Title registration for a review proposal:
Title of the review: ‘Involvement of children in school bullying: A systematic review of its effects on later criminal and health outcomes based on longitudinal studies’

To start a Campbell review, a title must be registered and approved by the appropriate Campbell review group. For information about the title registration and protocol and review steps, visit the Campbell website: http://www.campbellcollaboration.org/systematic_reviews/index.php

Submitted to the Coordinating Group of:
√ Crime and Justice
__ Education
__ Social Welfare
__ Other

Plans to co-register:
__ No
√ Yes __ Cochrane __ Other
__ Maybe

Instruction: Briefly address each item below. Provide enough precise information to allow us the ability to evaluate the scope of the review and its appropriateness for the Campbell Collaboration. Note the review proposal should not overlap with existing Campbell and Cochrane published reviews or registered reviews in progress.

TITLE OF THE REVIEW

‘Involvement of children in school bullying: A systematic review of its effects on later criminal and health outcomes based on longitudinal studies’

BACKGROUND

Briefly describe and define the problem
The cross-sectional correlational literature is replete with evidence of negative associations between bullying victimization and various indexes of mental/physical wellbeing and positive associations with delinquent/anti-social
behaviour (Ttofi & Farrington, 2008). Although the correlational nature of studies precludes causal inference, they are consistent with the notion that bullying serves at least as a risk factor for the psychosocial wellbeing of students. Very few pioneering longitudinal studies also suggest that involvement of children in bullying is at least an early risk marker of future physical/mental health problems and of adult criminality (e.g. Farrington, 1993; Losel et al., 2008).

To date, systematic reviews in criminology (but also in other fields) have focused primarily on intervention research, failing to address naturally occurring (non-manipulated) causes of delinquency, such as divorce, brain damage, gang involvement or —to give an example from the current proposal— bullying victimization (Murray et al., 2009). However, systematic reviews on risk factors could advance theory and help to develop effective prevention programmes (Murray et al., 2009:2). For example, it would be interesting to examine whether victims of bullying suffer from low self-esteem or whether school bullies lack empathy—such findings, based on relevant systematic reviews, could guide future intervention initiatives, whilst also refining theory about causes of bullying behaviour.

We aim to examine, using longitudinal studies only, whether bullying victimization is not just a risk factor, but also a causal risk factor for later adverse criminal and health outcomes. The report will focus specifically on school bullying (perpetration and victimization) and not on peer aggression in general. The definition of school bullying includes several key elements: physical, verbal, or psychological attack or intimidation that is intended to cause fear, distress, or harm to the victim; an imbalance of power (psychological or physical) with a more powerful child (or children) oppressing less powerful ones; and repeated incidents between the same children over a prolonged period of time (Farrington, 1993; Olweus, 1993).

In risk factor research, many naturally occurring probabilistic events —such as bullying victimization, to give an example from our proposed title— cannot be randomly assigned due to ethical or other considerations (Petrosino, 2003). However, examination of whether these events are risk factors, or better still causal risk factors, can potentially advance knowledge on related intervention research. We propose to examine whether bullying victimization is a causal risk factor for later adverse criminal and health outcomes. Bullying victimization (‘being bullied’) at school will be regarded as a social intervention—with possible unintended criminal and health outcomes later in life. Even though children are not allocated to victim versus non-victim status in a planned manner, bullying victimization can be regarded as a social intervention with specific outcomes; some students undergo bullying victimization at some point in their school life. This will be the major focus of our review.

We propose, however, to also examine whether bullying perpetration is a causal risk factor for later criminal and health outcomes. Although children choose

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to engage in this form of behaviour, it is interesting to include this group and make comparisons between bullies, victims and non-involved children.

