

Campbell Systematic Reviews

2007:7

First published: 21 September, 2007

Last updated: 21 September, 2007

Serious (Violent or Chronic) Juvenile Offenders: A Systematic Review of Treatment Effectiveness in Secure Corrections

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Title	Serious (violent or chronic) juvenile offenders: A systematic review of treatment effectiveness in secure corrections
Institution	The Campbell Collaboration
Authors	Garrido, Vicente PhD Morales, Luz Anyela
DOI	10.4073/csr.2007.7
No. of pages	47
Last updated	21 September, 2007

Citation	Garrido V, Morales LA. Serious (violent or chronic) juvenile offenders: A systematic review of treatment effectiveness in secure corrections. <i>Campbell Systematic Reviews</i> 2007:7 DOI: 10.4073/csr.2007.7
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Keywords	

Contributions	None stated.
Support/Funding	Valencia University, Spain Madrid University, Spain Dr. Julio Sánchez-Meca, University of Murcia, Spain Ministerio de Ciencia y Tecnología of Spain (Project No. SEC2001-3821-C05-05)
Potential Conflicts of Interest	There is no conflict of interest.

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**SERIOUS (VIOLENT OR CHRONIC) JUVENILE OFFENDERS:
A SYSTEMATIC REVIEW OF TREATMENT EFFECTIVENESS IN SECURE
CORRECTIONS**

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**Final Report Submitted to the Campbell Collaboration
Crime and Justice Group**

March 2007

SERIOUS (VIOLENT OR CHRONIC) JUVENILE OFFENDERS A SYSTEMATIC REVIEW
OF TREATMENT EFFECTIVENESS IN SECURE CORRECTIONS

CAMPBELL REVIEW

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Sources of support

Logistic support from Valencia and Madrid Universities.

Dr. Julio Sánchez-Meca (University of Murcia, Spain) has been a consultant in the statistical procedures and analyses.

This research has been supported by the Ministerio de Ciencia y Tecnología of Spain (Project No. SEC2001-3821-C05-05)".

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CONSUMER SYNOPSIS

Positive results in reducing future offender were found for some of the programs examined that serve serious (violent or chronic) juvenile offenders in secure corrections. Considering this general outcome, it is justifiable to continue treating this population. We found that programs were more effective at reducing serious recidivism than in reducing general recidivism. This finding shows the importance of including serious recidivism as an outcome measure of efficacy in all the programmes oriented to reduce the delinquent behaviour of serious offenders. Chronic and violent offenders are a small part of the offender population yet they are responsible for a substantive portion of all offenses. Reducing the delinquent behaviour of this group through secure correctional programming is clearly important that this review suggests that such programs can be effective.

ABSTRACT

Background

Juveniles responsible for violent offenses are at high risk of becoming chronic offenders, committing many types of offenses. A challenge in the treatment of these violent or chronic delinquents is that the majority are well into the delinquent careers. It remains to be demonstrated what specific strategies provided within secure correctional facilities are promising in rehabilitating incarcerated these serious juvenile offenders.

Objectives

To systematically collect and assess the quality of the outcomes of empirical research regarding the effectiveness of treatment programmes implemented in secure corrections designed to decrease the reoffending rate and type of offense for serious (chronic or violent) delinquents (12-21 years old).

Search Strategy

Several strategies were used to identify studies that met the explicit criteria of this review. We conducted a specific search in 14 relevant electronic databases about the topic area, including the Campbell SPECTR database of trials. Experts in the field were consulted and relevant citations were followed up.

Selection Criteria

This review included experimental (with random assignment) and quasi-experimental (without random assignment) studies with control or comparison groups. Furthermore, the outcomes presented in the studies include recidivism rates or at least information about new offenses. The program recipients were juveniles either male or female, in secure corrections aged between 12 and 21 years old, under either the adult or juvenile jurisdictions, characterised as serious (chronic or violent) delinquents.

Data collection and analysis

Separate meta-analyses were carried out for the two different recidivism measures (general and serious recidivism) and for completers and intent-to-treat (as assigned) data. We selected as the effect-size index the odds ratio and its translation to natural logarithm. The meta-analytic calculations were carried out assuming a random-effects model. When the heterogeneity Q test was statistically significant, mixed-effects analyses were carried out to search for moderator variables that could explain the variability among the effect estimates. For qualitative moderator variables, weighted analyses of variance were applied on the effect estimates, whereas the relationship between continuous moderator variables and the effect estimates was assessed by weighted regression models.

Main Results

The overall results at the last follow up for completers showed a statistically significant positive result in favour of treatment. For the intent-to-treat data, both fixed- and random-effects models were statistically significant. This result showed that even under the more conservative intent-to-treat model, the interventions were still effective overall. Moderator variables did not show a statistically significant results to explain the heterogeneity in relation to effectiveness of the treatment. We found evidence for positive effects of the cognitive and cognitive-behavioural treatments and of the multi-focus programmes.

Reviewers' conclusions

In general, the programmes “do work” to reduce the general and, specially, the serious recidivism of serious institutionalised juvenile offenders. This is particularly true in the case of interventions with a cognitive or cognitive-behavioural emphasis, applied to male samples in centres of juvenile reform. It seems also that the educative non-structured programs did not work to reduce the recidivism.

This review should be cited as:

Garrido, V. and Morales, L.A. (2007). Serious (violent and chronic) juvenile offenders: a Systematic Review of treatment effectiveness in secure corrections. In: The Campbell Collaboration Reviews of Intervention and Policy Evaluations (C2-RIPE), July 2007. Philadelphia, Pennsylvania: Campbell Collaboration.

1. BACKGROUND

The importance of interventions for serious juvenile offenders cannot be overstated as this group pose a significant challenge to criminal justice agencies both in terms of their frequency and seriousness of their offending and later behaviour as adults. Authorities are increasingly incarcerating these young people; however, doubts remain over the effectiveness of such an approach.

In this review “serious” includes violent or chronic (persistent) offenders, and “juvenile” or “delinquent” refers to young people aged 12 to 21 years. Although different models may be needed to explain the development of delinquency and therefore the treatment characteristics for males versus female offenders, the very few studies including female offenders precludes selecting gender as a moderator variable in the analyses. Consequently this review is mainly on male delinquents.

This systematic review does not include community-based interventions as these are reported in related systematic reviews that include interventions in non-secure corrections for juveniles — “Community-based alternatives to prison” (Martin Killias), “Juvenile aftercare programmes” (Ken Adams), and “Re-entry programmes for offenders” (Christy Visser).

1.1. Relevance of reviewing this subcategory of offenders

There are many studies showing that those juveniles responsible for violent offenses are at high risk of becoming chronic offenders, committing many types of offenses and likely to receive an institutional sentence. For example, Thornberry, Huizinga and Loeber (1995) reported results from the Programme of Research on the Causes and Correlates of Delinquency, which consists of three well co-ordinated longitudinal research projects: The Denver Youth Survey, the Pittsburgh Youth Study and the Rochester Youth Development Study. In total these three projects involved 4,500 inner-city youths, ranging in age, at the beginning of data collection, from 7 to 15 years old.

Chronic violent offenders constituted only 15% of the total sample in Rochester and 14% of the adolescent sample in the Denver study; however, they committed 75% of all the violent offenses reported in the Rochester study and 82% of all the violent offenses reported in the Denver study. Data from the Rochester and Denver studies indicated the criminal versatility of these violent offenders (i.e. they commit a wide array of other offenses including property crimes, public disorder, status offenses and drug sales). In conclusion the authors stated “If we do not successfully reach this small group, we will leave the vast majority of the violence problem untouched” (p. 220).

Similar results were obtained in the Cambridge longitudinal study (Farrington, 2003), where 73% of males convicted as juveniles between the ages of 10 to 16 were reconvicted between ages 17 and 24, in comparison with only 16% of those not convicted as juveniles (also see studies of Krohn et al., 2001, and Stattin & Magnusson, 1991, as quoted by Farrington, 2003). Violent juveniles in the Cambridge study were also criminally versatile: 55 of the 65 males with a conviction for violence also received a conviction for a non-violent crime. To a large extent, the frequent offenders were versatile and sooner or later committed a violent offense. Effective interventions with juveniles should therefore affect later offending rates in adulthood.

Finally, those juveniles with multiple convictions are more likely to receive further periods of incarceration. A twenty-state research programme sponsored by the Office of Juvenile Justice and Delinquency Prevention, ‘Juveniles Taken into Custody’, reported programmes that shared

age 18 as the upper age of juvenile jurisdiction, permitting readmission rates to be calculated over a reasonable time period. Of the 8,057 youths released in 1992, 27% were readmitted within one year of their release. Male readmission rates were much higher than for females (28% and 16%, respectively), and there was a strong relationship between the number of prior correctional commitments and readmission rates (Krisberg & Howell, 1998).

