14.31	.0002
Duration for children	240- (10) 1.18	270+ (17) 1.51	14.13	.0002
Duration for teachers	3- (13) 1.20	4+ (12) 1.55	14.10	.0002
Inspired by Olweus	No (16) 1.31	Yes (12) 1.60	12.77	.0004
Intensity for teachers	14- (11) 1.23	15+ (13) 1.54	12.21	.0005
Total elements	10- (14) 1.31	11+ (14) 1.54	8.32	.004
Information for parents	No (9) 1.24	Yes (19) 1.48	6.03	.014
School conferences	No (12) 1.33	Yes (16) 1.52	5.80	.016
Classroom rules	No (7) 1.22	Yes (21) 1.46	4.55	.033
Classroom management	No (7) 1.23	Yes (21) 1.46	4.10	.043
Design features				
Age of children	10- (14) 1.21	11+ (14) 1.57	20.09	.0001
Publication year	04+ (18) 1.31	03- (10) 1.69	18.75	.0001
Outcome measure	Other (21) 1.33	2+M (7) 1.74	18.51	.0001
In Norway	Rest (21) 1.34	Nor (7) 1.58	7.76	.005
In Europe	Rest (12) 1.32	EU (16) 1.53	6.47	.011

Notes: Cat = Category of variable; OR = Weighted mean odds ratio; QB = heterogeneity between groups; Duration in days; Intensity in hours; Outcome Measure 2+M: two times per month or more (versus other measures)

What works in preventing bullying: effective elements of anti-bullying programmes

the heterogeneity between groups or QB (Lipsey & Wilson, 2001: 135–138). For example, the mean OR was 1.59 for interventions including parent training and 1.28 for interventions not including parent training, a significant difference ($p < .0001$).

The most important programme elements that were associated with a decrease in bullying were parent training, improved playground supervision, disciplinary methods, school conferences, information for parents, classroom rules and classroom management. These correlations do not prove a causal effect of these components on bullying but they are suggestive. In addition, the total number of elements, and the duration and intensity of the programme for children and teachers, were significantly associated with a decrease in bullying. Programmes inspired by the work of Dan Olweus worked best. Several other programmes not inspired by the work of Olweus were also successful: the Finnish Anti-Bullying programme (Salmivalli, Kaukiainen & Voeten, 2005), the Greek Anti-bullying programme (Andreou *et al.*, 2007), the Kia Kaha programme (Raskauskas, 2007), the KiVa programme (Salmivalli, Karna & Poskiparta, 2009) and the Respect programme (Ertesvag & Vaaland, 2007).

Regarding the design features, the programmes worked better with older children, in Norway specifically, and in Europe more generally. Older programmes, and those in which the outcome measure of bullying was two times per month or more, also worked better. No programme element was significantly associated with an increase in bullying.

Table 3 shows the programme elements and design features that were significantly related to effect sizes for victimisation (being bullied). The most important programme elements that were associated with a decrease in victimisation were videos, disciplinary methods, work with peers, parent training and co-operative group work. In addition, the duration and intensity of the programme for children and teachers were significantly associated with a decrease in victimisation. Regarding the design features, the programmes worked better in Norway specifically and in Europe more generally, and they were less effective in the USA. Older programmes, those in which the outcome measure was two times per month or more, and those with other experimental-control and age-cohort designs, also worked better. No programme element was significantly associated with an increase in victimisation.

Table 3: Significant relationships with victimisation

	Cat (N) OR	Cat (N) OR	QB	P
Programme elements				
Videos	No (14) 1.15	Yes (15) 1.47	25.69	.0001
Disciplinary methods	No (19) 1.21	Yes (10) 1.50	21.64	.0001
Duration for children	240- (11) 1.13	270+ (17) 1.42	18.09	.0001
Intensity for teachers	14- (12) 1.18	15+ (13) 1.47	17.02	.0001
Work with peers	No (20) 1.11	Yes (9) 1.41	15.43	.0001
Parent training	No (19) 1.23	Yes (10) 1.47	15.24	.0001
Intensity for children	19- (11) 1.22	20+ (11) 1.46	10.77	.001
Co-operative group work	No (14) 1.22	Yes (15) 1.42	9.51	.002
Duration for teachers	3- (13) 1.23	4+ (13) 1.44	7.27	.007
Design features				
Outcome measure	Other (22) 1.18	2+M (7) 1.64	49.19	.0001
In Europe	Rest (13) 1.13	EU (16) 1.52	40.90	.0001
Design	12 (19) 1.13	34 (10) 1.53	40.73	.0001
In Norway	Rest (22) 1.20	Nor (7) 1.55	30.77	.0001
Not in USA	US (8) 1.10	Rest (21) 1.45	27.26	.0001
Publication year	04+ (19) 1.23	03- (10) 1.52	21.04	.0001

