

# **A systematic review of the national and international evidence on the effectiveness of interventions with violent offenders**

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## Key Implications

A systematic review is a scientifically rigorous form of literature review which uses robust and replicable methods for locating, appraising and synthesising evidence from prior studies. This systematic review identified and obtained available evidence from previous evaluations which assessed the effectiveness of interventions with violent offenders. The review was commissioned to provide a comprehensive overview of the available evidence to inform policy on the commissioning of prison and probation services and was not designed specifically to evaluate National Offender Management Service (NOMS) or Her Majesty's Prison Service (HMPS) programmes. It therefore captured evaluations of a broad range of interventions and programmes run in a number of different countries.

- When combining results from the obtained studies the review indicated that, overall, interventions with violent offenders were successful at reducing general and violent re-offending.
- The review identified elements of programmes and interventions (such as the content of the intervention and the delivery of the intervention) which were associated with a reduction in re-offending.
- As NOMS and HMPS currently provide interventions for violent offenders which incorporate elements identified as effective, this research indicates that the programmes and policies used by NOMS and HMPS are in line with the current evidence base.
- A relatively small number of high quality studies were identified. This limits the generalisability of the findings and suggests that more high quality evaluations (such as randomised control trials) of interventions for violent offenders need to be conducted to establish what works best and for whom.

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# Executive summary

## Background

- A systematic review assessing the effectiveness of interventions with adult male violent offenders was conducted by Cambridge University.

## Aims of the Review

- 1) To assess the evidence on the effectiveness of interventions with adult male violent offenders;
- 2) to identify the potential mediators and moderators of the relationship identified in 1); and
- 3) to make recommendations about future research.

## Methodological approach

- The systematic review was conducted by Cambridge University researchers between January 2006 and June 2006. The researchers searched 22 electronic databases, two research registers, reference lists of relevant articles, hand searched two relevant journals, conducted citation searches and contacted experts in the area. The search covered research conducted in the UK and internationally. Eleven relevant research reports, which were classified as Level 3 or above on the Scientific Methods Scale adapted for Reconviction Studies<sup>1</sup>, obtained, all of which are in the public domain.
- Domestic violence, sexual offending and offending by persons with a personality or mental disorder were treated as discrete groups, distinct from general violent offending, and therefore excluded.

## Key findings and implications

- Analysis of these research reports suggested that interventions with violent offenders were effective both at reducing general and violent re-offending, with a difference in percentage reconvicted of about eight to eleven per cent for general re-offending measures and seven to eight per cent for violent re-offending measures.
- Violent offenders had extensive criminal histories (e.g. Farrington, 1998), were more likely to re-offend than general offenders (Loza et al., 2004), and tended to be more difficult to engage in treatment (Heseltine et al., 2006). In light of this challenging backdrop the mean effect sizes of the interventions included in this review are very promising.
- Further analysis suggested that the effectiveness of interventions varied considerably depending on the features of the study, the content of the intervention, the delivery of the intervention and the methodology of the study. For example, there was some evidence to suggest that those interventions of greater overall duration were more effective, and that the greater duration per session was associated with greater effect for both general and violent re-offending. This relationship between treatment intensity and reduction in re-offending has been identified in a number of other studies and reviews (Chitty, 2005). However, what is not clear, and what could not be assessed in the current review, is what

1 Friendship, C., Street, R., Cann, J. and Harper, G. (2005), *Introduction: the policy context and assessing the evidence*, in Harper, G. & Chitty, C. (Eds) (2005), *Home Office Research Study No. 291: The impact of corrections on re-offending: a review of 'what works'*, London: Home Office

the optimal dosage of intervention might be. Future research is needed to examine the dose-response relationship to determine that point at which additional treatment duration no longer considerably adds to reductions in re-offending

- In addition, the evidence suggested that interventions which addressed cognitive skills, anger control, used role play and relapse prevention and had offenders complete homework were more effective than those interventions that did not. Interventions which employed two or three of these successful features had statistically significantly higher effects for reducing general re-offending.
- In contrast to possible beneficial influences of certain features of interventions, the absence of certain intervention features was found to be independently associated with higher effect sizes. Not providing basic education was associated with larger effects. This may be because the time allocated to this basic education reduced the time the offender was exposed to the more effective features of the interventions. Similarly, interventions which did not use empathy training had higher effect sizes.
- This analysis indicates the programmes and policies employed by NOMS and HMPS in this area are in line with the current evidence base.
- All included studies met a minimum standard of good methodological quality; however, the studies of highest methodological quality were associated with a smaller reduction in general re-offending and no significant reduction in violent re-offending. As evaluations of a variety of types of intervention were included in this review it is difficult to ascertain whether this is due to the effectiveness of the interventions or the quality of the research methods used to evaluate them.
- More high-quality evaluations of interventions for violent offenders (e.g. randomised control trials) with more detailed reporting need to be conducted to generate stronger evidence of which interventions work with which types of violent offenders and which do not.

## Limitations

- Despite the extensive searching, only 11 reports could be obtained due to the paucity of quality evaluation work on interventions with violent offenders. This limits how far the findings can be generalised.
- The analysis on these studies was limited by the detail reported in the 11 documents. Analysing frequency of re-offending or time to re-offence might be more sensitive to changes in re-offending patterns, but this was not possible.

# 1 Context

## Background information

There have been a number of prior reviews of the effectiveness of interventions with offenders in general. For example, a systematic review of 26 evaluations of the 'Reasoning and Rehabilitation' programme by Tong and Farrington (2006) concluded that it was effective in reducing reconvictions, with a small to moderate standardised mean effect size ( $d$ ) of .08. Furthermore, in their extensive review, Wilson, Allen and MacKenzie (2004) concluded that Reasoning and Rehabilitation, moral reconnection therapy and other cognitive-behavioural programmes were all effective according to 'higher quality' evaluations with moderate to large effects ( $d$  values of .16, .33 and .49 respectively). A recent Cambridge University Press book by Doris MacKenzie (2006) expanded on these promising results.

There seems, however, to be a conspicuous absence of studies and reviews which deal with treatment effectiveness for violent offenders specifically. (There are reviews of effects of interventions on violent re-offending [e.g. Dowden & Andrews, 2000]). This absence is surprising as violent crime is generally considered more serious than other forms of criminal behaviour, because of the harm to the victim of the violence as well as the greater costs incurred by society (Dowden et al., 1999). Violent offenders comprise a relatively small proportion of the total number of offenders, but research has found that this group commits a disproportionate amount of both violent and non-violent crime (e.g. Wolfgang et al., 1972). In many ways, violent offenders are similar to frequent offenders (Farrington, 1991). A small fraction of the population commits a large fraction of all violent offences. For example, in two large prospective longitudinal studies in the US, 14–15 per cent of the samples committed 75–82 per cent of all violent offences (Thornberry et al., 1995).

There are several programmes specifically for violent offenders which are delivered in prisons and probation areas in the UK. The Controlling Anger and Learning to Manage it (CALM) programme is delivered in custody and the community. The Aggression Replacement Training (ART) programme is delivered only in the community. The Cognitive Self Change Programme is the only programme which addresses instrumental violence and is a lengthy and intensive intervention for very serious violent offenders. It is delivered in prisons and has a follow-on component for delivery in the community. Currently, the National Offender Management Service (NOMS) and Her Majesty's Prison Service (HMPS) are working together to research and scope ways forward to develop an intervention to address instrumental violence.

## The current investigation

This investigation involved a comprehensive systematic review and meta-analysis of empirical studies which evaluated the effectiveness of interventions with adult male violent offenders. Unlike narrative reviews of research, systematic reviews use rigorous methods for locating, appraising, and synthesising evidence from prior studies. Systematic reviews have explicit objectives, explicit criteria for including and excluding studies, and they are reported with the same level of detail that characterises high quality reports of original research (e.g. Farrington & Petrosino, 2000). Meta-analysis (a form of survey research based on research reports rather than subjects) was also used to quantify the results of the systematic review. An effect size measure was derived in each study that was included in the systematic review and these effect sizes were summarised to provide a critical assessment of the impact of interventions with violent offenders.

## Objectives of the study

This systematic review had the following objectives.

1. To characterise (and as far as possible quantify) the evidence to date on the effects of interventions with adult male violent offenders. This included assessments of the impact on various types of re-offending, but also the potential impact on the frequency and seriousness of re-offending as well as the time to re-offending where available.
2. To characterise (and as far as possible quantify) the potential mediators and moderators of the relationships identified in 1 above. For example, the results might be influenced by the type of intervention, the fidelity of implementation of the intervention, the setting where the intervention took place, or the types of violent offenders.
3. In light of what has been learned in past evaluations, and their limitations, to make recommendations about what future evaluation research is needed to advance knowledge about the effectiveness of interventions with violent offenders.

## 2 Approach

### Inclusion criteria

Below is a list of the criteria that were used for including a study in the current review.