1.2. Current doubts about the effectiveness of interventions with violent juvenile offenders

The challenges involved in the treatment of the violent delinquents have been widely reported. As Thornberry, Huizinga and Loeber (1995) point out, by the time most serious delinquents are identified and receive intensive treatment from the juvenile justice system, they are well into their delinquent careers. For example, the National Youth Survey in United States (Elliot, 1994; Elliot, Huizinga and Morse, 1986, quoted by Thornberry, Huizinga and Loeber, 1995) found a substantial gap between the peak ages of involvement in serious violence and processing by the juvenile justice system. In addition, the offenders enrolled in treatment programmes have a host of negative characteristics that reduce the likelihood of successful intervention. “These offenders are older, are heavily involved in delinquent careers, and are likely to have progressed along overt, covert and authority conflict pathways. They are likely to be involved in other forms of delinquency, to use drugs, and to exhibit other related “behavior problems”. They are likely to have multiple risks factors and social deficits [...]. Given these limitations, our expectations of treatment programmes should be modest” (Thornberry, Huizinga and Loeber, 1995, p. 233).

Lipsey and Wilson (1998) highlighted the paucity of systematic reviews of interventions with different types of offenders, especially those most serious offenders who might be presumed to be among the most resistant to treatment. This includes juvenile offenders.

An underlying problem is the dearth of primary intervention research conducted specifically with serious juvenile offenders: Most of the samples are mixed including less serious offenders and not separately identified and analysed. In an attempt to clarify the situation in serious juvenile offenders, Lipsey and Wilson (1998) conducted a meta-analysis (not in the context of a systematic review) focusing on two basic questions:

Does the evidence indicate that intervention programmes generally are capable of reducing the reoffending rates for serious delinquents? And if so, what types of programmes are the most effective?

Lipsey and Wilson included 200 experimental or quasi-experimental studies (published between 1950 and 1995) that involved serious juvenile offenders to some degree (more stringent inclusion criteria produced a very small number of studies). The juveniles finally selected were those “reported to be adjudicated delinquents”. The juvenile samples were largely male and with an average age of 14 to 17 years old. They categorised the studies as non-institutionalised (N=117) and institutionalised (N=83).

With *non-institutionalised* juveniles, treatment effects were larger for juvenile samples with mixed priors (i.e., including some proportion of person offenses) than those with mostly property priors. The most effective interventions were a group composed of interpersonal skills training, individual counselling and behavioural programmes, while the less effective interventions were wilderness/challenge programmes, early release from probation or parole, deterrence programmes (shock incarceration), and vocational programmes (distinct from employment related programmes).

The results with *institutionalised* juveniles contrasted markedly with those for non-institutionalised juveniles: With the offenders in institutions, the treatment effects are much the

same for a given programme whatever the sample characteristics such as age, gender, ethnic mix and history of prior offenses. Again, the most successful intervention was interpersonal skills training, followed by the teaching family home programme (Achievement Place Project). The least effective interventions were wilderness/challenge programmes, drug abstinence, employment related programmes and milieu therapy.

The mean effect sizes were similar for both non-institutional ($r = .07$) and institutional interventions ($r = .05$), and the difference was not statistically significant. Specifically, the intervention for the most effective treatment with institutionalised juveniles showed mean effect sizes of .17-.19. In terms of the equivalent recidivism rate differentials, these techniques had an impact on recidivism that was equivalent to reducing a .5 control group baseline to around .15-.17, which is a substantial reduction considering the challenge presented by this category of offender¹.

Although Lipsey and Wilson categorised interventions as either institutional or non-institutional, they included in the institutionalised category many programmes that were, in fact, residential community-based interventions, such as Achievement Place.

According to Andrews et al. (1990), treatment for delinquent behaviour is most effective when the juveniles to whom that treatment is administered have appreciable risk of actually reoffending (the 'risk principle'). The contrary view, however, is often expressed: That the most serious cases will be least amenable to treatment. The authors' meta-analysis supported the risk principle: For both groups of offenders, the average intervention programme produced a positive effect equivalent to about a 12% reduction in subsequent reoffense rates.

In spite of these results, it remains to be demonstrated what specific strategies are really promising in rehabilitating incarcerated juvenile offenders, and, as a subgroup, the incarcerated serious juvenile offender. Presently, we have some preliminary results which suggest that the efforts directed at juveniles are more promising than the ones directed at adults. Redondo et al. (1997), reported in the first meta-analysis of only European evaluations, that in terms of crime typology, the most effective interventions (criterion: General improvement) were obtained with offenders against persons ($r = .419$), and the least with sexual offenders ($r = .085$), and that juvenile centres ($r = .257$) and juvenile prisons ($r = .193$), were more effective than adult prisons ($r = .119$). In a second systematic review, Redondo, Sánchez-Meca and Garrido (1999) analysed the specific influence of 32 European treatment programmes (applied during the eighties) on recidivism. Important findings included: (1) behavioural and cognitive-behavioural programmes were the most effective, (2) treatments were more successful with juvenile offenders. The reason for this probably reflected the use of most successful techniques (behavioural and cognitive-behavioural) with juveniles; and (3) the greatest effectiveness was achieved with violent offenders (not sex offenders), which seems to confirm the risk principle (Andrews et al., 1990).

In an update of the European meta-analysis, Redondo, Sánchez-Meca and Garrido (2002), found that the largest effect sizes were obtained with adolescents ($r = .35$), although all of the age categories achieved significant positive results.

Outcome measures in this area of "violent offending" also pose a challenge to an investigator and reviewer and must therefore be considered in this review. As Serin and Preston (2001) stress, the definition of "violent offender" and the issue of measures of recidivism have yet to be clarified. It is necessary to specify with more detail the characteristics of the offenders enrolled into programmes and the quality of the reoffending, separating the new violent offenses from the general recidivism rate.

¹ Values in this paragraph correspond to the translation of d values (standardized mean difference) of observed ESs presented by Lipsey and Wilson (1998), not the method-adjusted ESs.

The role played by different moderating variables (e.g., prior offense history, chronicity of violent offending, age at intervention, booster programmes and gender) requires further investigation, as described by Lipsey and Wilson and the European meta-analysis.

In summary, many gaps remain in our knowledge about the treatment of serious delinquents:

The Lipsey and Wilson (1998) meta-analysis compared institutionalised and non-institutionalised treatment for serious delinquents, but they included in the institutionalised category many programmes that were in fact residential community-based interventions, like Achievement Place. We still do not know the effectiveness of secure corrections treatment per se, in comparison to that of the traditional juvenile prison and training schools as well as modern small units for some kinds of offenders (with individualised treatment as a philosophy in the programme intervention).

The role played by different moderating variables (for example: Prior offense history versus non prior history; violent non chronic offenders versus violent chronic offenders; intervention at an early age versus at a later age; programmes that count with booster treatment after leaving versus programmes do not count with it; male delinquents versus female delinquents) has to be more investigated, as we have presented above in the case of Lipsey and Wilson and the European meta-analysis.

The measurement of “violent offender” and the issue of the recidivism have not been clear and consistent. It is necessary to specify with more detail who are the subjects treated and the quality of the reoffending, separating the new violent offenses from the general recidivism rate.

It is important, given the nature of this issue, to include in this systematic review all eligible studies that can be found, independent of language.

2. Objectives

2.1. General Objectives

To collect and assess the quality, in a systematic way, of the outcomes of empirical research regarding the effectiveness of treatment programmes implemented in secure corrections in order to decrease the reoffense rate and quality (i.e., type of offence) of serious (chronic or violent) delinquents (12-21 years old).

2.2. Specific Objectives

To identify quantitative published and unpublished studies (in different languages) relating to the evaluation of correctional intervention programmes for institutionalised serious (chronic or violent) juvenile offenders.

To analyse the effects of correctional intervention in serious (violent or chronic) juvenile offenders.

In the category of serious delinquents we have included violent or chronic offenders. As explained earlier, chronic and violent juveniles have many characteristics in common. Additionally, the majority of violent juveniles have previous criminal convictions and it is reported that almost half of persistent delinquents had committed violent offenses.

This review pays particular attention to the variability caused by moderating variables. These include: Type of treatment (theoretical framework of the treatment, focus), subjects or participants in the programs (age, type of offense, gender), the setting in which the intervention

occurs (the stage in which the programme is applied, the regime of the participants, and the country), methodology (type of assignment of the participants to the groups, groups attrition, and the follow-up period), and extrinsic variables (publication year and source) (Lipsey, 1994; Sánchez-Meca, 1997).