Using the methodological quality scales for risk-factor research developed by Murray and colleagues (2009), studies meeting specific inclusion criteria (see below under ‘Methodology/Inclusion Criteria’) will be assessed for construct validity, statistical conclusion validity, and external validity. Unadjusted effect sizes will be calculated in addition to effect sizes after adjusting for specified risk factors. Where applicable, regression methods will be used to investigate independent predictors of effect sizes. For example, it seems plausible that effect sizes of bullying victimization during childhood versus later depression would vary depending on the length of follow-up period.

**Briefly describe and define the population**
The ‘intervention population’ = children who are bullied at school.
The ‘comparison population’ = children who are not bullied at school.

We also propose to examine whether bulling perpetration is a causal risk factor for later criminal and health outcomes. Making comparisons between bullies, victims and non-involved children on the topic would better advance knowledge. If, for example, it is found that bullying perpetration is a causal risk factor for delinquency and later criminality, then a strong argument can be made about bullying prevention being an indirect form of early crime prevention.

With regard to other demographics (e.g. gender, age, geographical location), an effort will be made to synthesize data from longitudinal studies taking place in any country, for both male and female students and for any school age group (from kindergarten through high school) as long as it is clearly stated that the study has data specifically on school bullying and not on peer aggression in general.

**Briefly describe and define the intervention**
In this review, bullying victimization (‘being bullied’) at school will be regarded as a social intervention—with possible unintended criminal and health outcomes later in life. Even though children are not allocated to victim versus non-victim status in a planned manner, bullying victimization can be regarded as a social intervention with specific outcomes; some students undergo bullying victimization at some point in their school life.

Subsequently, possible variations of the intervention will be taken into account for moderator analyses, such as different types of bullying victimization (indirect, physical, verbal etc), the length of victimization the individual has undergone, the age at which the individual received this intervention (mean age of bullying victimization at Time 1) and the like.

We propose to also examine whether bulling perpetration is a causal risk factor for later criminal and health outcomes. Although children choose to engage in this for or behaviour, it is interesting to include this comparison group and examine whether it is the bullies or the victims who score higher on later adverse outcomes based on various indexes of criminal and mental health.

**Outcomes: What are the intended effects of the intervention?**

The effect of bullying victimization and perpetration on adult life will be examined by taking into account two outcomes, internalizing and externalizing, with further subcategories. Internalizing outcomes later in life will include various measures such as: depression and anxiety (see relevant table below). Externalizing outcomes later in life will include various measures of delinquency and general offending such as shoplifting, arson, vandalism and criminal record (see relevant table below).
OBJECTIVES

Our objective is to conduct a systematic review of the topic and calculate standardized effect sizes with the final aim of:

a) Establishing whether there is indeed an association between bullying perpetration/victimization and criminal/health outcomes
b) Establishing where the strongest effect lies; guiding future bullying prevention initiatives (e.g. do victims suffer from low self-esteem compared to controls?)
c) Establishing the unique contribution of school bullying/victimization (i.e. after controlling for covariates) across-time (predictive efficacy)

Main questions to be addressed are:

1. To what extent does bullying victimization/perpetration predict later health problems and later offending?
2. What is the strength of each relationship (unadjusted effect sizes)?
3. Does the prediction hold up after controlling for important baseline risk factors (adjusted effect sizes)?
4. What covariates (e.g. length of follow-up period; mean age of victims of bullying at Time 1; number or risk factors controlled for) are independently related to the adjusted effect sizes?
5. Is there anything known about developmental sequences linking bullying victimization/perpetration with psychosocial maladjustment and later offending?
6. Are results replicable between different countries and over times?

METHODOLOGY

What types of study-designs are to be included and excluded?

In our review, we will include longitudinal studies:
• using a matched-control design (e.g. based on propensity score matching) to establish whether associations between bullying victimization/perpetration and later adverse outcomes exist independently of possible confounds, such as the ones listed in the table entitled ‘List of critical covariates’ (see later).
• using statistical controls to establish whether associations between bullying victimization/perpetration and later adverse outcomes exist after controlling for possible confounds such as the ones listed in the table entitled ‘List of critical covariates’ (see later).