1. The study investigated the effects of an intervention or treatment broadly defined.
2. The intervention was applied to a sample of adult males<sup>2</sup> who were violent offenders, broadly defined. For the purposes of this review a violent offender was defined as a person identified as violent either by official contacts with the criminal justice system or through self-reports. However, studies which evaluate interventions for domestic violence, sexual offending, or of persons with a personality or mental disorder were considered to be qualitatively different to other types of violent offending and thus were excluded.
3. The study measured at least one quantitative offending outcome variable. In addition, it must have reported results on at least one such variable in a form that, at a minimum, allowed the direction of the effect to be determined (whether the outcome was more favourable for the treatment or control/comparison group). Information about the frequency and seriousness of the re-offending was also coded if available. If an offending outcome was measured but the reported results fell short of this standard, the study was still included if the required results were obtained from the author or other sources. At a minimum, information about the proportion of those re-offending amongst those who were and were not subject to the intervention was required. This allowed for the calculation of an effect size (and its variance) so that it could be included in a meta-analysis.
4. The study design involved a comparison that contrasted one or more interventions with one or more comparable control conditions. Control conditions could be 'no treatment', 'treatment as usual', 'placebo treatment' etc. Comparability between treatment and control conditions could be established by random assignment, matching, risk scores or prior measures of offending. Random assignment designs that met the above conditions were always eligible under this criterion. One-group pre-test-post-test studies were never eligible (studies in which the effects of treatment were examined by comparing measures before the treatment with measures taken after treatment on a single sample). Non-equivalent comparison group designs might be eligible (studies in which treatment and control/comparison groups were compared even though the research participants were not randomly assigned to those groups). To be eligible, however, such comparisons must have had either: (a) matching of the treatment and control/comparison groups prior to treatment on a recognised risk variable for offending such as prior offending history or on a risk of reconviction score; (b) a pre-intervention measure (pre-test) of at least one offending outcome variable on which the treatment and control/comparison groups can be compared; or (c) some other demonstration of the comparability of treatment and control/comparison groups. These criteria are equivalent to including studies at Level 3 to Level 5 of the modified Scientific Methods Scale (Friendship et al., 2005).
5. The study included at least 25 persons per condition initially, or 50 persons in total. Smaller studies are likely to have low internal and external validity and insufficient statistical power and are therefore less likely to be less robust. A minimum initial sample size of 100, as in the review of randomised experiments by Farrington & Welsh (2005), would have improved the robustness of included studies and, therefore, the strength of the findings from this review. However, this would have led to the

2 Adult was defined as age 18 or over. If an individual was present in an adult prison or community-based treatment programme they were presumed to meet this criteria.

inclusion of very few studies and reduced the practical benefits of conducting a comprehensive search. Also, publication bias is more likely to be a problem with smaller studies (statistically significant findings are published whereas non-significant findings are not) and attrition rates may be high in post-intervention interviews.

6. The study was published between 1975 and the present day.

## Search strategy<sup>3</sup>

The search for relevant articles involved a number of strategies. The electronic database searches (e.g. Criminal Justice Abstracts, PsychLit) resulted in the identification of 1,955 studies that were potentially relevant. Of these, it was possible to exclude 1,872 on the basis of the title or after reviewing the abstract and 81 articles were obtained and reviewed. Eventually, 11 evaluations were included in the review. The references to the papers that were obtained and reviewed and the reasons for exclusion are detailed in the table of excluded studies (Table 2.2) in the Technical Appendix. In addition to searching these electronic databases, a number of other sources of information were searched. These included searches of research registers (e.g. the Social, Psychological, Educational and Criminological Register), hand searches of relevant journals (e.g. Criminal Justice and Behavior, International Journal of Offender Therapy and Comparative Criminology), searches of the references of relevant or potentially relevant articles (e.g. Dowden & Andrews, 2000) and searches of studies that cited relevant or potentially relevant articles. A number of key researchers in the area were contacted and asked for assistance in identifying potentially relevant articles. Eleven evaluations were included altogether.

A considerable issue in carrying out this systematic review was the difficulty of locating evaluation research focusing specifically on violent offenders. Most research is conducted with mixed samples of serious and less serious offenders, which are often combined for the purposes of analysis. In their attempts to examine the efficacy of interventions with serious violent juvenile delinquents, Lipsey & Wilson (1998) found it necessary to alter their inclusion criteria from interventions with serious or violent juveniles to interventions with those 'reported to be adjudicated delinquents' in order to include enough studies for analysis.

## Description of included studies

Below are the references to the included studies, a list of key features of the intervention that the study used (see 'Influence of Study Features' section below), and a narrative description of the study. The statistical significance of the results is also presented.

Statistical significance is one measure of the level of confidence that one can have in the results of a study. This is usually set at  $p < .05$ , which is equivalent to a 95 per cent certainty that the results are not due to chance. Results lower than this level (e.g.  $p < .04$ ) suggest greater confidence, and results higher than this (e.g.  $p < .06$ ) are usually considered not statistically significant. However, statistical significance should not be treated as the only measure of the meaningfulness of a result. This is because statistical significance can reflect a large effect in a small sample and a small effect in a large sample. So a very effective intervention with a small number of violent offenders could be statistically significant, but a much less effective intervention with a large number of violent offenders could also be statistically significant. This is why it is important to consider effect sizes (which take in consideration the sample size; see 'calculating effect sizes' below and Technical Appendix), and statistical significance when assessing the meaningfulness of studies.<sup>4</sup>

<sup>3</sup> A full description of the search strategy can be found in the Technical Appendix, which is available on request.

<sup>4</sup> This is also why meta-analysis is an important tool for interpretation. Meta-analysis is based on summary effect sizes, and these take account of sample sizes in each study.

The key features of the intervention, delivery and methodology of the studies are summarised in Tables 2.3 to 2.7 in the Technical Appendix.

**Study ID 1**  
 Hughes, G. V. (1993). Anger management program outcomes. *Forum on Corrections Research*, 5, 5 – 9.

- Anger control
- Cognitive skills
- Role-play
- Study quality = low
- Delivered by rehabilitation professionals
- Delivered in prison
- Kingston, Canada

Hughes (1993)<sup>5</sup> reported on a small-scale evaluation of an anger management programme with a group of violent adult males incarcerated in a Canadian Federal Prison. The programme consisted of 12 weekly two-hour sessions in which a combination of educational and experiential material was used to address three basic issues. These were:

- Understanding the concept of anger including why and when to control anger. Techniques included arousal awareness, anger recognition and basic moral reasoning;
- reducing anger cognitively through the use of coping self-statements and problem-solving exercises and the basic tenets of rational-emotive therapy; and
- Modifying and improving behavioural coping skills through relaxation training, assertiveness training and role-playing different behavioural responses. The intervention was administered in a group setting by a clinical psychologist, a drama teacher from a local university and drama student.

A total of 52 offenders attended at least six group sessions (half of the programme) and were deemed to have received treatment. The comparison group comprised 19 offenders who were referred to the programme but decided not to participate because of work priorities, imminent transfer to another institution or lack of interest. The comparability of the treatment and comparison groups is not clear in this report, but no statistically significant differences existed between these two groups on any of the initial psychometric assessments (Beck Depression Inventory, Over-Controlled Hostility Scale, IPAT Anxiety Index and questionnaires relating to the physical symptoms of anger and anger-provoking situations). The results suggested that 56 per cent of the 42 treated offenders who were released were recidivists compared to 69 per cent of the 19 untreated comparisons. This result was not statistically significant (chi square = 0.3, n.s.) which means that the differences between the treated and untreated offenders could be due to chance. Further analysis suggested that 40 per cent of the treated men and 66 per cent of the untreated men had violent reconvictions during the follow-up period (chi square = 3.0, n.s.). It is possible that with larger numbers in the sample, any differences between the treated and untreated groups would become statistically significant.

5 The quality of this and other studies was measured using both the Modified Score on the Maryland Scale (SMS; Friendship et al., 2005) and a Quality Assessment Tool provided by the Ministry of Justice. Greater details about these measures can be seen on page 20 and also Table 2.6 of the Technical Appendix. The quality of the study is summarised here as Low (SMS = 3), Medium (SMS = 4) and High (SMS = 5).

**Study ID 2**

Henning, K. R. & Frueh, B. C. (1996). Cognitive-behavioral treatment of incarcerated offenders: An evaluation of the Vermont Department of Corrections' cognitive self-change program. *Criminal Justice and Behavior*, 22, 523 – 541.

- Cognitive skills
- Role-play
- Relapse prevention
- Offender homework
- Study quality = medium
- Delivered by correctional officers
- Delivered in prison
- Vermont, United States

Henning and Frueh (1996) undertook an evaluation of the Vermont Department of Corrections' cognitive self-change (CSC) programme in a medium security prison. This evaluation was based on the same data as that of Bush (1995), but was reported in greater detail in the later report. Violent offenders who volunteered for this programme and were accepted were housed in a separate unit (housing approximately 25 offenders) within a larger prison. The programme began with an eight-week orientation phase in which offenders were introduced to the theory behind the treatment, taught to recognise the most common cognitive distortions associated with criminal behaviour and acquired the techniques necessary for cognitive-behavioural self-monitoring. Once the initial phase was completed, the participants were assigned to a treatment group, consisting of five to ten offenders and several members of staff which met three to five times per week.

During each session a single offender was chosen to present a 'thinking report' which typically documented a prior incident of anti-social behaviour. This report entailed an objective description of the incident followed by a list of all of the thoughts and feelings that he had experienced before, during and after the event. The group would then work with the offender to identify the cognitive distortions that may have contributed to the anti-social behaviour. Role playing was occasionally utilised to assist the offender to develop a better understanding of the cognitions and emotions that led to the anti-social behaviour. Treatment length was largely dependent on the time remaining in an offender's sentence (M=9.8 months), and most participants left the programme when they were transferred to a minimum security prison in preparation for their release.

In order to evaluate this programme, the 55 offenders who took part in the CSC programme were compared to 141 offenders who did not. The CSC treatment group and comparison group were similar on age at first offence, number of prior felonies, percentage of maximum sentence served, age released to the community and percentage with substance abuse problems. However, the CSC treatment group had served statistically significantly longer for their current offence, were more likely to have a history of violent offending and were less likely to have a history of non-violent offending, which reduces the confidence one can have in the similarities between the groups. There was also substantial attrition in this study. This was appropriately accounted for in the analysis of the impact of the programme on re-offending using survival analysis, but it was only possible to collect violent reconviction information for 28 of the CSC treatment offenders and 96 of the 141 in the comparison group two years after release. The results suggest that those who had taken part in the programme were statistically significantly less likely to recidivate (50%) compared to those who did not take part in the treatment (70.8%; chi squared = 4.2,  $p < .05$ ). This significant difference held up after statistically controlling for the pre-existing differences between the CSC treatment and comparison groups.