3. Methodology

3.1. Criteria for Inclusion and Exclusion of Studies for this Review

3.1.1. Types of studies

This review includes experimental (with random assignment) and quasi-experimental (without random assignment) studies with control or comparison groups. Furthermore, the outcomes presented in the studies have to include recidivism rates or at least information about new offenses. The inclusion of non-randomised control groups is necessary due to the paucity of well-controlled studies in the area of correctional intervention. Lipsey and Wilson (1998, p. 314) recognised this and stated in their meta-analysis that: “These are questions that are answered most convincingly by experimental and quasi-experimental studies in which the subsequent offending rate of juveniles given treatment is contrasted with that of an otherwise comparable control group not given treatment. Such research yields statistical findings that represent the magnitude of the treatment effect observed in each study”.

Studies without a control or comparison group were excluded, due to their poor methodological quality, as well as the N = 1 studies, because it is not possible to obtain from these studies an effect-size index in the same metric than that of the group studies.

3.1.2. Types of participants

The program recipients were juveniles either male or female, in secure corrections aged between 12 and 21 years old, under either the adult or juvenile jurisdictions, characterised as serious (chronic or violent) delinquents.

In general, juvenile offenders are considered as a group of young people from 12 to 21 years old (Fuhrman, 1986; Tolan & Guerra, 1994; Rutter, Giller & Hagell, 1998). According with the results of longitudinal research about criminal careers, during these ages more people are implicated in offending; we also know that habitual delinquents commit the majority of their offenses during this period. Furthermore, if we take into account the legal context, the range of age for legal responsibility in different countries ranges from 12 to 21 years of age (Garrido, Stangeland & Redondo, 2001).

We determined that the population in the selected studies belongs to the category of serious delinquents by inspecting the type of offense committed and their previous convictions.

Violent delinquents. We have defined this category as juveniles who have committed violent offenses. These comprise “those acts in which someone is hurt and resulted in serious injury (requiring medical treatment-cut, bleeding, unconscious, etc.) or in which a weapon is used” (Thornberry et al., 1995, p. 224 in reference to Denver Youth Survey). Furthermore, we included offenses that involve threatening behaviour by physical force.

We included studies in which *more than half* of the sample have committed or had a history of offenses such as: Murder (and attempted murder), homicide, kidnapping, assault (including aggravated), robbery (taking into account armed robbery), voluntary manslaughter, endangerment, arson of occupied building. Other offenses such as those against life and integrity of others with serious bodily injuries caused by physical force or weapons as firearms, cold steels, etc. are included (see Wiebush et al., 1995, about the category of “serious and

violent” offenses on which the Annual Survey of the Office of Juvenile Justice and Delinquency Prevention is based (OJJDP), p. 176).

Chronic delinquents. We defined “persistent offender” as those juveniles with three or more previous legal adjudications (as they had been defined by some Justice Organizations as the Department of Juvenile Justice –DJJ- of United States, 1998; or in studies like those of Capaldi & Paterson, 1996; Hagell and Newburn, 1994).

We have included studies in which more than half of the sample corresponds with juveniles with three or more previous legal adjudications, or studies where the mean of the criminal history of the sample is three or more previous legal adjudications for any kind of offenses except violent ones.

Violent and chronic delinquents. We included studies where less than half of the sample were violent delinquents, but the combination of chronic and violent individuals was higher than 50%.

Finally, we excluded studies in which more than a half of the samples are sexual offenders, as this is the focus of another Campbell Collaboration systematic review (lead author Friedrich Lösel). Studies that include juveniles committing minor offenses such as shoplifting, minor public order, traffic offenses and status offenses for the first time (see Wiebush et al., 1995, pp. 176, 210) were excluded as well.

The term “secure corrections” means, in this review, environments or secure institutions characterized by physical restraint measures as locked doors, walls, bars, fences, etc. We included as secure corrections: Centres of juvenile reform, prisons, borstals², training schools, camps and ranches, which hold juveniles accountable for their delinquent acts and provide a structured treatment environment. We excluded community programs or programs such as foster care, foster home, group home, periodical detention and, in general, those in which delinquents are in contact every day with the community (as Achievement Place).

Because of the existence of institutionalised programmes with the latter period spent in the community, we have included the studies in which more than the 50% of the treatment takes place in the institution. In those cases, the treatment in the community has been registered as a moderator variable.

3.1.3. Types of interventions

We included interventions aimed at decreasing post-treatment recidivism when the juveniles are returned into the community. These include psychological approaches, social and educational procedures and methods, as well as environmental conditions directed at supporting the learning of prosocial behaviours and attitudes. The classification of interventions takes into account two criteria: the first one is about the theoretical model supporting the programme. The second one is the focus of the programme. In order to analyse all the possible varieties of cross cultural studies, we proposed the following categories of interventions to be included in our review (Redondo et al., 1997; Redondo et al., 1999):

Behavioural: This model is based on learning theories (developed in criminology by, among others, Edwin Sutherland, Albert Bandura and Ronald Akers). It considers that criminal conduct, as any other human behaviour, is learned. The objective of behavioural programmes is to employ learning mechanisms to reverse the learning process, so that subjects can learn to inhibit their criminal conduct and put new socially admissible behaviour into practice.

² This is a term not in use in USA, but has a long tradition of use in the UK and refers to the classic reformatory.

Two paradigmatic applications of these models are token economy programmes and environmental contingency programmes. In these programmes, all the staff of an institution or unit must be involved in program delivery. The staff is generally led by a small group of experts in charge of the design, supervision, and the evaluation of the programme.

These programmes explicitly include token economy programmes and behaviour modification strategies.

Cognitive-behavioural: This model emphasises the need to teach offenders, skills that will make easier their interaction with other people. These skills will be oriented toward prosocial values, either within the family, in their jobs, or in any other social context. One of the most complete cognitive-behavioural programme is the one that follows the model of “Reasoning and Rehabilitation” (Ross and Fabiano, 1985; see also Ross and Ross, 1995). The main elements include:

a) Evaluation of the subject’s deficits in cognitive and interaction skills.

b) Treatment is applied in small groups for several weekly sessions.

c) The most often used strategies include: Interpersonal cognitive problems solving, social skills training, anger control, critical reasoning, values development, negotiation abilities and creative thinking. Currently, cognitive-behavioural programmes are the most used with all kind of offenders.

Programmes based on this cognitive-behavioural model include a mixture of cognitive, social, and emotional skills considered very important to the community reintegration of juvenile offenders.

Cognitive: The cognitive programmes emphasise the “cognitive side” of the cognitive-behavioural model, stressing cognitive reframing through the control of cognitive distortions, automatic thought and self-instructions.

Education: Many offenders, especially those who have grown up in marginalised sectors of society, do not complete their schooling and consequently, have a large educational deficit. The theory states that recidivism will reduce by increasing educational attainment through intensive schooling programmes.

These programmes consist of courses, school activities, delivery of materials for reading, etc. In these educational programmes, the curriculum focuses on core academic skills (such as grammar, mathematics, etc.) in lieu of teaching living skills (as in the social skills workshops included in cognitive-behavioural programmes).

Non behavioural/cognitive: The belief that offenders commit a crime as a result of emotional distress has a long tradition in corrections and, according to this concept, the treatment of offenders has to be directed at treating these underlying psychological alterations. Therefore successful psychological therapy leads to a reduction or disappearance of criminal behaviour. In this model, a heterogeneous set of techniques is used including techniques founded on psychodynamic theory, on a medical or pathological model of crime, or on client-centered counselling.

In this category other approaches that are not very well defined but are not cognitive or behavioural, are also included. For example, the Friedman and Friedman (1976) programme used an eclectic family approach. The only therapeutic community intervention present in our review was coded here as well.

Another classification criterion for programmes used in our review was the focus or target of the intervention.

Family: Programmes directed to change the dynamics of family relationships. As a result, a change of the youth’s delinquent behaviour is expected.

Group: Programmes directed to young people working as a group generally formed by offenders with similar characteristics.

Peers: Programmes directed to promote prosocial modelling among the youths, using a peer-to-peer approach.

Individual: The programme is aimed at changing the individual behaviour through a personal helping relationship (mentoring, counselling, etc.).

Multi-focused: Programmes with several foci of attention

Specifically, this review excludes studies that correspond with other Systematic Reviews from the Campbell Crime and Justice Group such as boot camps or scared straight programs.

3.1.4. Types of outcome measures

Studies had to include at least one outcome of subsequent offending behaviour, as measured by such indices as official records obtained from the police or adult/juvenile justice courts, that involve any kind of new offences with any kind of court response (parole, prison, etc.). Here we will refer to this outcome measure as 'general recidivism'.

We have taken into account other measure of outcome: The measure of Serious Recidivism defined as any new official serious registered offence that causes a new commitment to a secure facility. Serious recidivism means reincarceration or reinstitutionalisation.

We tried to analyse other outcome measures such as psychological variables or behavioural achievements. Unfortunately, it was impossible to do so because there were few studies with this type of information available.