Inclusion criteria:
Published and unpublished reports will be included if the following inclusion criteria are met:
• The report has quantitative data that allow us to calculate effect sizes.
• A clear measurement of bullying victimization is stated in the report.
• The report is dealing with school bullying only (not school aggression/peer victimization in general).
• The data are longitudinal prospective, or longitudinal retrospective.
• Study participants are be school-aged children, with the exception of retrospective studies. Specifically, reports in which the study participants are adults and in which a retrospective measure of school bullying perpetration/victimization is related to outcome measures of interest (e.g. current depression, anxiety, general offending etc) are includable.
• Published and Unpublished reports of the literature. Please note that we have already collected original unpublished data (specific to the aims of our review) from the Principal Investigators of 25 longitudinal studies:

**Specific Data Addressing the Aims of our Review:**
1. Averdijk et al. 2010 [z-proso]
3. Bender and Losel. 2010 [Erlangen-Nuremberg Study on School Bullying]
5. Capaldi et al. 2010 [Oregon Youth Study]
7. Farrington. 2010 [Cambridge Study in Delinquent Development]
8. Fonseca. 2010; Young Cohort [Coimbra Longitudinal Study]
9. Fonseca. 2010; Intermediate Cohort [Coimbra Longitudinal Study]
10. Gibb et al. 2010 [Christchurch Health and Development Study]
11. Hemphill et al. 2010 [International Youth Development Study]
12. Henry et al. 2010; Young Cohort [Metropolitan Area Child Study]
13. Henry et al. 2010; Older Cohort [Metropolitan Area Child Study]
14. Hill et al. 2010 [Seattle Social Development Study]
15. Jiang et al. 2010 [SNAP Under 12 Outreach Project]
17. Kimber et al. 2010
18. Loeber. 2010 [Pittsburgh Youth Study]
19. McGee et al. 2010 [Mater-University of Queensland Study of Pregnancy]
20. Moffit et al. 2010 [Dunedin Longitudinal Study]
22. Olweus. 2010 [Swedish Community Samples]
23. Ozdemir and Stattin. 2010 [Seven Schools Longitudinal Study]
24. Renda et al. 2010 [Australian Temperament Project]
25. Salmivalli. 2010 [KiVa Longitudinal Intervention Study]

• Language of the report: any language.
• Outcome measures of interest will include the following:

<table>
<thead>
<tr>
<th>INTERNALIZING</th>
<th>EXTERNALIZING</th>
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<tbody>
<tr>
<td>1. Psychosis/psychiatric referral</td>
<td>Delinquency and General offending such as, to give some examples: * shoplifting, arson, criminal record, theft, vandalism.</td>
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<td>2. Somatic complaints</td>
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<td>3. Neuroticism/neurosis</td>
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<td>4. Depression</td>
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<td>5. Anxiety</td>
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<td>6. Self-injurious behaviour (e.g. Suicidal ideation/ Suicidal attempt)</td>
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**Exclusion criteria:**
Studies on this topic will be excluded if:
• The character of the data is cross-sectional
• The character of the data does not allow the calculation of an effect size (e.g. qualitative data based on interviews)
• Bullying victimization/perpetration is a sub-scale of a peer victimization/aggression scale.

**Your method of synthesis:**
Comprehensive Meta-Analysis Software will be used to synthesize data and for further analyses (e.g. meta-regression and publication bias analysis). Given the character of the review, we anticipate a wide range of effect sizes being reported
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(standardized regression coefficients, correlation coefficients, risk ratios, cohens's d), but in the final report all results will be converted into ORs and partial ORs.

The review will be conducted in two stages. The first stage will be a review of evidence on the strength of association between bullying victimization/perpetration at school and later adverse criminal/health outcomes. For this stage, three criteria will be set for inclusion of studies in the review:

- Intervention/Control Group: The study must include children who were bullied and children who were not bullied.
- Measure of outcome: The study must use a consistent measure of the outcome. The same measure should be used for bullied children, perpetrators and controls.
- Numeric information: Effect sizes must be reported, or enough numerical information to calculate effect sizes (and the variance of effect sizes).