Notes: Cat = Category of variable; OR = Weighted mean odds ratio; QB = heterogeneity between groups; Design: 12 = randomised experiments + before/after / experimental-control versus 34 = other experimental-control + age-cohort designs; Duration in days; Intensity in hours; Outcome Measure 2+M: two times per month or more (versus other measures)

Summary of main findings

Our systematic review shows that school-based anti-bullying programmes are often effective. Some programmes (especially those based on the work of Dan Olweus) are clearly more promising than others. Particular programme elements were associated with a decrease in bullying and victimisation (being bullied). No programme element was significantly associated with an increase in bullying or victimisation.

The main policy implication of our review is that new anti-bullying programmes should be designed and tested based on our results. In particular, programmes should be targeted at children aged 11 or older, rather than younger children. The outcome measure of bullying or victimisation should be two times per month or more. Future interventions could be grounded in the successful Olweus programme but should be modified in light of the key programme components that we have found to be most effective.

Also, cost-benefit analyses of anti-bullying programmes should be carried out, to investigate how much money is saved for the money expended (Welsh, Farrington & Sherman, 2001). Saving money is a powerful argument to convince policy-makers and practitioners to implement intervention programmes (Farrington, 2008: 59).

Finally, anti-bullying programmes should be based on theories of bullying and victimisation (Baldry & Farrington, 2007: 201). In general, the existing programmes are not. These theories should guide programme development. More research is needed on the development and testing of theories of bullying and victimisation.

In conclusion, results obtained so far in evaluations of anti-bullying programmes are encouraging. The time is ripe to mount a new programme of research on the effectiveness of these programmes, based on our findings.

Address for correspondence

Professor David P Farrington
Institute of Criminology
Cambridge University
Sidgwick Avenue
Cambridge CB3 9DA
UK
Email: dpf1@cam.ac.uk

Implications for policy-making

- Many (but not all) school-based anti-bullying programmes are effective; high-quality intervention research on school bullying should be encouraged.
- New anti-bullying programmes should be designed and tested based on the intervention components that are significantly associated with large effect sizes. These could be grounded in the successful Olweus programme.
- Cost-benefit analyses of anti-bullying programmes should be carried out to investigate how much money is saved for the money spent.
- Research is also needed to develop and test better theories of bullying and victimisation as a basis for new intervention programmes.

References

- Ananiadou K & Smith PK (2002) Legal requirements and nationally circulated materials against school bullying in European countries. *Criminal Justice* 2 471–491.
- Andreou E, Didaskalou E & Vlachou A (2007) Evaluating the effectiveness of a curriculum-based anti-bullying intervention programme in Greek primary schools. *Educational Psychology* 27 693–711.
- Baldry AC & Farrington DP (2007) Effectiveness of programmes to prevent school bullying. *Victims and Offenders* 2 183–204.
- Bauer NS, Lozano P & Rivara FP (2007) The effectiveness of the Olweus bullying prevention programme in public middle schools: a controlled trial. *Journal of Adolescent Health* 40 266–274.
- Ertesvag SK & Vaaland GS (2007) Prevention and reduction of behavioural problems in school: an evaluation of the Respect programme. *Educational Psychology* 27 713–736.
- Farrington DP (1993) Understanding and preventing bullying. In: M Tonry (Ed) *Crime and Justice* (volume 17). Chicago: University of Chicago Press.
- Farrington DP (2009) Conduct disorder, aggression and delinquency. In: Lerner RM & Steinberg L (Eds) *Handbook of Adolescent Psychology* (3rd edition). Hoboken, NJ: Wiley (in press).
- Farrington DP & Welsh BC (2003) Family-based prevention of offending: a meta-analysis. *Australian and New Zealand Journal of Criminology* 36 127–151.
- Ferguson CJ, Miguel CS, Kilburn JC & Sanchez P (2007) The effectiveness of school-based anti-bullying programmes: a meta-analytic review. *Criminal Justice Review* 32 401–414.