3.2. Search Strategy for Identification of Relevant Studies.

Several strategies were used to identify studies meeting the criteria of this review. In order to reduce potential biases, we searched for: (1) published and unpublished studies, (2) between 1970 and 2003, (3) studies in areas of criminology, psychology, sociology, social service, education and psychiatry, (4) from any country and written in one of the following languages: English, Spanish, French, Portuguese, German and Italian.

First, we did a hand search of a selection of specialised relevant journal contents that are held in our Universities. We reviewed by hand search seven non-English journals and 21 English journals (Appendix 1).

Second, we conducted a specific search of 13 available electronic databases relevant to the topic area. Searches were done online using available Madrid Autónoma and Valencia Universities (Spain) resources. A report about keywords and results by each database consulted is included in Appendix 2. The keywords used to search in these databases were:

Delinquen (cy, ts), criminal (s), convicted, offender(s), inmates

Delincuencia, delincuentes, criminales, encarcelados.

Institution (alized, al, alization), detention, facility(ies), prison (s,ers), incarceration (ed), hospital (s), borstal (s), correctional(s), reformatories.

Institución, institucionalizados, detención, detenidos, prisión (es, eros), encarcelamiento, hospitales, correccionales, reformatories.

Boy(s), girls(s), adolescent(ce,s), juvenile (es), youth, young.

Jóvenes, juvenil, adolescentes.

Treatment(s), program(s), therapy (ies), rehabilitation, intervention(s).

Tratamiento, programa, terapia, rehabilitación, intervención.

Aggression (ive), anger, violence, violent, serious, chronic, persistent.

Agresión, ira, violencia, violento, serio, crónico, persistente.

We used other methods to search studies for this review. These methods included: (1) broad searches of the Campbell Collaboration Social, Psychological, Educational & Criminological Trials Register (C2-SPECTR) developed by the UK Cochrane Centre and supervised by the University of Pennsylvania Graduate School of Education (Petrosino et al. 2000); (2) we checked all the citations from the meta-analysis of Lipsey (1999) and Lipsey & Wilson (1998) about serious juvenile offenders (this meta-analysis quoted 74 references about interventions with institutionalised offenders) and also some European meta-analysis (Redondo, Garrido & Sánchez-Meca, 1997; Redondo, Sánchez-Meca, and Garrido, 1999), where 15 studies were about juveniles; (3) we maintained postal and e-mail correspondence with different institutions that work in topics linked with crime in several countries (information about these communications is included in Appendix 3); (4) we distributed letters requesting information from participants and lecturers attending the 2002 Annual Meeting of the American Society of Criminology at Chicago (copy of this letter is included in Appendix 4). Finally, we did a World Wide Web search with two popular search engines: Altavista and Google (information about the results of this search is included in Appendix 5).

3.3. Search Results and Selection of Studies

The total number of references obtained from the search methods (excluding the Internet searches, which generated thousands of websites) was 1299. Most of them included abstracts. Although the majority of these references contained the keys words of our search, in general the studies were not evaluation reports.

Many of the studies identified were theoretical assessments about the quality of a particular approach or the best way to consider several issues of the facilities regimes. Several other studies were descriptions of young offenders in the transition process to live in freedom after secure care. Some other studies focused on the validation or application of psychological tests used with juvenile offenders and violent youths while they were incarcerated. Other studies discussed topics such as community and diversion programs, the prediction of recidivism or the description of profiles of serious offenders. A small group of studies dealt with the training of people who work with juvenile delinquents.

The 1,299 studies identified included 74 references from the Lipsey meta-analysis (Lipsey, 1999; Lipsey and Wilson, 1998), and 14 references from the European meta-analysis (Redondo, Sánchez-Meca and Garrido, 2002, 1999a).

In regard to the 74 references of Lipsey's meta-analysis, 38 of them were excluded of our review. Nineteen were excluded because these studies were done previously to 1970; one reference was about sexual offenders; 3 studies were about bootcamps; and 15 articles were programmes that included time spent in the community and not inside an institution.

From the 1,299 initial identified references, we selected 122 as potentially eligible to include them in this review. These 122 researches were assessed using an eligibility checklist. This universe of references was constituted by 36 studies from Lipsey's meta-analysis, 14 references from the European meta-analysis and 72 references were obtained through a search in several databases.

As result of the selection process, 11 out of the 36 Lipsey's studies were included in our review and 25 of them were excluded.

From the 25 excluded studies, 10 corresponded to studies where juveniles participants were not serious offenders (in accord to our criteria); five studies lacked available information about the outcome of recidivism; three studies lacked sufficient methodological rigor; two studies did not have a description of the offender type (it was not possible to know if they were serious

offenders) and these studies did not observe our criteria of institutionalisation; in two cases there was no measure of recidivism and their participants were not serious offenders; in one study there was no outcome of recidivism and the methodology was poor; another study lacked methodological rigor, juveniles were not serious offenders and participants resided in the community. Finally, one study did not correspond to the application of a specific program; actually it assessed the effect of different placements on the juveniles.

In the European meta-analysis, of the 14 studies with juvenile participants, none of them corresponded to this review's criteria.

From the 72 remaining references identified in the database searches, 10 were selected for this review, one was impossible to obtain³, and 61 were excluded. Of the 10 selected studies, two were about the same research (Fagan, 1990a; Fagan, 1990b), so they were considered as a single study (comparison between one experimental and one control groups). Two other works shared data: Lukin (1981) and Jessnes (1975), and both of them were included as a single study as well. Another reference (Gordon, 1997) coincided with the same program and some participants from the study of Greenwood and Turner (1993), which was included in the Lipsey's meta-analysis. In this case, data from the Gordon's study were considered for this review because they included the data from Greenwood and Turner. A summary of the studies' selection process is included in Appendix 6.

Finally, we found 17 reports that fit the criteria of our review. These 17 references allowed us to analyse 30 different studies (comparison between experimental and treatment groups).

3.4. Data Management and Extraction

The reviewers selected 17 research reports for this review and found 30 comparisons between treatment and control groups in these works. We used a coding protocol to register the extracted data from each comparison. This coding protocol was constructed on the basis of the literature reviewed about correctional intervention programmes for serious institutionalised delinquents. We have also taken into account previous experiences in other systematic reviews such as the Boot Camp review (MacKenzie, Wilson & Kider, 2001) and previous meta-analyses (Marín-Martínez, Hidalgo, López, López, Moreno, Redondo, Rosa and Sánchez-Meca, 2002).

Building on the work of Lipsey (1994) and Sánchez-Meca (1997) the coding instrument was divided in three variables groups:

Substantive variables: This category includes the characteristics that are the object of this review, such as special features about the research participants, treatment and context.

Methodological variables: This group of variables referred to the design quality of the selected studies.

Extrinsic variables: This group of variables included study characteristics not directly linked with the object of this review, such as language used, published/not published document, etc; however, these can affect results.

Two trained psychologists completed the coding protocol for each study; the discrepancies were solved by mutual consent.

³ It was an unpublished Ph.D. thesis (Arduini, 2000). The purpose of the dissertation was to evaluate the effect of Project POOCH on violent, incarcerated, male juveniles in the Correctional Institution, Oregon Youth Authority. This project matched unwanted dogs with incarcerated youths who train and prepare them for adoption as family pets. Although we contacted the author, the document was not available until the termination of this report. We hope to have this document in the future in order to update this review.

3.5. Statistical procedures and conventions

The most usual recidivism measure reported in the studies about the effectiveness of programmes for delinquents consists of classifying the sample subjects as recidivists versus non recidivists. This was the case in our meta-analysis, as only two studies reported continuous measures of recidivism. As our unit analysis was the comparison between a treatment group and a control (or comparison) group, we selected as the effect-size index the odds ratio and its translation to natural logarithm. To calculate the odds ratio from each study, we composed a 2x2 contingency table, with the cell frequencies indicating the number of recidivists and non recidivists in each group (treatment and control). Odds ratios over the value 1 (and log odds ratios over zero) meant a lesser recidivism probability in the treatment group than in the control group and, at the inverse, odds ratios under the value 1 (and log odds ratios under zero) represented a higher recidivism probability in the treatment group than in the control group. If the study reported separate data for general and serious recidivism (such as we have defined in section 3.1.4), then an odds ratio was calculated for each recidivism measure and separate meta-analyses were carried out for each one of them. When a study reported recidivism data for several follow up periods, an odds ratio was calculated only for the last follow up, because including effect estimates for different follow up periods from the same sample violates the independence assumption in the meta-analytic calculations. Thus, for each study the odds ratio was calculated from the completers, that is, from the subjects with data in the last follow up. Although the strategy of calculating an odds ratio only for the last follow up avoids dependence in the effect estimates, it can bring attrition in the data used to calculate the effect sizes and, as a consequence, the effect estimates can be biased. In order to assess whether attrition could affect the effect estimates, intent-to-treat analyses (analyses based on assignment to conditions even if the juveniles did not complete or receive assigned treatment) were also carried out. With this purpose, another odds ratio for each study was calculated assuming the 'poorest scenario', that is, assuming that all of the subjects lost in the last follow up, both in the control and in the treatment groups, had recidivated. Therefore, separate meta-analyses were carried out for the two different recidivism measures (general and serious recidivism) and for completers and intent-to-treat data.