**Study ID 3**

Motiuk, L., Smiley, R. & Blanchette, K. (1996). Intensive programming for violent offenders: A comparative investigation. *Forum on Corrections Research*, 8, 10 – 12.

- Anger control
- Cognitive skills
- Basic education
- Empathy training
- Study quality = medium
- Delivered by rehabilitation professionals
- Delivered in prison
- Vancouver, Canada

In another study undertaken in a Canadian Federal Prison, Motiuk et al. (1996) evaluated an intensive programme for the treatment of male violent offenders. This specialised programme emphasised cognitive-behavioural and psychosocial dynamic approaches to changing the anti-social behaviour of these offenders. Groups of 12 to 16 offenders were co-led by at least two professional staff members for eight months of intensive treatment. In this evaluation the reconvictions of 60 offenders who had completed the programme were compared to a comparison group (n=60) who had not, matched on release date, age at release, sentence length and a risk of reconviction score (the Statistical Information on Recidivism Scale Revised). Two years after release 40 per cent of the treated individuals had been reconvicted compared to 35 per cent of the comparison group. Also, 18 per cent of the treatment group had reconvictions for violence compared to 15 per cent of the comparison group. Neither of these differences was statistically significant.

**Study ID 4**

Berry, S. (1998). *The Montgomery House Violence Prevention Programme: An Evaluation*. Wellington, NZ: Department of Corrections Psychological Services.

- Anger control
- Cognitive skills
- Basic education
- Role-play
- Relapse prevention
- Offender homework
- Study quality = medium
- Delivered by rehabilitation professionals
- Delivered in secure community facility
- Hamilton, New Zealand

In New Zealand, Berry (1998) undertook an evaluation of a residential treatment programme for mainly Maori aboriginal men who repetitively committed serious violent offences. The goal of the treatment was to reduce the frequency and seriousness of the men’s offences through a module-based programme including instruction in practical skills (e.g. social education, health) and cognitive-skills training (e.g. role-play, self-disclosure, skills practice). All modules were delivered in a group setting with approximately ten offenders. The treatment group (n=62; only those who completed the programme) and the comparison group were matched on a number of features including age at first violent offence, total number of offences (both violent and non-violent), time spent in prison, seriousness of previous offending, and estimated probability of re-offending.

The results showed that 16 of the 62 (25%) programme completers committed a violent offence in the 16 month follow-up compared to 27 of the 64 in the comparison group (42%). This difference was statistically significant (chi squared = 4.5, p<.05). There was also evidence to suggest that those who had received treatment had a lower frequency of violent offences and a longer time to reconviction than those in the comparison group during the follow-up period. Unfortunately, it was not possible to assess the significance of these two findings because the standard deviations of the number of offences and time to reconviction was not reported. It is also important to note that as the treatment group only included programme completers, it

may be argued that the difference between the two groups could be explained by the completers' motivation to change (regardless of participation in a programme).

### Study ID 5

Dowden, C. Blanchette, K. & Serin, R. (1999). Anger management programming for federal male inmates: An effective intervention. Research Report R-82. Ottawa: Correctional Service of Canada.

- Anger control
- Cognitive skills
- Role-play
- Relapse prevention
- Study quality = medium
- Delivered by correctional officers
- Delivered in prison
- Kingston, Canada

Dowden et al. (1999) investigated the effectiveness of an anger management programme for adult male violent offenders in a Canadian Federal Prison. This programme was a cognitive-behavioural intervention with particular emphasis on skills-building and staff involvement. The primary goal of the programme was to reduce aggressive behaviour by developing emotion management skills. The training was provided in a group setting (4–10 participants) in 25 two-hour sessions two to five times a week. The effectiveness of this programme was evaluated by comparing 110 offenders who had received the anger management training to a retrospectively chosen sample of 110 inmates (matched on age, index offence and risk of reconviction score) who had not received the training. The results showed that almost 30 per cent of the comparison group had non-violently recidivated within the three-year follow-up period compared to only ten per cent of the treatment group. This difference was statistically significant (chi squared = 11.6,  $p < .005$ ). There was evidence that the anger management programme also had a positive influence on reducing violent recidivism, but this was only the case when the analysis was restricted to those offenders classified as high-risk (chi square = 4.4,  $p < .05$ ).

### Study ID 6

Polaschek, D. L. L., Wilson, N. J., Townsend, M. R. & Daly, L. R. (2005). Cognitive-behavioral rehabilitation for high-risk violent offenders: An outcome evaluation of the violence prevention unit. *Journal of Interpersonal Violence*, 20, 1611 – 1627.

- Anger control
- Cognitive skills
- Basic education
- Role-play
- Empathy training
- Relapse prevention
- Offender homework
- Study quality = medium
- Delivered by rehabilitation professionals
- Delivered in prison
- Wellington, New Zealand

Polaschek et al. (2005) examined an intervention programme for imprisoned violent offenders in New Zealand. The programme was targeted at high-risk offenders and the content and delivery of the programme conformed to a cognitive-behavioural orientation. Programme components included identifying and presenting the offence chain, restructuring offence-supportive thinking, mood management, victim empathy, moral reasoning, problem solving, communication skills and relapse prevention planning. The programme was delivered by a professional to groups of ten men and treatment intensity was approximately 330 hours in total comprising four three-hour group meetings each week for 28 weeks.

In this study, the first 22 offenders who completed the programme were compared to a comparison group of 60 offenders derived from case files used in a previous study (Berry, 1998). Treatment and comparison groups were matched on ethnicity, age, offence history variables and a risk of reconviction score. Two years after release the results showed that those who had received treatment were statistically significantly less likely to recidivate violently (32%) compared to the comparison group (63%; chi squared = 5.3,  $p < .05$ ). Furthermore, the mean number of days to a violent re-offence was statistically significantly greater for the treatment group ( $M = 447$ ,  $sd = 314$ ) compared to the comparison group ( $M = 217$ ,  $sd = 199$ ;  $t = 3.21$ ,  $p < .05$ ). Results were found to be statistically significant due to the considerable difference in violent recidivism and mean time to violent re-offence between the treatment and comparison groups. However, it is important to note that due to the small number of treated individuals this group may not be representative of the total population eligible for this programme.

### Study ID 7

Boe, R., Belcourt, R., Ishak, K. & Bsilis, S. (1997). Follow-up of offenders from the Vancouver district violent offenders program. *Forum on Corrections Research*, 9, 3 – 10.

- Anger control
- Cognitive skills
- Basic education
- Empathy training
- Study Quality = low
- Offender homework
- Delivered by rehabilitation professionals
- Delivered in prison
- Vancouver, Canada

In 1996 the Vancouver District Violent Offender Unit, a pilot programme for managing violent offenders under supervision in the community, was evaluated by Boe, Belcourt, Ishak, and Bsilis (1997). The Violent Offender Unit provided intensive community supervision for persistently violent offenders and was based on the same treatment formula as that delivered by Motiuk et al (1996) above. Offenders were provided with intensive cognitive-behavioural treatment in groups of 10 – 16 co-led by two professional staff members for eight months. At least two sessions were provided each week. The programme was designed to assist offenders to deal with patterns related to their crime cycle. While learning about the behavioural, cognitive, interpersonal and affective components of violent offending, offenders focused on communication, addictions, thinking errors, human sexuality/relationships, anger management and empathy.

This evaluation compared 74 offenders who entered the programme over a two-year period to a matched, non-treated comparison group ( $n = 45$ ). The outcome measure of this study was revocations, suspensions and convictions during the six-month follow-up after completing the programme. The results showed that 11 of the 74 (15%) treated offenders had 'failed', compared to eight out of 45 untreated offenders (18%). This difference was not statistically significant (chi squared = 0.17, n.s.).

### Study ID 8

Watt, K., Shepherd, J. & Newcomb, R. (2006). Drunk and dangerous: A randomized controlled trial of alcohol brief intervention for violent offenders. (unpublished manuscript).

- Basic education
- Empathy training
- Study quality = high
- Delivered by rehabilitation professionals
- Delivered in the community
- Cardiff, Wales

Watt, Shepherd and Newcomb (2006) used a randomised controlled trial to evaluate a brief intervention for violent offenders who were sentenced at Cardiff Magistrates' Court. Offenders who were found guilty of a violent offence which was alcohol-related were recruited immediately after sentence. Participants were not considered eligible if they were found not guilty, had the charge dismissed, had the case transferred

to a Crown Court, received a custodial sentence, were too violent, had prior or concurrent sex offences or had cognitive or hearing impairments. If offenders were eligible and agreed to take part in the research they were administered a screening questionnaire and then randomly assigned to treatment (n=135) or control conditions (n=134). Offenders assigned to the treatment condition were immediately given the brief intervention, which was guided by a manual and based on the principles of motivational interviewing. Based on the FRAMES methodology (Feedback, Responsibility, Advice, Menu, Empathy, Self-efficacy; Miller and Rollnick, 1991), the intervention took approximately 15–20 minutes to administer and focused on a pamphlet that was designed specifically for the study, which was given to participants to take home.

Subsequent offending was examined by searching the Police National Computer (PNC) at three and 12 months after the intervention. PNC information could not be found for 15 of those in the treatment group and ten of those in the comparison group. Twelve months after the intervention 52.5 per cent of those in the intervention group had committed a new offence compared to 51.6 per cent of those in the comparison group (chi squared = 0.02, n.s.). The results also showed a statistically non-significant increase in re-offences for violence among those who were treated. Over 19 per cent of those in the treatment group committed a violent offence compared to 18 per cent in the comparison group (chi squared = 0.08, n.s.).