Using the methodological quality scales for risk-factor research developed by Murray and colleagues (2009), studies meeting specific inclusion criteria will be assessed for construct validity, statistical conclusion validity, and external validity. Where applicable, regression methods will be used to investigate independent predictors of effect sizes. For example, it seems plausible that effect sizes of bullying victimization during childhood versus depression in adult life would vary depending on the length of follow-up period.

The second stage of the review will assess the evidence on whether bullying victimization/perpetration might cause adverse criminal and health outcomes in adult life. Further criteria will be used to select studies from the first stage of the review for inclusion in the second stage, following the Cambridge Quality Checklists of Murray and colleagues (2009) on drawing conclusions about causes from systematic reviews of risk factors. For obvious reasons, we expect that no experimental studies will be found on the effects of bullying victimization on children. In order to summarize what is known about the causal effects of bullying victimization on health/criminal outcomes in adult life, relevant quasi-experimental longitudinal research will be synthesized. Criteria for selecting research for this stage of the review will include:

- Studies using a matched-control design (e.g. based on propensity score matching) to establish whether associations between bullying victimization and later adverse outcomes exist independently of possible confounds, such as the ones listed in the table below.

- Studies using statistical controls to establish whether associations between bullying victimization and later adverse outcomes exist after controlling for possible confounds such as the ones listed in the table below.

**List of critical covariates**

<table>
<thead>
<tr>
<th><em>Child covariates</em></th>
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<tr>
<td>Impulsivity, attention deficits, IQ, school attainment</td>
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<th><em>Parent covariates</em></th>
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<tr>
<td>Parental antisocial behaviour/ criminality, parental age, parental education, parental mental health, parental substance abuse</td>
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<th><em>Parenting covariates</em></th>
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<td>Low parental supervision, harsh parental discipline, abuse of child, neglect of child, parent-child conflict, inter-parental conflict</td>
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<th><em>Family covariates</em></th>
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<td>Family size, socio-economic status, family income</td>
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<th><em>Wider environmental covariates</em></th>
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<td>Peer delinquency, neighbourhood deprivation, neighbourhood crime, school crime</td>
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In order to avoid publication bias as much as possible, thorough searches of the literature will be conducted. We have already obtained original unpublished data on the topic from the principal investigators of 25 longitudinal studies. We further suggest searching the volumes of the following journals and conducting the same searches in the following databases:

**Journals:**
- Archives of Pediatrics and Adolescent Medicine
- Aggression and Violent Behavior
- Aggressive Behavior
- American Journal of Psychiatry
- Australian Journal of Education
- Australian Journal of Educational and Developmental Psychology
- British Journal of Clinical Psychology
- British Journal of Developmental Psychology
- British Journal of Educational Psychology
- British Journal of Psychiatry
- BMJ
- Canadian Journal of School Psychology
- Child Abuse and Neglect
- Child Development
- Child Psychiatry and Human Development
- Clinical Psychology Review
- Criminal Justice and Behavior
- Crisis-The journal of Crisis Intervention and Suicide Prevention
- Developmental Psychology
- Development and Psychopathology
- Deviant Behavior
- Educational Psychology
- Educational Psychology in Practice
- Educational Psychology Review
- Educational Research
- European Journal of Public Health
- Health Education Journal
- Health Promotion International
- Health Education Research
- Injury Prevention
- International Journal of Behavioral Development
- International Journal of Behavioral Medicine
- International Journal on Violence and Schools
- Intervention in School and Clinic
- Japanese Journal of Educational Psychology
- Journal of Adolescent Health
- JAMA
- Journal of Behavioral Medicine
Journal of Child Psychology and Psychiatry
Journal of Educational Psychology
Journal of Emotional Abuse
Journal of Experimental Criminology
Journal of Interpersonal Violence
Journal of Pediatric Psychology
Journal of Psychosomatic Research
Journal of School Health
Journal of School Violence
Journal of Youth and Adolescence
Justice Quarterly
Pastoral Care in Education
Psychological Medicine
Psychology, Crime and Law
Psychology Health and Medicine
Psychology in the Schools
Scandinavian Journal of Psychology
School Psychology International
School Psychology Review
Studies in Educational Evaluation
Swiss Journal of Psychology
Trauma, Violence and Abuse
Victims and Offenders
Violence and Victims
Youth and Society