Only two studies did not report dichotomous recidivism measures (both of them reported in Friedman & Friedman, 1970), but means and standard deviations on a continuous recidivism measure (e.g., number of offenses). In those cases, we calculated a standardized mean difference, d , and then it was translated into the log odds ratio, Lor , by $Lor = 1.65d$, in order to put all of the effect estimates in the same metric (Haddock, Rindskopf, & Shadish, 1998; Sánchez-Meca, Marín-Martínez, & Chacón-Moscoso, 2003).

The meta-analytic calculations were carried out assuming a random-effects model. Under this statistical model each effect estimate is weighted by its inverse-variance, being the variance equal to the sum of the within-study and the between-studies variances. With this weighting scheme, an average effect size and its 95% confidence interval were calculated for the different recidivism measures. The heterogeneity among the effect estimates was assessed by the between-studies variance (τ^2), the Q test, and the I^2 index (Higgins & Thompson, 2002; Huedo-Medina, Sánchez-Meca, Marín-Martínez, & Botella, 2006). Although the random-effects model was the model in our analyses, we also calculated average effect estimates from a fixed-effects model in order to examine the robustness of our results to changes in the statistical model.

When the heterogeneity Q test was statistically significant, mixed-effects analyses were carried out to search for moderator variables that could explain the variability among the effect estimates. For qualitative moderator variables, weighted analyses of variance were applied on the effect estimates, whereas the relationship between continuous moderator variables and the effect estimates was assessed by weighted regression models. Some of these analyses were crucial to assess the validity of our meta-analytic results:

To assess if publication bias might be a threat against the validity of our results: (a) we compared the average effect sizes for the published versus unpublished studies, and (b) we applied the Egger test (Rothstein, Sutton, & Borenstein, 2005).

To examine if attrition affected the effect estimates in our meta-analyses: (a) regression analyses assuming a mixed-effects model were carried out to test whether the treatment group attrition, the control group attrition, and the differential attrition, and (b) separate meta-analyses were carried out to compare the average effect size obtained from the completers with those obtained from the intent-to-treat data.

As we had included studies with random and non random assignment of the subjects to the groups, we compared the average effect size for both design types, in order to assess whether the remaining analyses could be done with all the effect estimates regardless of the subjects assignment rule.

Although all of the meta-analytic calculations were carried out with the log odds ratio, this effect-size index is difficult to interpret in a practical sense. To make easier the practical interpretation of the results, the average log odds ratios were translated into both odds ratios and correlation coefficients and, then, the correlation coefficients were translated into the BESD (Binomial Effect Size Display) to obtain an index of effectiveness in terms of differential percentage of success between the treatment and the comparison groups (Rosenthal, 1991). To accomplish this, first each average log odds ratio, Lor , was translated into a d index by: $d = Lor/1.65$, and then the d index was translated into a correlation coefficient, r , by: $r = d / \sqrt{d^2 + 4}$ (Haddock et al., 1998; Rosenthal, Rosnow, & Rubin, 2000; Sánchez-Meca et al., 2003). Thus, an average log odds ratio of, for example, $Lor = 0.211$, became an odds ratio of $or = e^{0.211} = 1.235$ and a correlation coefficient of $r = 0.064$, meaning that, on average, the subjects that received a treatment exhibited about a 6.4% less recidivism than those of control groups. On the other hand, this translation also enabled us to compare our results with those obtained in previous meta-analyses that had presented their effect estimates in terms of correlation coefficients. All of the meta-analytic calculations were carried out with the program Comprehensive Meta-analysis 2.0, CMA 2.0 (Borenstein, Hedges, Higgins, & Rothstein, 2005).

3.6. Criteria for determination of independent findings

The selected studies reported multiple outcomes in the same sample of subjects and several outcome measures at different time points (follow ups). In order to avoid statistical dependency in the data in these cases, we computed an effect size (ES) for each outcome measure, that is, for general and serious recidivism, and separate meta-analyses were carried out for each one of them. On the other hand, when the study reported data for multiple follow up periods, an effect estimate was calculated for only the last follow up. Therefore, each study contributed with only an effect estimate in the meta-analytic calculations.

4. Results

In this part of the review, we describe the characteristics of the selected studies. We explain afterwards the global results of the Effect Size (ES) for general and serious recidivism, and then we analyse the relationships between some moderator variables and the effect estimates.

4.1. Description of selected studies

This review included an analysis of 17 documents (eight journal articles, two books, one published governmental report, two unpublished governmental reports, three unpublished dissertations, one unpublished research report and one unpublished demonstration project

report). In these 17 documents, we identified 30 comparisons between a treatment group and a control group. We named these comparisons “studies”.

For these 30 studies, we have only included groups with “n” (number of youths in the sample of each group) equal to or above five⁴. When the studies had information about more than one control or comparison group, we chose one of them in order to avoid the dependency in the data⁵.

Table 1 shows the main characteristics of the studies included in this meta-analysis. In general, the studies included in this review were published in the United States, with samples of male violent offenders, with a mean age of 16 years. Most of the programmes were non-behavioural interventions, followed by cognitive-behavioural and cognitive treatments, and the minority being the behavioural and educational programmes. Most of the programmes—focused on the individuals, only one study focused on the family, two of them applied multi-focused services, three were directed to groups of offenders and five were directed to peers. The participants in the studies lived at juvenile prisons, as well as in special training schools and centres of juvenile reform. Of the 30 studies, 13 of them were experimental studies, whereas 17 were quasi-experimental studies.

A total number of 7,509 juveniles were included in all the 30 selected studies (3,685 juveniles were in the treatment groups and 3,824 in the comparison groups). However, as we have included only the most serious offenders from the samples, the initial total population included in this review is smaller (6,658 juveniles)⁶. The sample sizes ranged from 5 to 660 juveniles. The last follow up in the studies was between 6 and 120 months. On average, the last follow up period for the 30 studies had a median value of 18 months, whereas the mean was 31.6 months (SD = 36.1). The global attrition was 17% for general recidivism and 30% for serious recidivism. Descriptive characteristics of continuous variables of the studies are included in the Table 2. Additionally, a descriptive summary of the studies included in this review and some

⁴ We decided to apply this criterion because effect sizes calculated from small sample sizes are very unstable. In any case, none studies had to be deleted or excluded for that reason.

⁵ We made that choice in two cases. In the Bottcher (1985) study, there were several possibilities of comparison between treatment and control groups. Regarding the treatment group, there were two possibilities: Athena 1, which was a treatment group composed of all the girls who were committed to the Athena Program after December 1, 1981; and Athena 2, a treatment group composed of the same girls as Athena 1, but in which sixteen of them returned to the program and left in time for a subsequent 18 months follow up; as a consequence, these 16 girls were in the program two or more times. We selected for this review Athena 1 as the treatment group. Regarding the control group, Bottcher analyzed four comparison groups; we selected the group 4 because this group excluded all the control girls who were subsequently referred to Athena. In this way we eliminated the possibility that the girls that were in the control group at the beginning of the research could later participate in the treatment program. In the Jessness study (1975) there were two comparison groups. We selected one of them, taking into account that these both groups were institutionalized in the same training school, two years before the application of the experimental program.

⁶ There were three studies in this situation. In the first one, Bottoms and McClintock (1973) in order to control the differences between the groups used a predictive instrument. In this instrument each offender was ranged an estimated probability of failure. Each juvenile was conveniently assigned to one of five classes (A,B,C,D and E), “A” being the lowest probability of failure (less than 25%) and class “E” being the highest. In order to respect the criteria in our review we only included the most serious offenders (with the higher scores D and E). The same occurred with the Cann et al. (2003) study, in which two year expected reconviction rates were generated for the sample using the average OGRS score for offenders in each risk group (Low, Medium-low, Medium-High and High). We took also into account only the category of high risk. Finally, in the Jessness study (1971), based on certain background variables that are known to be related to parole outcome, a further refinement in the analysis was carried out by classifying wards as good, average and poor parole risks (base expectancy categories) according to scores derived from weighted background variables. For this review only the juveniles of poor risk were included.

comments about each one of them are included in the Appendix 7, as well as a summary of the variables database for this review can be found in the Table 13.

4.2. Results of the Meta-Analysis

The 30 studies included in this review reported measures about general recidivism, but only 15 of them analysed serious recidivism. Next, separate meta-analyses for both recidivism measures and for effect sizes based on completers and on intent-to-treat data are presented.