### Study ID 9

Hatcher, R. M., Palmer, E. J., McGuire, J., Hounsome, J. C., Bilby, C. A. L. & Hollin, C. (2006). Aggression replacement training with adult male offenders within community settings: A reconviction analysis. (unpublished manuscript).

- Anger control
- Cognitive skills
- Role-play
- Study quality = medium
- Delivered by correctional officers
- Delivered in the community
- England and Wales

Aggression Replacement Training has been used to reduce offending successfully among violent adolescents (e.g. Goldstein & Glick, 1987), and has recently been adapted for use with adult populations. ART aims to minimise the occurrence of aggressive acts by addressing three different domains. First, ART aims to address the general shortfall in personal, interpersonal and social-cognitive skills that characterises aggressive individuals. Second, ART also attempts to reduce impulsive behaviour and low-level anger. Third, it addresses immature, egocentric and concrete moral reasoning.

ART was used as an intervention with 53 violent adult males with a Community Rehabilitation Order in England (Hatcher et al., 2006). Fifty-three male offenders who had not taken part in ART, but had been convicted of a violent offence and subsequently received a community penalty formed the comparison group. The experimental and comparison groups were matched on age, number of previous convictions and a risk of reconviction score. In this evaluation, re-offending was assessed by searching the Offenders Index (OI) for the treatment and comparison groups. The results indicated that 51 per cent of the comparison group had been reconvicted compared to 39 per cent of the experimental group. This difference was not statistically significant (chi squared = 1.87, n.s.). There was little evidence of a dose-response relationship with this treatment. When the reconvictions of only those who had completed the treatment (n=15) were compared to their matched comparison group (n=15) the results were also statistically non-significant (20% compared to 33%, chi squared = 0.68, n.s.).

**Study ID 10**

Finn, M. A. & Muirhead-Steves, S. (2002). The effectiveness of electronic monitoring with violent male parolees. *Justice Quarterly*, 19, 293 – 312.

- Delivered by correctional officers
- Delivered in the community
- Study Quality = medium
- Atlanta, United States

Finn and Muirhead-Steves (2002) examined the effectiveness of using electronic monitoring (EM) as a supervision tool for violent male parolees in Georgia. The treatment group (n=128) comprised all male violent parolees who had been placed on EM in the fiscal year 1996 (July 1, 1995–June 30, 1996), and the comparison group (n=158) comprised a randomly selected group of violent male parolees who had been released in the previous fiscal year (July 1, 1994–June 30, 1995). The treatment and comparison groups were similar on race, level of education, mean age at release, reporting a drug or alcohol problem, average time served, average number of previous incarcerations and average number of felony convictions. Both groups were followed up for return to prison within three to four years after the completion of parole. In that time, 37 out of 158 (23.4%) of the experimental group were returned to prison compared to 30 out of 128 (23.4%) of the comparison group (chi squared = 0.00, n.s.). A logistic regression predicting return to prison, including EM as an independent variable, further suggested that EM did not statistically significantly reduce the likelihood of return to prison. The researchers also used survival analysis to examine the impact of EM on time to failure. Similar to the results with respect to return to prison, the survival analysis suggested that EM did not statistically significantly increase the time to failure when controlling for the background variables.

**Study ID 11**

Cortoni, F., Nunes, K. & Latendresse, M. (2006). An examination of the effectiveness of the violence prevention programme. Research Report R-178. Ottawa: Correctional Service of Canada.

- Anger control
- Cognitive skills
- Basic education
- Role-play
- Relapse prevention
- Study quality = medium
- Delivered by correctional officers
- Delivered in prison
- Kingston, Canada

The effectiveness of a specifically devised Canadian Violence Prevention Programme (VPP) was evaluated by Cortoni, Nunes & Latendresse (2006). The intervention phase of the VPP consists of ten modules presented over the course of 94 two-hour group sessions, at the rate of six sessions per week. The modules addressed such issues as violence awareness, anger control, problem solving, social attitudes, relationships, conflict resolution, positive lifestyles, self-control and violence prevention. After the intervention, there was a review of the participant's relapse prevention plan. Evaluation of the VPP involved comparing reconviction after release of 305 offenders who had participated in the programme (199 completers, 106 non-completers), and 266 offenders who had not received the VPP. The comparison group was selected based on propensity score matching and were similar to the treatment group on race, marital status, age and risk and needs scores. Interestingly, the treatment group showed statistically significantly lower levels of motivation for treatment at intake than the comparison group.

A comparison of offenders released, and therefore at risk of committing a new offence, suggested that the treatment group (a combined group of completers and non-completers) were statistically significantly less likely to be reconvicted compared to the comparison group (27.2% compared to 39.1%, chi square = 8.7,  $p < .01$ ). The treatment group was also statistically significantly less likely to be reconvicted for a

violent offence (14.1% compared to 21.8%, chi square = 6.1,  $p < .03$ ). However, when other factors that may have differed between the treatment and comparison individuals who were released (e.g. completion of other violence and non-violent programmes and risk score) were statistically controlled the results were less promising. Cox regressions showed that the offenders who started the VPP did not differ statistically significantly from the comparison group in the prevalence of reconvictions or violent reconvictions. Those who completed the programme were, however, statistically significantly less likely to be violently reconvicted than those in the comparison group.

### 3 Results

The results first describe the overall effectiveness of all of the identified interventions on the general re-offending and violent re-offending of violent offenders. Then the extent to which features of the studies (e.g. variation in the studies, variation in the content of interventions, variation in the delivery of interventions) might have influenced the results was investigated. Finally, using multivariate statistics, attempts were made to establish the most effective intervention strategies.

#### Impact on offending

Figure 1 shows the results of the meta-analysis based on the eleven studies which reported results on general re-offending (see the Technical Appendix for explanation). Effect sizes were converted to d-values for ease of exposition. The study which showed the greatest impact on offending was that by Dowden et al. (1999) with an effect size of  $d = .717$  ( $p < .0001$ ), and the study with the least impact was that by Motiuk et al. (1996) with an effect size of  $d = -.116$  (n.s.). Overall, two studies reported a statistically significant reduction in re-offending, seven studies reported a reduction in re-offending, but not to a statistically significant level, and two studies reported an increase in re-offending, but not to a statistically significant level.

Combining these effect sizes together showed that the weighted standardised mean effect size of the eleven studies ranged between  $d = .16$  and  $d = .21$  depending upon the model chosen (either fixed effects or random effects). Both models were statistically significant ( $p < .0001$  and  $p < .01$  respectively), suggesting that these interventions with violent offenders statistically significantly reduced general recidivism. There was evidence to suggest that there might be greater variation in the effect sizes than would be expected by sampling error alone.<sup>6</sup>

To aid in the interpretation of the effect size it is often useful to convert it to a difference in proportions.<sup>7</sup> Therefore, the eleven evaluations of interventions with violent offenders included in this analysis suggest that the programmes were followed by about a eight to eleven per cent reduction in re-offending for those who had received treatment compared to those who had not (e.g. from 50% reconvicted to 42-39% reconvicted).

#### Impact on violent offending

Many of the studies that met the inclusion criteria were evaluations of interventions that were specifically designed to address violent behaviour. Therefore, some interventions may have a differential impact on violent re-offending as opposed to re-offending generally. Eight of the eleven studies reported the impact of the intervention on violent re-offending.

Figure 2 shows the result of the meta-analysis based on the eight studies which reported the results of the impact of the intervention on violent re-offending. The study which showed the greatest impact on violent re-offending was that by Hughes (1993) with an effect size of  $d = .503$ , but this was not statistically significant, which might be due to the small numbers of participants. The study with the least impact was that by Motiuk et al. (1996) with an effect size of  $d = -.132$  (n.s.). Overall two studies reported a statistically significant reduction in violent re-offending, four studies reported a reduction in violent re-offending which was not statistically significant and two studies reported an increase in violent re-offending.

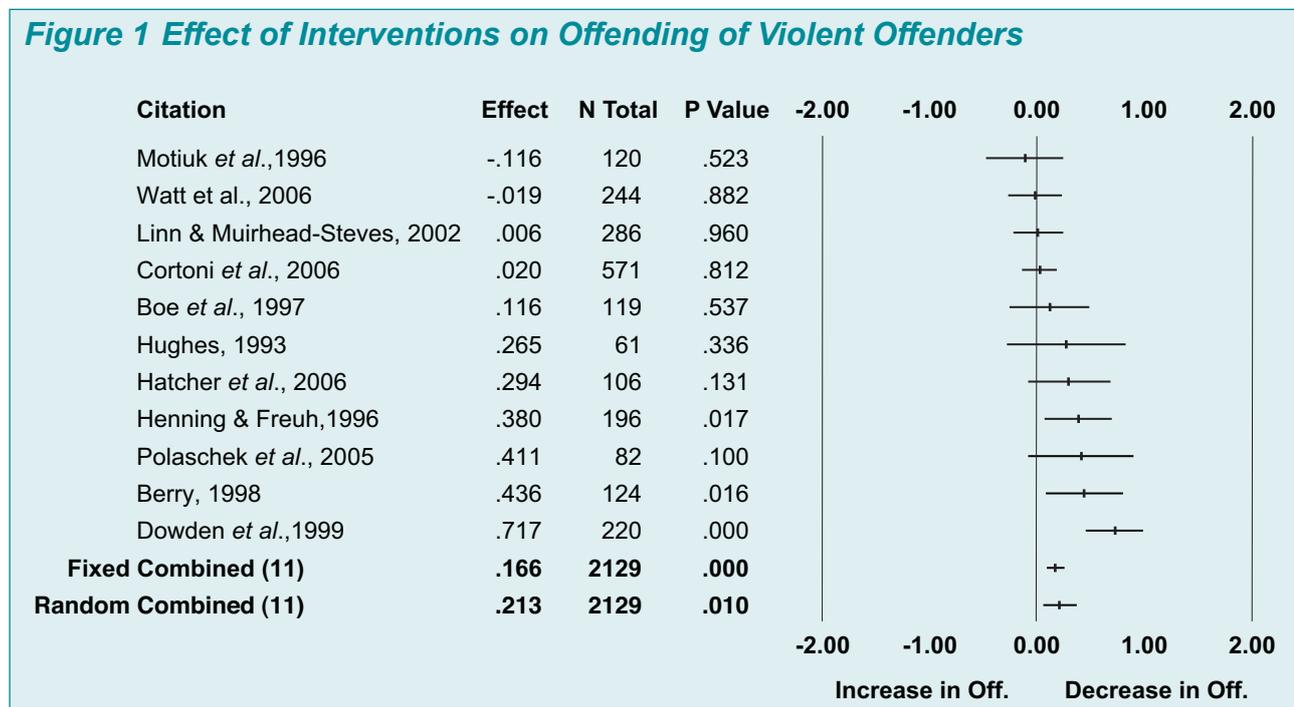
The results of this meta-analysis suggest that the eight interventions taken together statistically significantly reduced violent re-offending. The weighted mean effect sizes ranged from  $d = .13$  ( $p < .02$ ) for the fixed-effects model to  $d = .16$  ( $p < .04$ ) for the random effects model, indicating that violent offending was reduced by about