List of Databases

- Australian Criminology Database (CINCH)
- Australian Education Index
- British Education Index
- Cochrane Controlled Trials Register
- C2-SPECTR
- Criminal Justice Abstracts
- Database of Abstracts of Reviews of Effectiveness (DARE)
- Dissertation Abstracts
- Educational Resources Information Clearinghouse (ERIC)
- Ethos-Beta
- EMBASE
- Google Scholar
- Index to Theses Database
- MEDLINE
- National Criminal Justice Reference Service (NCJRS)
- PsychInfo/Psychlit
- Sociological Abstracts
- Social Sciences Citation Index (SSCI)
Possible keywords for searching the literature include:

bullying/ bullied AND psychosomatic/ health outcomes/ suicidal ideation/eating disorders/ psychiatric symptoms/ neuroticism/ psychosocial/ physical health/ mental health/ self-harm/ delinquency/self-injurious/criminality/psychosis/psychometric/trauma/disorders/ clinicians/interns

**SOURCES OF SUPPORT**

**Internal funding:** None

**External funding:** None as yet, but it is expected that the SNCCP will fund a report on the effects of victimization on anxiety and depression; and of bullying perpetration on delinquency/general offending.

**DECLARATIONS OF INTEREST**

There is no potential conflict of interest.

**REQUEST SUPPORT**

Do you need support in any of these areas (methodology, statistics, systematic searches, field expertise, review manager etc?)

We do not envision needing any assistance at this time. We have benefited very much from David Wilson's advice.

**AUTHOR(S) REVIEW TEAM**

Include the complete name and address of reviewer(s) (can be changed later). This is the review team -- list the full names, affiliation and contact details of author’s to be cited on the final publication.

**Lead reviewer:**

The lead author is the person who develops and co-ordinates the review team, discusses and assigns roles for individual members of the review team, liaises with the editorial base and takes responsibility for the on-going updates of the review

Name: Dr. Maria M. Ttofi
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**Co-author(s):** (There should be at least one co-author)
Name: Prof. David P. Farrington
Title: Professor of Psychological Criminology
Affiliation: Institute of Criminology, University of Cambridge
ROLES AND RESPONSIBILITIES

Please give brief description of content and methodological expertise within the review team. The recommended optimal review team composition includes at least one person on the review team who has content expertise, at least one person who has methodological expertise and at least one person who has statistical expertise. It is also recommended to have one person with information retrieval expertise.

Who is responsible for the below areas? Please list their names:

- Content: Rolf Loeber, David Farrington, Friedrich Losel and Maria Ttofi
- Systematic review methods: David Farrington, Friedrich Losel and Maria Ttofi
- Statistical analysis: David Farrington, Friedrich Losel and Maria Ttofi
- Information retrieval: David Farrington, Friedrich Losel, Rolf Loeber and Maria Ttofi

PRELIMINARY TIMEFRAME

Approximate date for submission of Draft Protocol (please note this should be no longer than six months after title approval. If the protocol is not submitted by then, the review area may be opened up for other reviewers):

We would aim to submit a draft protocol within six months.

Submit the Title proposal directly to the relevant Coordinating Group’s Managing editor (see our website for name/address) or to <info@c2admin.org>