4.2.1. Effect Sizes for General Recidivism

Overall Results at the Last Follow-up for Completers Data

For this review, we defined general recidivism in a broad sense, including any official record obtained from the police or adult/juvenile justice courts, which involve any kind of new offenses with any kind of court response (parole, prison, etc.). The general recidivism definition for each study is detailed in Appendix 7, and the results obtained from the completers data is showed in Table 3. Figure 1 shows a forest plot for the effect sizes distribution in the metric of the odds ratio, with the values over 1 showing a lowest rate of general recidivism in the treatment group in comparison to the control group. Assuming a random-effects model, the average odds ratio was $or_+ = 1.235$, being positive in favour of the treatment groups and statistically significant ($p = .006$). Its translation into a correlation coefficient was $r = .064$, meaning that the subjects that received any intervention programme exhibited, in average, a 6.4% less recidivism into crime than those of the control groups. The average effect size obtained from the fixed-effects model was very similar ($r = .069$) to that from the random-effects model and the heterogeneity Q test was statistically significant ($p = .037$; $I^2 = 34.10\%$). These results imply that the effectiveness of the applied treatments was heterogeneous and, as a consequence, we analysed the influence of moderator variables on the effect estimates by means of mixed-effects models. Because of the small number of studies included in the meta-analysis, only a few conceptually relevant moderator variables were examined.

Overall Results for Intent-to-Treat Data

With the purpose of carrying out a sensitivity analysis, the odds ratio of each single study was re-calculated taking into account the initial sample size of both the treatment and the control groups. As the outcome was dichotomous (recidivism versus non recidivism into offending), we assumed that all the subjects that had been missed before the last follow-up had recidivated (an “intent-to-treat analysis”). With this strategy, we were recreating the poorest scenario in terms of effectiveness. If under this scenario the results were similar to those obtained with the completers data, then we will have a strong argument to dismiss possible biases due to attrition. Table 4 shows the results of our meta-analysis for intent-to-treat data. With both the fixed- and the random-effects model a statistically significant average odds ratio was obtained and the average correlation coefficient for the random-effects model was even higher than that obtained from the completers data ($or_+ = 1.307$; $r = .081$). This result showed that assuming the worst scenario (that is to say, that all missing individuals both in the experimental and the control group had recidivated), the intervention was still effective. In this way we can conclude that our results are not overly influenced by attrition. As a consequence the following analyses were carried out only with the completers data.

4.2.2. Effect Sizes for General Recidivism: Searching for Moderator Variables

Design Type and Effect Size

The first moderator variable to analyse was the design type, distinguishing between experimental (random assignment) and quasi-experimental (nonrandom assignment) studies. Table 5 shows the results of applying a mixed-effects model for the design type on the odds ratios. The inter-categories homogeneity test (Q_B) showed no statistically significant differences between the mean effect sizes for the experimental and quasi-experimental studies ($p = .391$), although the confidence interval of the average odds ratio for the experimental designs included the null effect ($or_+ = 1.098$; $r = .028$), whereas that of the quasi-experimental designs did not include it ($or_+ = 1.271$; $r = .072$). Although the absence of significant differences between the two design types justifies the integration of all the studies in order to analyse the rest of the moderator variables, the results should be interpreted very cautiously because of the differences between the two mean effect sizes.

Attrition and Effect Size

In order to complement the intent-to-treat analyses before presented, we also carried out simple regression analyses, assuming a mixed-effects model, to examine the relationships between effect size and three moderator variables referred to attrition: (a) attrition in the treatment group (A_T), (b) attrition in the control group (A_C), and (c) differential attrition between the treatment and the control group, defined as $A_{Dif} = A_T - A_C$. So, positive values for A_{Dif} represented a higher attrition in the treatment than in the control group, and vice versa (Table 6).

The results shown in this table point out that neither the attrition of the treatment group ($p = .875$), nor that of the control group ($p = .686$), nor the differential attrition between both groups ($p = .748$) presented a significant relation with the effect estimates. Therefore, attrition is unlikely to be a meaningful source of bias in these results.

Treatment Type and Effect Size

One of the moderator variables most conceptually relevant to explain heterogeneity among the effect estimates was the type of treatment implemented in the experimental groups. Table 7 presents the results of analysing this moderator variable on the effect estimates. Comparing the five treatment categories here considered was not statistically significant result [$Q(4) = 4.598$, $p = .331$; $\chi^2 = 0.00$]. We can not say, consequently, that some treatments were better than others, although the absence of statistical significance can be due to the paucity of studies included in each. Moreover, with the exception of the cognitive treatment, the remaining four treatment categories obtained confidence intervals around the average effect size that included the null effect and, therefore, we must conclude that there was no evidence in favour of the effectiveness of those interventions evaluated with serious juvenile offenders in terms of general recidivism.

An apparently counterintuitive result was that the cognitive category, with an average odds ratio $or_+ = 1.213$ ($r = .058$) achieved the statistical significance, whereas the cognitive-behavioural category, with a higher $or_+ = 1.629$ ($r = .146$), did not achieve an average effect size statistically significant. The reason of this finding was the great heterogeneity exhibited by the effect sizes included in this category, and mainly caused by the two most extreme effect estimates: the odds ratios 0.218, from the Fagan's (1990) Study 2, and 21.010 from the Caldwell & Rybroek's (2001) Study. In fact, once these two values were excluded from the analysis, the average odds ratio for this category remained very similar to that in Table 7 ($or_+ = 1.621$), but its confidence interval did not contain the value zero (confidence limits in terms of odds ratio: 1.062 and 2.474; $r = .145$). Therefore, deleting these two studies it is possible to say that the treatments that included a cognitive component achieved a positive statistically significant effect.

In the case of the Fagan study, two studies were realised with the same methodology and programme in four different cities and with three moments of follow up: 12, 24 and 36 months after obtaining the liberty. The only study of these four studies that had 5 or more youths

participating in the programme and that it was possible to obtain information about recidivism after 36 months of the application of the programme was the Study 2. All the results obtained on these four studies during the follow up periods of 12 and 24 months are positive in favour of the treated groups, with the exception of the study realised in Detroit (Fagan Study 2) during the follow up period of 36 months. In fact, the studies 2 and 4 presented ESs placed between the highest ranked of the studies included in our review ($r = .37$ and $r = .28$, respectively). Furthermore, it is worth to take into account that this same study 2 in the 24 months follow-up obtained positive results in favour of the treatment group (with percentage of recidivism less of 42.9% of 14 youths in the control group, compared with 23.1% of 13 youths in the treatment group). This same study only had 4 youths in risk in the 12 months of follow up in the treatment group and 5 youths in the control group, who none of them had recidivated. Taking into account the follow up period of 24 months and not the 36 one, the effect size for this study is $r = .27$. The reason to include data of the 36 months follow up and not the 24 one was because of our criteria of considering the last follow up of each research.

We must point out that the prior behavioural-cognitive study of Caldwell and Van Rybrock had the smallest N of this category, which can affect its extreme result.

In this way, we cannot say that there is some different effectiveness caused by the type of treatment applied.

Therefore, although in a strict sense our findings did not show a differential effectiveness of the treatment categories, we find sound evidence for positive effects of the cognitive and cognitive-behavioural treatments.

In relation to the control or comparison groups, in general there was a poor description about the research conditions, such as it is shown in Table 14. Most of the comparison groups (17 of the 30 studies included in the review) had no available information about the characteristics of the programme received (if it was educational, vocational or only hardening of facility regimes), but it seems that these programmes were not highly structured. In five cases it was clear that the comparison groups were in a hard facility regime. Other five studies received some kind of academic or educational programme. In two studies comparison groups received some kind of therapeutic community. Finally, only one study included behavioural intervention in the control group.

Focus Type and Effect Size

A moderator variable related to the treatment category was the focus of the programme. As is shown in the Table 8, significant differences were found among the mean effect sizes pertaining to the intervention categories in terms of the selected focus ($p = .010$), with a 15.9% of explained variance. However, of the four categories analysed, only the multi-focus programmes presented a significant mean ES ($or_+ = 1.829$; confidence limits: 1.432 and 2.335; $r = .180$). This result has to be taken very cautiously because it is based in just two studies.

Delinquent Type and Effect Size

There were no significant differences among the three types of offenders (chronic, violent and mixed) in relation to effectiveness ($p = .121$), with a explained variance proportion almost null ($\eta^2 = .025$). Moreover, the mixed offenders was the only category with a significant mean ES ($or_+ = 1.352$; confidence limits: 1.164 and 1.573; $r = .091$) (Table 9).

Follow-up Duration and Effect Size

A weighted mixed-effects regression model was applied in order to test whether the follow-up period was related with the effect sizes. The unstandardized regression slope was negative ($B =$

-.0056), but it did not reach the statistical significance [$Q_R(1) = 1.831, p = .176$], with a negligible explained variance proportion ($R^2_{adj} = .017$). Therefore, the follow-up period did not seem to be related to the treatment effect.