6 See Technical Appendix for further detail (available on request).

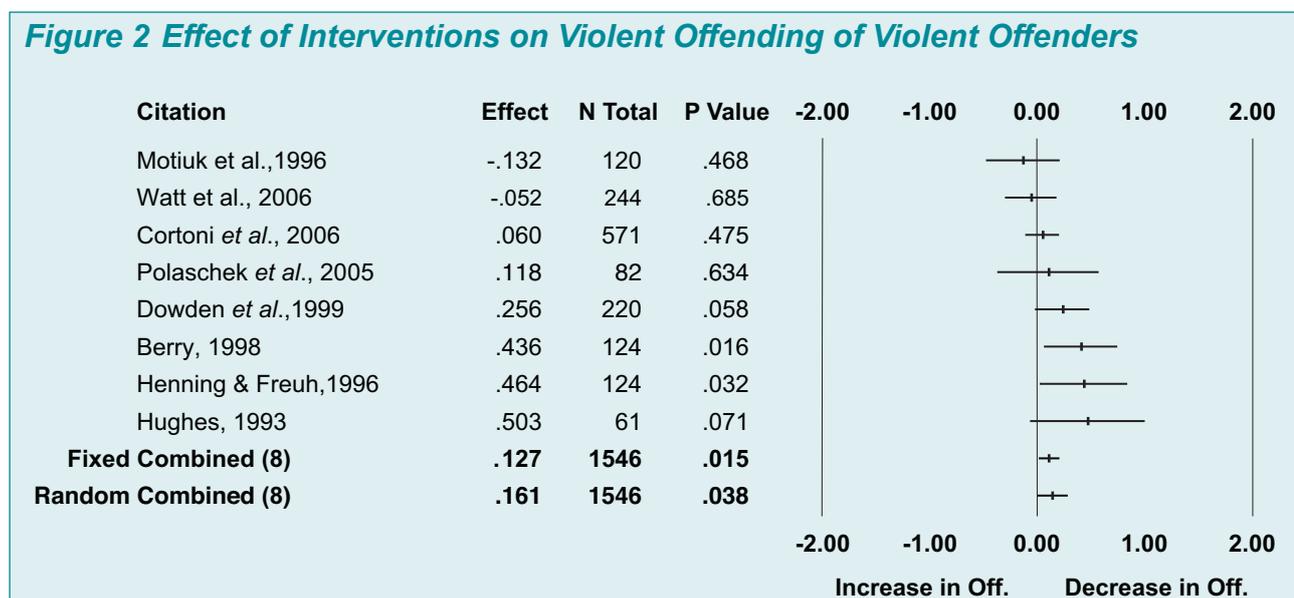
7 See Technical Appendix for further detail (available on request).

seven to eight per cent by these interventions. Again, there was some evidence to suggest that the variation in these effect sizes might be greater than would be expected by sampling error alone.

**Figure 1 Effect of Interventions on Offending of Violent Offenders**



**Figure 2 Effect of Interventions on Violent Offending of Violent Offenders**



### Influence of study features

One method of addressing the identified variability in the effect sizes is to assume that some of this might be attributable to variation in the features of the studies (Lipsey & Wilson, 2001; p118). In order to test this, a coding protocol was developed to investigate the key features of the included studies. These are summarised in Tables 2.3 to 2.7 in the Technical Appendix. Obviously, it was not possible to obtain information about all of the potentially relevant features from all of the studies. Importantly, it was not always clear why an offender had been classified as violent (e.g. violent history or violent index offence or both). Also, some features were coded but not subjected to analysis. For example, the length of the sentence was only available in four studies, information about whether those delivering the treatment had received specific

training about the intervention was missing in five cases, and the estimated time released after completing the intervention was only available in one case. Also, some features did not vary enough to allow analysis. For example, all except one of the interventions was delivered in a group setting (Watt et al., 2006), and the treatment was based on a manual in all but one case (Hughes, 1993).

Unfortunately, information about the violent index offence that led to the classification of the individual as violent was not available in the studies. This meant that it was not possible to examine the relative effectiveness of the interventions with expressively violent versus instrumentally violent individuals.

### **Key features of the study**

Key features of the studies related to relevant features which were not directly related to the intervention or the methodology of the study.

#### *1. Date of publication*

The year of the study was coded in case there has been an improvement over time in the quality of interventions, with more recent studies finding a greater impact on re-offending. The eleven studies ranged in publication date from 1993 to 2007

#### *2. Country where the research was conducted*

It was important to code the country where the research was conducted because what works in one country is not always transferable to another (especially where there are social and cultural differences as well as different criminal justice systems). Two studies were conducted in the UK, five in Canada, two in the US and two in New Zealand.

#### *3. Age of the sample*

Interventions with violent offenders may work better with those of an older age, because older offenders may have more ability to control their behaviour. The mean age of the sample was reported in eight of the eleven studies. The mean age of the participants in the eight studies was 28.9 (sd = 4.7) with a range of 23–36.

#### *4. Ethnic composition of the sample*

Interventions with violent offenders may work better with some ethnic groups rather than others due to different socio-economic backgrounds and cultures. No studies presented offending results separately by ethnic group. However, an indicator that was available in some (6) studies was ethnic composition. This was coded as the proportion of the sample that was identified as White, and ranged from nine per cent to 95 per cent.

#### *5. Total sample size*

In addition to being a feature of the sample, sample size might also be considered a measure of the methodological quality of a study. Previous research has found that small studies tend to have higher effect sizes, possibly reflecting either their poorer methodological standards or their better quality control (Farrington & Welsh, 2003). The studies had sample sizes for analysis that ranged from 61 to 571 (mean = 193.8, sd = 144.1).

### **Key features of the intervention content**

Studies were coded based on the description of the nature and focus of the intervention or interventions that were delivered.<sup>8</sup>

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<sup>8</sup> It is possible that some of these interventions may have been overlapping and not reported. For example, a cognitive skills programme might include role-play. However, if this was mentioned in the original report it was coded as having both skills training and role-play.

Eight key features were identified across the studies and these were coded as either present or absent. These were:

- (1) Anger Control (any reference to addressing the anger of offenders, a feature of eight studies);
- (2) Cognitive Skills (any reference to cognitive-behavioural skills training, a feature of nine studies);
- (3) Moral Training (any reference to providing training about morals, a feature of four studies);
- (4) Basic Education (any reference to teaching life skills e.g. literacy, a feature of six studies);
- (5) Role-Play (any reference to using role-play as a training method, a feature of seven studies);
- (6) Empathy (any reference to empathy training, a feature of four studies);
- (7) Relapse Prevention (any reference to relapse prevention planning, a feature of five studies);
- (8) Homework (any reference to offenders being required to rehearse skills or training outside of the intervention context, a feature of four studies).

## **Key features of the delivery of the intervention**

### *1. Who delivered the intervention?*

Interventions may be more successful in reducing re-offending when delivered by mental health or rehabilitation professionals. Information about who delivered the intervention was reported in all studies. In six studies the intervention was reported to have been delivered by a psychologist or similar, and in another five the intervention was delivered by correctional/probation officers.

### *2. Duration of the intervention*

There may be a dose-response relationship between the duration of the intervention and the impact on re-offending. Information about the duration of the intervention was available from all eleven studies, and ranged from 10–15 minutes to 40 weeks (mean = 18 weeks, sd = 12.0).

### *3. Duration per session*

Information about the duration of the intervention per session was available in seven studies and ranged from 10–15 minutes to three hours (mean = 1.9 hours, sd = .79).

### *4. Frequency of sessions*

It might be expected that interventions which had more frequent contact between participants and intervention providers might be more effective in reducing re-offending compared to those that required less frequent contact. In studies where a range of the frequency was provided (e.g. 2–5 sessions per week) the lower limit of this range was used as the estimate of the frequency. This information was available in nine studies (mean = 3.2 sessions per week, sd = 2.1).

### *5. Total time of the intervention*

The total time of the intervention was only provided in three studies. However, in an additional seven studies it was possible to make an estimate of the total time of the intervention using the duration of the intervention, the duration per session and the frequency of the sessions. The mean total time of the intervention was 354 hours (sd = 633.3).<sup>9</sup>

<sup>9</sup> When the outlier was removed (Linn & Muirhead-Steves, 2002) the mean was 160 hours (sd = 170).