What works in preventing bullying: effective elements of anti-bullying programmes

- Jolliffe D & Farrington DP (2007) *A rapid evidence assessment of the impact of mentoring on reoffending*. Home Office Online Report 11/07. London: Home Office. Available from: homeoffice.gov.uk/rds/pdfs07/rdsolr1107.pdf.
- Kaminski JW, Valle LA, Filene JH & Boyle CY (2008) A meta-analytic review of components associated with parent training programme effectiveness. *Journal of Abnormal Child Psychology* 36 567–589.
- Lipsey MW & Wilson DB (2001) *Practical Meta-Analysis*. Thousand Oaks, CA: Sage.
- Littell JH, Corcoran J & Pillai V (2008) *Systematic Reviews And Meta-Analysis*. Oxford: Oxford University Press.
- Olweus D (1993) *Bullying at School: What We know and What We Can Do*. Oxford: Blackwell.
- Olweus D (2004) The Olweus Bullying Prevention Programme: design and implementation issues and a new national initiative in Norway. In: PK Smith, D Pepler & K Rigby (Eds) *Bullying in Schools: How successful can interventions be?* Cambridge: Cambridge University Press.
- Olweus D (2005) A useful evaluation design, and effects of the Olweus bullying prevention programme. *Psychology Crime and Law* 11 389–402.
- Ortega R, Del-Rey R & Mora-Merchan JA (2004) SAVE Model: an antibullying intervention in Spain. In: PK Smith, D Pepler & K Rigby (Eds) *Bullying in Schools: How successful can interventions be?* Cambridge: Cambridge University Press.
- Pepler D, Smith PK & Rigby K (2004) Looking back and looking forward: implications for making interventions work effectively. In: PK Smith, D Pepler & K Rigby (Eds) *Bullying In Schools: How successful can interventions be?* Cambridge: Cambridge University Press.
- Petticrew M & Roberts H (2006) *Systematic Reviews in the Social Sciences: A practical guide*. Malden: Blackwell.
- Raskauskas J (2007) *Evaluation of the Kia Kaha Anti-Bullying Programme for Students in Years 5–8*. Report prepared for the New Zealand Police, Wellington, New Zealand.
- Rigby K (2002) *A Meta-evaluation of Methods and Approaches to Reducing Bullying in Preschools and Early Primary School in Australia*. Canberra: Attorney General's Department, Crime Prevention Branch.
- Salmivalli C (1999) Participant role approach to school bullying: implications for interventions. *Journal of Adolescence* 22 453–459.
- Salmivalli C, Karna A & Poskiparta E (2009) From peer putdowns to peer support: a theoretical model and how it translated into a national anti-bullying programme. In: SK Jimerson, SM Swearer & DL Espelage (Eds) *International Handbook of School Bullying*. Mahwah, NJ: Erlbaum (in press).
- Salmivalli C, Kaukiainen A & Voeten M (2005) Anti-bullying intervention: implementation and outcome. *British Journal of Educational Psychology* 75 465–487.
- Smith JD, Schneider B, Smith PK & Ananiadou K (2004) The effectiveness of whole-school anti-bullying programmes: a synthesis of evaluation research. *School Psychology Review* 33 548–561.
- Smith PK & Ananiadou K (2003) The nature of school bullying and the effectiveness of school-based interventions. *Journal of Applied Psychoanalytic Studies* 5 189–209.
- Smith PK, Ananiadou K & Cowie H (2003) Interventions to reduce school bullying. *Canadian Journal of Psychiatry* 48 591–599.
- Smith PK, Morita J, Junger-Tas D, Olweus D, Catalano R & Slee PT (Eds) (1999) *The Nature Of School Bullying: A cross-national perspective*. London: Routledge.
- Smith PK, Pepler D & Rigby K (Eds) (2004a) *Bullying in Schools: How successful can interventions be?* Cambridge: Cambridge University Press.
- Smith PK, Sharp S, Eslea M & Thompson D (2004b) England: The Sheffield Project. In: PK Smith, D Pepler & K Rigby (Eds) *Bullying In Schools: How successful can interventions be?* Cambridge: Cambridge University Press.
- Ttofi MM & Farrington DP (2008a) Bullying: short-term and long-term effects, and the importance of defiance theory in explanation and prevention. *Victims and Offenders* 3 289–312.
- Ttofi MM & Farrington DP (2008b) Reintegrative shaming theory, moral emotions and bullying. *Aggressive Behaviour* 34 352–368.
- Ttofi MM, Farrington DP & Baldry AC (2008) *Effectiveness of Programmes to Reduce School Bullying: A systematic review*. Stockholm: Swedish National Council for Crime Prevention. Available from www.bra.se.
- Vreeman RC & Carroll AE (2007) A systematic review of school-based interventions to prevent bullying. *Archives of Pediatrics and Adolescent Medicine* 161 78–88.
- Welsh BC, Farrington DP & Sherman LW (Eds) (2001) *Costs and Benefits of Preventing Crime*. Boulder, CO: Westview Press.
- Whitney I, Rivers I, Smith PK & Sharp S (1994) The Sheffield Project: Methodology and findings. In: PK Smith & S Sharp (Eds) *School Bullying: Insights and perspectives*. London: Routledge.

Copyright of *Journal of Aggression, Conflict & Peace Research* is the property of Pavilion Journals (Brighton) Ltd and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.