4.2.3. General Recidivism at the Last Follow up: Publication Bias

To test if publication bias might be a threat against the validity of our meta-analytic results, we compared the mean effect size for the published and unpublished studies included in the meta-analysis. As Table 10 shows, there were no significant differences related to the publication status. In fact, the mean effect size achieved by the unpublished studies ($or_+ = 1.423; r = .106$) was even slightly higher than that of the published ones ($or_+ = 1.166; r = .047$).

To complement this result, we applied the Egger test. The 'Egger test' is an unweighted regression consisting in taking the precision of each study as the independent variable (precision being defined as the inverse of the standard error of each effect size) and the effect size divided by its standard error as the dependent variable. A t-test for the hypothesis of an intercept equal to zero enables to determine if publication bias is a threat against the validity of our overall effect size (Sterne & Egger, 2005). In our case, applying the Egger test we obtained a not statistically significant result for the intercept of the regression model [Intercept = $-.244; T(28) = -.792, p = .435$] and, therefore, we can reject publication bias as a confounding source of our results.

4.2.4. Serious Recidivism and Effect Size

With relation to serious recidivism, the 15 studies that were taken to analyse presented a significant mean log odds-ratio that supported the effectiveness of the treatment ($or_+ = 1.354$; confidence limits: 1.074 and 1.708; $r = .091$) (Figure 2). Moreover, the ESs were homogeneous around the mean odds ratio [$Q(14) = 10.585, p = .718$], and the between-studies variance was 0 (as well as the I^2 index); as a consequence, the assumed statistical model in this case was the fixed-effects model. Therefore, we can affirm that the interventions reduced the serious recidivism of the offenders.

4.2.5. Are the results for serious recidivism better than those for general recidivism?

Taking into account the results shown both in the general and in the serious recidivism, the mean ES in terms of correlation coefficient for serious recidivism ($or_+ = 1.354; r = .091$) is twice the ES for general recidivism ($or_+ = 1.136; r = .039$), being statistically significant (see Table 11). However, the confidence interval for general recidivism for these 15 studies included the null effect, pointing out that the effectiveness obtained for serious recidivism did not extend to general recidivism.

4.2.6. Serious Recidivism and Publication Bias

Again, the results obtained with the Q_B test rejects the publication bias, because we did not find significant differences (Table 12). Moreover, the Egger test was not statistically significant [Intercept = $.488; T(13) = 1.104, p = .290$].

4.2.7. Searching for moderator variables

Because of the few studies that reported data about serious recidivism we did not make any analysis with respect to the influence of moderator variables. On the other hand, the heterogeneity test, Q , was not significant, and the I^2 index was 0.

4.2.8. Other outcomes

Despite our initial aims, we could not make any other analysis due to the paucity of information presented in the studies.

5. Discussion

One of the main objectives of this review was to identify empirical published and unpublished studies (in different languages) with high methodological rigor, relating to the evaluation of correctional intervention programmes for institutionalised serious (chronic or violent) juvenile offenders. Considering this objective, we found few studies with sufficient methodological rigor that met our definition of serious offenders. Only 17 studies met these inclusion criteria for our review. Considering these criteria were flexible (because we included experimental as well as quasi-experimental studies), the number of studies found was low. In some of the studies (see appendix 1, “characteristics of included studies”) a variable number of subjects (always less than 50 per cent of the total) were not violent or chronic offenders, however we do not believe that a supplemental analysis that takes into account this fact as a moderator variable makes a difference or can clarify in any way the final outcomes, considering the low number of studies finally gathered.

Additionally, in spite of our efforts we could not find studies with these characteristics in languages other than English. Almost all the studies in this review were done in the United States. This condition limits our conclusions for other countries and cultures, and supports the need to foster this kind of researches in other countries.

Our main question was if, with the best available evidence, the correctional treatment could demonstrate effectiveness to reduce the recidivism of serious institutionalised juvenile offenders. This systematic review addressed the following question: Are correctional treatments effective in reducing recidivism among institutionalised serious (violent or chronic) juvenile offenders?

Our research confirms the overall finding found in other meta-analyses of the efficacy of the treatment programmes for juvenile offenders (Andrews et al., 1990; Garret, 1985; Gensheimer, Mayer, Gottschalk and Davidson, 1986; Redondo, Garrido and Sánchez-Meca, 1997, 1999, 2002), and especially the results of assessments about the limited effectiveness of programmes applied to serious offenders (Lipsey, 1999; Lipsey and Wilson, 1998).

5.1. General recidivism

In general, the mean ES for general recidivism was positive in favour of the treatment groups. Thus, the evidence suggests that implementing programmes is better than not doing it. However, due to the available information from the studies and considering the number of studies analysed in this review, it is very difficult to discriminate among the main characteristics associated with effective programmes.

The previous meta-analyses of Lipsey and Wilson (1998) and Lipsey (1999) reported ESs of $r = .05$ for institutional interventions with institutionalised serious juveniles offenders. The present review reports an ES of $r = .06$, a value very similar to that obtained by Lipsey. The present conclusion is that the effectiveness of interventions with serious offenders is smaller.

Regarding the participants variables, similar to other meta-analysis such as Lipsey's, most of the studies have focused on male juveniles. Although a few analysed female evaluations produced slightly negative findings, these results are statistically unstable. This situation could be

explained because of the reduced number of studies with female samples. The gender variable of the participants did not seem to have any effect on the magnitude of the ES. Additionally, the proportion of explained variance by this variable was small.

Although one of our main concerns in this review was to assess the differential effect of the correctional programs on the different kind of offenders (violent, chronic and mix), this variable did not show significant differences on treatment efficacy. After comparing violent, chronic and mixed samples, the data obtained showed no apparent interaction with the effectiveness of the programmes. This situation could be explained because the primary studies provided limited information about the samples. Although all the studies included in this review had the inclusion criteria of serious offenders, in some of them the total sample were constituted by violent, chronic or mix offenders, but in others only around 50% of the sample was composed of this kind of offenders. This condition could influence the results of this variable.

When it came to the type of interventions, this variable was the most important in theoretical terms. Data showed that in general the interventions are effective in favour of the treatment groups. However, with the available data we cannot affirm that the type of intervention has an influence on the ES. In spite of this fact, it is important to point out that two types of treatment presented significant ES, and these interventions included some cognitive components (cognitive – behavioural and cognitive programmes). These results are in agreement with the results of other meta-analyses.

Another important result is the focus of the intervention programme. The multi-focused interventions reported a significant ES. Although there were only two studies classified into the category of multi-focused treatment, it is important to consider this factor in future research, with its respective complete description in the studies. The result about the focus of the interventions can be an initial evidence of a promising component of treatment success.

In general, no single approach in the treatment of violent adolescents has been proven effective (for example, Lipsey and Wilson, 1998). In words of Tate, Reppucci and Mulvey (1995): “Service provision should be reconceptualized as an ongoing care model that emphasizes intervention in multiple spheres of an adolescent’s life. The most promise lies in a comprehensive, long-term commitment, not in the development of any singular, more powerful approach” (p. 780). The results of this review suggest more attention in this sense.

It is important to point out that many studies did not have available information about the intensity and the magnitude of the intervention. The latter is important if we take into account the early age of onset in delinquent activities of the serious offenders and their long learning histories of illegal behaviour. For this reason it is important to propose the discussion about the efficacy of short vs. long intervention programmes. Because only a few of our reviewed studies reported information about the intensity and the magnitude of the programmes, the conclusions obtained in both issues are limited.

Other features in the literature associated with successful programmes such as the principles of risk, needs or responsivity (Andrews, 1995; Lösel, 1995; McGuire & Priestley, 1995) were not studied in our review. Again, in many studies there was not available information about these principles.

A very important methodological point is that it is difficult to find control groups that have no correctional program (the “treatment-as-usual” effect). This situation could be considered as one of the reasons that explains why we did not find higher ESs. For instance, in researches as the one of Cornish and Clarke (1975), the control group as well as the treatment group received a therapeutic community intervention with only some differences in the structure. In another example, Friedman and Friedman (1979), the control groups had an educational intervention. And in other studies as in Guerra and Slaby (1990) the youths in the control group did not have

any cognitive intervention, but it was not possible to know if this group had received any other kind of intervention in the past. Thus, if the control group received some kind of intervention, this circumstance could influence the ES results.

From 17 articles or documents included in this review, 6 corresponded to experimental studies and 11 to quasi-experimental studies. From the 30 studies (comparisons) 13 were experimental and 17 quasi-experimental. As it is established in the results of this research, the experimental studies presented a nonsignificant small ES, whereas the quasi-experimental studies obtained a significant small ES. In spite of the absence of a statistically significant difference between the mean ESs of the experimental and quasi-experimental studies, our results should be interpreted very cautiously, because the experimental studies showed a nonstatistically significant mean ES. Also these data suggest the importance of more experimental research, with the aim of obtaining stronger conclusions about the effectiveness of the interventions with institutionalised young serious delinquents (violent and chronic).