## Key features of the methodology of the studies

### 1. Study quality based on the Maryland Scientific Methods Scale.

Studies with higher methodological quality provide a more accurate and less biased assessment of the effect of the various interventions and re-offending. Past research has shown that studies of higher methodological quality tend to have lower effect sizes (Weisburd et al., 2001). Each of the eleven comparisons was assessed according to the criteria of the Maryland Scientific Methods Scale (Sherman et al., 1997). Only one study was rated as Level 5 (random assignment), eight comparisons were rated as level 4 (quasi-experimental) and two comparisons were rated as Level 3 (two comparable groups).

### 2. Score on Quality Assessment Tool

The Quality Assessment Tool (QAT) (Deaton, 2004) is a ten-item scale which gives another way of measuring the methodological quality of evaluation research and which, compared to the SMS scale, goes beyond overall research design and looks in more detail (for example, at different sources of bias in sampling, data collection and analysis). The measure assesses the quality of the sample (3 items), potential bias (e.g. response or attrition bias; three items), data collection (3 items) and data analysis (1 item). The means on each subsection are added together to produce a total score. In the interest of clarity the QAT was reverse scored so that low scores indicate low methodological quality and high scores indicate high methodological quality. The mean of the eleven studies was 8.3 (s.d. = 1.4), with a range from 6 to 11.3.

### 3. Follow-up was intention-to-treat or completers

Five studies reported re-offending information only for those participants who successfully completed the intervention (completers), whereas six reported re-offending information for all who started the intervention (intention-to-treat). Some researchers (e.g. Hatcher et al., 2006) suggest that only participants who complete interventions should be followed up in evaluation research as many treatments are designed to be completed in their entirety, and those who only partially complete them will not benefit to the same degree. However, in studies that only examine completers it is not possible to disentangle the influence of background factors or motivation for treatment from the treatment itself on the outcome (in this case re-offending). It could be that participants committed to attending all sessions of a treatment have personality features that make them less likely to reoffend regardless of the method/type of treatment, or that more antisocial people are more likely to drop out. Therefore, studies which use the intention-to-treat (ITT) sample produce more conservative and possibly more accurate estimates of effect.

### 4. Length of follow-up the period

The length of the follow-up period was available in ten of the studies and ranged from six months to 36 months (mean = 21.2 months, sd = 10.2).

## Comparison of effect sizes with study features

### Correlations with study features

Correlations were used to investigate the relationships between the study features measured on a continuous scale (e.g. year, total sample size) and the effect sizes (d values) of the eleven studies for re-offending and eight studies for violent re-offending. Because the number of studies was relatively small, and information was missing in some instances, few statistically significant results would be expected. However, as a rule of thumb, correlations with a magnitude of greater than or equal to  $r = 0.2$  were considered meaningful (as in Farrington & Loeber, 1989). These correlations are informative but do not necessarily indicate any causal effects of the study features on effect size.

Only six of a possible eleven comparisons met the criterion of  $r \geq .2$  when the effect sizes for general re-offending were correlated with the study features, and only five of eleven met these criteria when the

effect size for violent re-offending was correlated with the study features. The date of publication was negatively correlated ( $r = -.60$ ) with the effect on violent re-offending. This result is likely to reflect the lower methodological quality of the studies that were undertaken earlier. For example, the comparison group for the study by Hughes (1993), with an effect size of  $d = .51$ , comprised those who did not complete or did not want to take part in the treatment, a very biased sample. This is also supported by the fact that there was a negative correlation between year and Quality Assessment Tool ( $r = .56$ ) showing that the methodological quality of studies has improved over the years.

Although based on a small number of studies ( $n=6$ ) the analysis shows that those studies with a lower proportion of White offenders found greater effects ( $r = -.55$ ). This finding is probably driven by the two studies with large effect sizes that were designed for and delivered primarily to Maori populations (Berry, 1998; Polaschek et al., 2005). It should be noted that both of these studies only included treatment completers in their analysis so their effects may be somewhat overestimated.

**Table 1 Correlations of study features with effect sizes**

	General Re-offending		Violent Re-offending	
	N	r	N	r
<i>Key Features of the Sample</i>				
Date of Publication	11	-0.09	8	<b>-0.60</b>
Age of Sample	8	0.17	7	-0.04
Ethnic Composition (% white)	6	<b>-0.55</b>	5	0.04
Total Sample Size	11	-0.12	8	-0.12
<i>Key Features of the Delivery of the Intervention</i>				
Duration of Intervention	11	-0.05	8	0.03
Duration per Session	7	<b>0.62</b>	6	<b>0.37</b>
Frequency of Sessions	8	0.03	6	<b>-0.34</b>
Estimated Total Time of Intervention	10	<b>-0.34</b>	7	<b>0.30</b>
<i>Key Features of Methodology</i>				
Quality Assessment Tool	11	<b>-0.36</b>	8	<b>-0.64</b>
Length of Follow-up	10	<b>0.26</b>	7	0.17

There was little evidence of a relationship between the size of the sample and the general re-offending or violent re-offending effect size. This is somewhat surprising as a number of previous studies have found that smaller studies reported larger effects (e.g. Farrington & Welsh, 2003; Jolliffe & Farrington, 2007).

Similar to a previous systematic review (Jolliffe and Farrington, 2007) there was evidence to suggest that interventions which had a higher level of duration per session were more effective. This was true for both general re-offending ( $r = .62$ ) and violent re-offending ( $r = .37$ ). However, there was little variation in the duration per session (most interventions were two hours per session) and this result may have been caused by the low duration per session (15 minutes ) and low effect in one study (Watt et al., 2006).

Interventions in which the frequency of sessions was greater had less effect on reducing subsequent violence ( $r = .34$ ) and was not related to re-offending. This result might have been somewhat influenced by the methodological quality of certain studies. For example, the Hughes (1993) study (a study of lower methodological quality – see Table 2.4 in the Technical Appendix) produced a high effect and had only one session per week. Furthermore, the Polaschek et al. (2005) study (which included only those who had completed all aspects of the intervention) had four sessions a week but a relatively small effect.

The estimated total time of the intervention was negatively related to the effect size for general re-offending ( $r = -.34$ ) but positively related for violent re-offending ( $r = .30$ ). This counter-intuitive result was clearly caused by the inclusion of the Finn & Muirhead-Steves (2002) study of electronic tagging. This study only reported a general re-offending outcome, had a very long total time of the intervention and a very small effect. When this study was removed the correlation between total duration of the intervention and general re-offending was  $r = .30$ , the same as for violent re-offending. This suggests that interventions of greater duration have a greater effect in reducing general re-offending and violent re-offending.

The negative correlation between the Quality Assessment Tool and the effect size for general re-offending ( $r = .36$ ) and violent re-offending ( $r = .64$ ) suggest that studies of lower methodological quality had higher effects. This relationship has been identified in a number of other studies (e.g. Jolliffe & Farrington, 2007; Weisburd et al., 2001) and suggests that caution should be exercised when interpreting the findings. That is, it is difficult to ascertain the extent to which the interventions with large effect sizes are effective because of their superior type or method of treatment or because their effects were artificially increased by biased methods.

There was some evidence to suggest that studies with longer follow-ups were more successful with a correlation of  $r = .26$  for general re-offending and  $r = .17$  for violent re-offending.

## Comparison with dichotomous measures of the intervention content

Table 2 shows the relationship between the selected categorical variables and the effect size. Studies that used anger control and taught cognitive skills were statistically significantly more effective in reducing general re-offending compared to those that did not (Q between groups of 4.7,  $p < .03$  and 8.9,  $p < .003$  respectively). Studies that used anger control and taught cognitive skills also had statistically significant desirable influences on reducing violent re-offending ( $d = .14$  and  $d = .16$  respectively), but those that did not use these types of interventions had lower and statistically non-significant effects. Even though the difference between the effect sizes of studies that did and did not use anger control and cognitive skills on violent re-offending was not statistically significant<sup>10</sup>, the overall results suggest that using anger control and teaching cognitive skills had a desirable impact on both general re-offending and violent re-offending.

Studies which provided moral training to offenders had a relatively small effect, which was not statistically significant, on both re-offending and violent re-offending, whereas studies that did not use such training had higher and statistically significant effects. However, the differences between these effect sizes were not statistically significant for general re-offending and violent re-offending (Q between groups of 0.84 and 0.54 respectively). It is therefore possible that studies that use moral training are less effective, but this is not statistically significant.

The results are more consistent with respect to the provision of basic education. Both studies that provided this education and those that did not had statistically significant positive effects on re-offending. However, examining the differences between these groups suggested that those that did not provide basic education appeared to be more effective in reducing general re-offending and were statistically significantly more effective in reducing violent re-offending.

A clear finding of the analysis was that studies that used role-playing were statistically significantly more effective in reducing re-offending and violent re-offending than those that did not. It was also very clear that studies that provided empathy training to offenders were statistically significantly less successful in reducing re-offending and violent re-offending compared to those that did not.

<sup>10</sup> This lack of statistically significant difference is likely to be related to the small number of studies available for comparison.

Studies that used relapse prevention planning were more effective in reducing both general re-offending and violent re-offending than those studies that did not, but this difference was only statistically significant for general re-offending. Studies that required offenders to complete homework outside of the treatment setting were more effective than those that did not. This difference was statistically significant for violent re-offending, and just failed to reach significance for general re-offending.

**Table 2 Key features of the intervention content**

	General Re-offending				Violent Re-offending			
	N	Mean ES (d)	sig.	Q Between Groups	N	Mean ES (d)	sig.	Q Between Groups
No Anger Control	3	0.08	n.s.	<b>4.7, p&lt;.03</b>	2	0.08	n.s.	.23, n.s.
Anger Control	8	0.29	0.0001		6	0.14	0.02	
No Cognitive Skills	2	-0.006	n.s.	<b>8.9, p&lt;.003</b>	1	-0.05	n.s.	2.4, n.s.
Cognitive Skills	9	0.30	0.0001		7	0.16	0.004	
No Moral Training	7	0.24	0.0001	0.84, n.s.	5	0.15	0.01	.57, n.s.
Moral Training	4	0.14	n.s.		3	0.06	n.s.	
No Basic Education	5	0.32	0.0001	3.3, n.s.	3	0.34	0.001	<b>5.4, p&lt;.02</b>
Basic Education	6	0.15	0.008		5	0.06	n.s.	
No Role-Play	4	-0.005	n.s.	<b>15.0, p&lt;.0001</b>	2	-0.08	n.s.	<b>5.1, p&lt;.02</b>
Role-Play	7	0.35	0.0001		6	0.19	0.001	
No Empathy Training	7	0.28	0.0001	<b>5.9, p&lt;.01</b>	5	0.20	0.001	<b>4.7, p&lt;.03</b>
Empathy Training	4	0.04	n.s.		3	-0.05	n.s.	
No Relapse Prevention	6	0.04	n.s.	<b>12.4, p&lt;.0004</b>	3	-0.006	n.s.	2.6, n.s.
Relapse Prevention	5	0.36	0.0001		5	0.18	0.004	
No Offender Homework	7	0.17	0.0006	<b>3.8, p&lt;.051</b>	5	0.07	n.s.	<b>4.9, p&lt;.03</b>
Offender Homework	4	0.38	0.0001		3	0.37	0.002	

### **Comparison with dichotomous measures of the delivery of the intervention and the methodology**

Table 3 shows the key features of the delivery and methodology of the studies. Studies in which the intervention was delivered by correctional officers had statistically significant and desirable influences on general re-offending and violent re-offending, whereas studies in which the intervention was delivered by rehabilitation professionals did not show a statistically significant desirable influence. This might be considered a counter-intuitive result. However, the differences between these effect sizes were not statistically significant.

**Table 3 Key features of the delivery of the intervention and methodology**

	Re-offending				Violent Re-offending			
	N	Mean ES (d)	sig.	Q Between Groups	N	Mean ES (d)	sig.	Q Between Groups
Rehabilitation Professional	6	0.12	n.s.	2.5, n.s.	5	0.10	n.s.	.23, n.s.
Correctional officer	5	0.27	0.0001		3	0.15	0.03	
Level 3 Maryland Scale	2	0.17	n.s.	.32, n.s.	1	0.51	n.s.	1.6, n.s.
Level 4 Maryland Scale	8	0.26	0.0001		6	0.15	0.01	
High Quality Studies (QAT)	6	0.19	0.0001	1.1, n.s.	5	0.08	n.s.	<b>4.0, p&lt;.04</b>
Low Quality Studies (QAT)	5	0.30	0.001		3	0.37	0.005	
Intention to Treat	6	0.15	0.005	<b>6.8, p&lt;.009</b>	3	0.07	n.s.	2.1, n.s.
Completers	5	0.40	0.0001		5	0.22	0.008	

In order to investigate the relationship between the methodological quality of the studies and the effect size, the Quality Assessment Tool was used.<sup>11</sup> In this instance the 11 studies were dichotomised into high or low quality studies based on their QAT scores (Table 2.4 in Technical Appendix). The results suggest that there was a tendency for lower quality studies to have higher effect sizes and higher quality studies (which provide the most accurate assessment of the influence of interventions on violent offenders) to have lower effect sizes. This result was only statistically significant for violent re-offending.

There was also a clear tendency for studies that included only those who completed the programme to find a higher effect size than those who included all those who were intended to be treated in the analysis. This difference was only statistically significant for general re-offending.

## Multivariate analyses

To summarise, there was evidence to suggest that interventions that were of greater overall duration (especially those with a higher duration per session), those that included anger control, cognitive skills training, role-play, relapse prevention and required offenders to undertake homework had more desirable influences on both general and violent re-offending than those that did not. Also, studies that did not provide moral training, basic education or empathy training also appeared to have a more desirable influence than those that did include these elements. However, there was also evidence to suggest that studies which were the most likely to be biased (e.g. low methodological quality and evaluating the effects of the programme only among those who completed the treatment), found the largest effect sizes. Therefore, it is important to investigate the extent to which these effective elements of the intervention are still effective after controlling for these potentially biasing factors.

11 It was not possible to assess the relationship between the effect size and methodological quality measured using the Maryland Scale because eight of the eleven studies were judged to be Level 4 (quasi-experimental). Only two studies were judged to be Level 3 and one Level 5.

**Table 4 regressions controlling for methodological quality**

General Re-offending			Violent Re-offending		
Variable	Beta	p	Variable	Beta	p
Anger Control	0.14	n.s.	Anger Control	-0.71	n.s.
<i>Methodological Quality</i>	0.37	n.s.	<i>Methodological Quality</i>	1.12	0.008
Q model = 6.1, p<.05			Q model = 7.1, p<.03		
Cognitive Skills	0.76	0.07	Cognitive Skills	-0.38	n.s.
<i>Methodological Quality</i>	-0.21	n.s.	<i>Methodological Quality</i>	0.92	n.s.
Q model = 9.1, p<.01			Q model = 4.8, p<.09		
Moral Training	-0.09	n.s.	Moral Training	0.09	n.s.
<i>Methodological Quality</i>	0.45	0.02	<i>Methodological Quality</i>	0.63	0.05
Q model = 6.7, p<.05			Q model = 4.4, n.s.		
Basic Education	-0.39	0.04	Basic Education	-0.51	0.09
<i>Methodological Quality</i>	0.5	0.009	<i>Methodological Quality</i>	0.41	n.s.
Q model = 10.0, p<.007			Q model = 7.2, p<.02		
Role-Play	0.72	0.002	Role Play	0.44	n.s.
<i>Methodological Quality</i>	0.04	n.s.	<i>Methodological Quality</i>	0.27	n.s.
Q model = 15.1, p<.0005			Q model = 5.6, p<.06		
Empathy Training	-0.40	0.04	Empathy Training	-0.4	n.s.
<i>Methodological Quality</i>	0.40	0.04	<i>Methodological Quality</i>	0.34	n.s.
Q Model = 10.1, p<.007			Q Model = 5.6, p<.06		
Relapse	0.59	0.005	Relapse	0.22	n.s.
<i>Methodological Quality</i>	0.25	n.s.	<i>Methodological Quality</i>	0.48	n.s.
Q model = 13.9, p<.001			Q model = 4.9, p<.09		
Homework	0.27	n.s.	Homework	0.51	0.07
<i>Methodological Quality</i>	0.40	0.05	<i>Methodological Quality</i>	0.47	n.s.
Q Model = 7.7, p<.02			Q Model = 7.5, p<.02		
Treatment Provider	0.32	0.09	Treatment Provider	-0.03	n.s.
<i>Methodological Quality</i>	0.49	0.01	<i>Methodological Quality</i>	0.59	0.04
Q Model = 8.8, p<.01			Q Model = 4.4, n.s.		

Table 4 shows the results of the modified least squares regression which was used to examine the independent influence of the various features on the effect size of re-offending and violent re-offending controlling for methodological quality (based on the QAT). It would have been desirable to include all of the variables in a single regression, but because of the small number of studies only two predictor variables could be included in each regression. Assessing general re-offending according to the Beta values and associated statistical significance, this analysis shows the previously identified relationship between

anger control and general re-offending may have been the result of the low methodological quality of studies that used anger control. That is, when controlling for methodological quality, anger control was no longer statistically significantly associated with general re-offending or violent re-offending. Controlling for methodological quality also showed that the treatment provider (rehabilitation professional versus correctional officer) was not statistically significantly associated with higher effect sizes.

**Table 5 Regressions controlling for method of analysis**

General Re-offending			Violent Re-offending		
Variable	Beta	p	Variable	Beta	p
Anger Control	0.25	n.s.	Anger Control	-0.05	n.s.
<i>Method of Analysis</i>	0.4	0.07	<i>Method of Analysis</i>	0.42	n.s.
Q model = 8.1, p<.02			Q model = 2.1, n.s.		
Cognitive Skills	0.45	0.03	Cognitive Skills	0.32	n.s.
<i>Method of Analysis</i>	0.34	0.1	<i>Method of Analysis</i>	0.28	n.s.
Q model = 11.5, p<.003			Q model = 3.3, n.s.		
Moral Training	-0.16	n.s.	Moral Training	-0.18	n.s.
<i>Method of Analysis</i>	0.5	0.009	<i>Method of Analysis</i>	0.39	n.s.
Q model = 7.5, p<.02			Q model = 2.5, n.s.		
Basic Education	-0.31	n.s.	Basic Education	-0.58	0.06
<i>Method of Analysis</i>	0.48	0.01	<i>Method of Analysis</i>	0.15	n.s.
Q model = 9.4, p<.009			Q model = 5.6, p<.06		
Role Play	0.67	0.0006	Role Play	0.61	0.03
<i>Method of Analysis</i>	0.37	0.06	<i>Method of Analysis</i>	0.36	n.s.
Q model = 18.5, p<.0001			Q model = 6.7, p<.03		
Empathy Training	-0.52	0.008	Empathy Training	-0.63	0.02
<i>Method of Analysis</i>	0.55	0.005	<i>Method of Analysis</i>	0.44	n.s.
Q Model = 13.9, p<.0009			Q Model = 7.1, p<.02		
Relapse	0.61	0.001	Relapse	0.46	0.1
<i>Method of Analysis</i>	0.4	0.04	<i>Method of Analysis</i>	0.42	n.s.
Q model = 16.5, p<.0003			Q model = 4.8, p<.09		
Homework	0.3	n.s.	Homework	0.55	0.06
<i>Method of Analysis</i>	0.46	0.02	<i>Method of Analysis</i>	0.24	n.s.
Q Model = 9.2, p<.01			Q Model = 5.6, p<.06		
Treatment Provider	0.57	0.007	Treatment Provider	0.31	n.s.
<i>Method of Analysis</i>	0.71	0.0006	<i>Method of Analysis</i>	0.51	0.09
Q Model = 14.2, p<.0008			Q Model = 3.1, n.s.		

However, some study features were found to be independently related to higher effect sizes. For example, role-play and relapse prevention and cognitive skills (almost) continued to show statistically significant relationships with the effect size after controlling for the methodological quality. Furthermore, it appears that studies not providing basic education or empathy training (negative beta values) were also independently associated with a desirable impact on re-offending.

While having offenders complete homework and not providing basic education were close, unfortunately, none of the features of the intervention were independently related to a desirable impact on violent re-offending when controlling for the methodological quality of the studies.

Table 5 shows the results of regressions that were used to investigate whether the impact of the intervention features were independent of the target of analysis (intention-to-treat versus only treatment completers). For general re-offending the results suggest that studies that include cognitive skills, role play and relapse prevention had a desirable influence on general re-offending while controlling for the method of analysis. Also, the regression suggested that when correctional officers delivered the intervention it was more effective independent of the method of analysis. Studies that did not use empathy training also showed a statistically significant reduction in general re-offending when controlling for the method of analysis.

Role-play and not providing empathy training were statistically significantly associated with a desirable impact on violent re-offending. Also, having offenders complete homework and not providing basic education were close to having a statistically significant impact of violent re-offending.

**Table 6 Comparison of number of effective features to mean effect size**

Number of Effective Features	Mean Effect Size	Sig.
0	-0.006	n.s.
1	-0.004	n.s.
2	0.29	.07
3	0.36	.0001

## Number of 'effective' study features

The results of the multivariate analyses suggested that three intervention features were related to a desirable impact on general re-offending controlling for both methodological quality and the method of analysis. These were using cognitive skills, role-play and relapse prevention. Due to relatively small number of studies and issues of multicollinearity<sup>12</sup> it was not possible to determine which of these three intervention features might be the most effective at reducing general re-offending among violent offenders. However, Table 6 shows how the effectiveness of the interventions varied with the number of these three effective intervention features.

For example, interventions that did not include any of the effective features had a mean effect size of -0.006 (n.s.). Similarly, interventions that included only one of the effective features had a negligible (and statistically non-significant) mean effect size. However, those interventions that used two of the effective features had a mean effect size equivalent to a 15 per cent reduction in general re-offending (approximately half of  $d = .29$ ). This result was not statistically significant, likely because of the small number of studies ( $n=2$ ). Interventions that used all three of the effective features were the most effective with a statistically significant mean effect size of  $d = .36$ , approximately equal to an 18 per cent reduction in general re-offending.

<sup>12</sup> Multicollinearity is a statistical term for when the same type of information is unknowingly used more than once in analysis, perhaps by using technical indicators that display the same type of information.

## 4 Implications

### Discussion

Overall the results of this systematic review and meta-analysis suggested that interventions with violent offenders were effective both at reducing general and violent re-offending, with a difference in percentage reconvicted of about eight to eleven per cent for general re-offending and seven to eight per cent for violent re-offending. The magnitude of the effect was somewhat smaller than that identified by Wilson et al. (2004) of eight to twenty-five per cent but their review was focused only on cognitive-behavioural programmes with general offenders. However, violent offenders have extensive criminal histories (e.g. Farrington, 1998), are more likely to re-offend than general offenders (Loza et al., 2004), and tend to be more difficult to engage in treatment (Heseltine et al., 2006). In light of this challenging backdrop the mean effect sizes of the interventions included in this review are very promising.

Further analysis suggested that the influence of the interventions on the mean effect size varied considerably depending on the features of the study, the content of the intervention, the delivery of the intervention and the methodology of the study. For example, there was some evidence to suggest that those interventions of greater overall duration were more effective, and that the greater duration per session was associated with greater effect for both general and violent re-offending. This relationship between treatment intensity and reduction in re-offending has been identified in a number of other studies and reviews (Chitty, 2005). However, what is not clear, and what could not be assessed in the current review is what the optimal dosage of intervention might be. It is clear that more is better, but future research should examine the dose-response relationship to determine that point at which additional treatment duration no longer considerably adds to reductions in re-offending.

There was also evidence that certain features of the content of the intervention were more effective than others. That is, those interventions that addressed anger control, cognitive skills, used role-play, relapse prevention and had offenders complete homework tasks appeared more effective than those interventions that did not. Furthermore, interventions that did not include moral training, basic education or empathy training also appeared more effective at reducing general and violent re-offending than those that did.

Interventions which were delivered by correctional officers were somewhat more effective than those delivered by rehabilitation professionals. Subsequent analysis suggested that this finding might have been related to the lower methodological quality of those studies delivered by correctional officers. Also, it was not always possible in this review to determine the extent to which correctional officers had received specialised training for the intervention that they were delivering. It may be that correctional officers had received extensive training and therefore were equivalent to rehabilitation professionals with respect to the interventions delivered. Future research should examine the extent to which the specific training of those delivering the treatment is related to subsequent general and violent re-offending by those receiving the treatment.

A statistically significant relationship was identified between the mean effect sizes and the methodological quality of the studies. That is, those studies that provided the most accurate assessment of the influence of interventions of violent offenders (high quality studies) suggested that these interventions had a much lower effect on general re-offending than previously estimated, and a statistically non-significant influence on violent re-offending. Furthermore, studies that included only those who completed the treatment, arguably a biased sample, found higher effects than those that included those who were intended to be treated (completers and those who dropped out of treatment).

It was possible to control for these potentially biasing factors, and the analyses suggested that some features of the interventions continued to be related to decreases in general and violent re-offending. For general re-offending these were cognitive skills, role-play and relapse prevention, and for violent re-offending decreases were associated with having offenders complete homework. For general re-offending it was not possible to determine which of these features was best, but subsequent analysis suggested that not using any of these interventions, or only using one was associated with little reduction in re-offending. However, interventions which employed two or three of these successful features had statistically significantly higher effects for general re-offending. The finding that multi-modal treatments are more effective than those with a narrow focus is not a new finding (e.g. Chitty, 2005; Henggeler et al., 2002), but the current review does provide evidence that, given limited resources, multi-modal treatments which encompass cognitive skills, role-play and relapse prevention might be particularly effective with violent offenders.

In contrast to the possible beneficial influences of interventions which used cognitive skills, role-play and relapse prevention on general re-offending, the absence of certain intervention features were found to be independently associated with higher effect sizes. Not providing basic education was associated with higher effects sizes for general re-offending and violent re-offending. It is not surprising that simply teaching basic skills was not related to a reduction in re-offending, and perhaps the time allotted to this basic education reduced the time the offender was exposed to more effective interventions. Similarly, interventions which did not use empathy training had higher effect sizes. This might again be a case of allotting limited intervention time on less successful interventions. Recent research has suggested that the relationship between empathy and offending is more complex than originally thought (e.g. Jolliffe & Farrington, 2004), with some even suggesting that empathy could increase offending among certain types of offenders (Jolliffe & Farrington, 2007).

A notable exception from the list of effective interventions was anger control. Many researchers have suggested that anger control might be an effective intervention for violent offenders (e.g. Novaco, 1997), but the current review does not find support for this. That is, interventions that used anger control were more effective than those that did not, but not amongst the studies that provided the most accurate estimate of the relationship between the intervention and mean effect size. This mixed result might reflect the heterogeneity of violent offenders (e.g. Serin, 1999). For example, anger control may be useful for intervening with violent offenders whose offending is linked to a diminished capacity to control anger (e.g. expressively violent offenders), but not for intervening with violent offenders whose offending is linked to alternative motives (e.g. instrumentally violent offenders). In this review it was not possible to examine the impact of interventions with different types of violent offenders as this information was not available in the studies.

## Policy implications

The systematic review and meta-analysis clearly showed that interventions with violent offenders were successful at reducing general re-offending and violent re-offending. In light of the considerable harm caused to victims and costs incurred by society, the treatment of violent offenders should continue to be a priority. Furthermore, the research also provides suggestions about what a particularly effective intervention with violent offenders would look like. Effective interventions were intensive in terms of their overall duration and in their duration per session; they tended to employ at least two, but preferably three of cognitive skills training, role-play and relapse prevention. Furthermore, they did not teach basic skills or involve empathy training.

## Limitations of the current research

Like all research, this review has limitations. After extensive searching only a small number (11) of studies of interventions with violent offenders met the inclusion criteria. When desegregated into categories for analysis this small number of evaluations might limit the generalisability of the findings. The review was also limited by the information available in the publications which were obtained and analysed. Information about the age

and ethnic composition of the cohort, the training received by those delivering the treatment, and the type of violent offenders was not available in many cases. Obtaining this information from the authors of the studies proved difficult.

Out of necessity, the meta-analysis treated the offending outcome as dichotomous. While this was the best that could be achieved in light of the available material, outcome measures of frequency (i.e. the number of offences that a person commits), severity or time to re-offence might be more sensitive to changes in patterns of re-offending which might have been influenced by the interventions.

## 5 Conclusions

The conclusion of this review is that interventions with violent offenders are successful. However, the success of these interventions depends on their intensity and content, with more intensive multi-modal interventions (of certain types) being more successful.

Clearly more evaluative research of higher methodological quality is needed before firm conclusions can be drawn about the most effective methods of intervening with violent offenders. This would involve careful randomised controlled trials which made efforts to control for previous violent and non-violent criminal history, the point in the sentence when the intervention was applied, and the number of other interventions that the offenders had taken part in and/or completed. Furthermore, greater detail about the type, frequency, severity and time to re-offence would allow for greater sensitivity when assessing the effectiveness of the intervention.

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