The statement of Tate, Reppucci and Mulvey (1995) is still valid: “There is a clear need for methodologically sophisticated studies of treatment effectiveness that are more precise with regard to their definition of violence and that either exclusively target or conduct separate analyses for violent juveniles” (p. 780).

With respect to the presence of some possible bias in the calculation of ES, neither the attrition nor the publication bias seem to affect the results.

5.2. *Serious recidivism*

In spite of the fact that not all the included studies in this review had data about serious recidivism, the analysis of the 15 studies with this kind of results presented interesting data. The global ES for the serious recidivism was favourable to treatment groups with a statistically significant mean ES. These results indicate that rehabilitation programmes for serious offenders reduce serious recidivism to a higher degree than general recidivism. This is an important finding because the treatment for serious offenders has among its main objectives to reduce the recidivism and the dangerousness of the serious offenders. The data points out an important effect on both of these aims.

6. Implications for practice and research

Although the data showed positive results for treated groups of serious offenders, there are few studies assessing the efficacy of correctional intervention for this category of offenders. It is important to improve the number and quality (with a complete description of moderator variables) of this kind of studies, in order to reduce this lack of knowledge.

Considering that some programmes showed a high ES and that the global ES was positive for treated juveniles, it is justifiable to continue the efforts in the treatment of this population.

Additionally, the intervention for females is indispensable. The few studies with women did not permit definitive conclusions. It is necessary to prepare more researches in order to identify if delinquent girls need some special characteristics in their programmes.

Perhaps the main finding of our review is that there are more effective programmes in the reduction of serious recidivism than of general recidivism. This finding stands out the importance to include the serious recidivism outcome as a measure of efficacy in all the programmes focused to reduce the delinquent behaviour of serious offenders. It is not enough to

assess the general recidivism, because it seems that the programmes have effects in other behaviours associated with delinquency (for instance the minimum time for recidivism).

7. Implications for criminal policy

It is important to point out that if a small part of the offenders' population is cataloged as chronic and violent, and this specified population is responsible for a significant proportion of the offenses, the need to identify these kind of offenders and to propose correctional intervention programs to reduce their delinquent behaviour is evident.

The results showed that the programmes have a positive effect on general recidivism, and an effect even higher on serious recidivism. Our data supported the importance of continuing to work in secure corrections in order to improve the quality of the interventions offered to inmates. Additionally, even though the cognitive treatment seemed to be the most effective, when we excluded the two most extreme ESs of the cognitive-behavioural category, this type of intervention also achieved an ES statistically significant and had the largest overall mean ES.

8. Conclusion

In accordance to the results obtained in this review, in general the programmes “do work” to reduce the general and, specially, the serious recidivism of serious institutionalised juvenile offenders. This is particularly true in the case of interventions with a cognitive or cognitive-behavioral emphasis, applied to male samples in centres of juvenile reform. It seems also that the educative non-structured programs did not work to reduce the recidivism.

We still do not know the effect of the aftercare period in the intervention programme efficacy. We do not know either the effect of the programmes on females, neither the intensity nor appropriate magnitude of the intervention with the aim to reduce the recidivism in serious offenders. Furthermore, it is unknown the effect of the intervention programmes on other outcomes such as the minimum time for recidivism, although the preliminary data are promising.

It is clear the need of more experimental studies about the effect of the intervention correctional programmes on institutionalised serious juvenile offenders. In addition to this, the data show that we must explore the possibilities of multi-focused programmes in increasing the intervention effectiveness.

9. Acknowledgements

We would like to thank to Dr. Mark W. Lipsey for his kind support, providing some original articles from his meta-analysis about serious offenders.

10. Conflict of Interest

There is no conflict of interest.

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12. Tables

Table 1. Descriptive characteristics of categorical variables of the studies

Table 2. Descriptive characteristics of continuous variables of the studies

Table 3. Overall results for only completers data

Table 4. Overall results for Intent-to-Treat data

Table 5. Design type and odds ratios for general recidivism (last follow up and completers data).

Table 6. Simple regression analyses (by weighted least squares and assuming a mixed-effects model) for log odds ratios (completers data).

Table 7. Treatment type and odds ratios for general recidivism (last follow up and completers data).

Table 8. Focus type and odds ratios for general recidivism (last follow up and completers data).

Table 9. Delinquent type and odds ratios for general recidivism (last follow up and completers data)

Table 10. Study source and odds ratios for general recidivism (last follow up and completers data)

Table 11. Overall results, in terms of odds ratios, for the 15 studies that presented data for calculating an effect size for general and serious recidivims at the last follow up (completers data).

Table 12. Study source and odds ratios for serious recidivism (last follow up and completers data).

Table 13. Summary variables analysed by each study

Table 14. Summary description of the control or comparison groups.

Table 1: Descriptive characteristics of the studies (categorical variables)

Moderator variable	Count	%
Design Type:		
Experimental	13	43.3
Quasi-experimental	17	56.7
Treatment Type:		
Behavioral	4	13.4
Cognitive	7	23.3
Cognitive-Behavioral	7	23.3
Education	3	10
Non Behavioral	9	30
Focus of the intervention:		
Group	3	10
Individual	19	63.3
Multi-focused	2	6.7
Peers	5	16.7
Family	1	3.3
Delinquent Type:		
Chronic	5	16.7
Mixed	9	30
Violent	16	53.3
Study Source:		
Published	24	80
Unpublished	6	20
Country:		
Canada	4	13.3
England	4	13.3
USA	22	73.4
Study Date:		
1970-79	17	56.7
1980-89	1	3.3
1990-99	9	30
2000-03	3	10

Table 2: Descriptive characteristics of the studies (continuous variables)

Moderator variable	k	Min.	Max.	Mean	Median	SD
Treatment sample size (Initial)	30	5	568	112	40	148
Control sample size (Initial)	30	5	660	117	36	174
Total sample size (Initial)	30	10	1136	229	76	320
Treatment sample size (Final)	30	5	568	94	28	142
Control sample size (Final)	30	5	660	104	24	173
Total sample size (Final)	30	10	1136	199	52	312
Treatment attrition	30	.0	73.7	17.6	.0	25.8
Control attrition	30	.0	66.7	16.9	.0	25.9
Differential attrition	30	-27.5	59.1	.7	.0	13.5
Last follow-up (in months)	30	6	120	31.6	18	36.1

k: Number of studies.

Min.: Minimum value.

Max.: Maximum value.

SD: Standard deviation.

Table 3: Overall Results for Only Completers Data

Statistical Model	k	r	or ₊	95% C. I.		z	p
				L _l	L _u		
Fixed-Effects Model	30	.069	1.257	1.156	1.366	5.379	< .001
Random-Effects Model	30	.064	1.235	1.061	1.436	2.726	.006
Heterogeneity assessment	Q(29) = 44.009, p = .037; I ² = 34.10%; τ ² = .039						

k: Number of studies.

r: Average correlation coefficient obtained by translating the average odds ratio.

or₊: Average odds ratio.

95% C. I.: 95 per cent confidence interval around the average odds ratio.

z: Significance test for the average odds ratio.

p: Probability level.

Q: Heterogeneity test.

I²: I squared index.

τ²: Between-studies variance.

Table 4: Overall Results for Intent-to-Treat Data

Statistical Model	k	r	or ₊	95% C. I.		z	p
				L _l	L _u		
Fixed-Effects Model	30	.102	1.405	1.266	1.559	6.414	< .001
Random-Effects Model	30	.081	1.307	1.063	1.606	2.538	.011
Heterogeneity assessment	Q(29) = 71.845, p < .001; I ² = 59.63%; τ ² = .135						

k: Number of studies.

r: Average correlation coefficient obtained by translating the average odds ratio.

or₊: Average odds ratio.

95% C. I.: 95 per cent confidence interval around the average odds ratio.

z: Significance test for the average odds ratio.

p: Probability level.

Q: Heterogeneity test.

I²: I squared index.

τ²: Between-studies variance.

Table 5: Design Type and Odds Ratios for General Recidivism (Last Follow up and Completers Data)

Design Type	k	r	or ₊	95% C. I.	
				L _l	L _u
Experimental	13	.028	1.098	0.834	1.449
Quasi-experimental	17	.072	1.271	1.054	1.534

$$Q_B(1) = .734, p = .391; \omega^2 = .0$$

Q_B: Chi-square statistic to test the homogeneity among the average odds ratios for the different categories of the moderator variable. ω^2 : Hays' omega squared index, which represents the explained variance percentage by the moderator variable on the effect sizes.

Table 6: Simple regression analyses (by weighted least squares and assuming a mixed-effects model) for odds ratios (completers data)

Moderator variable	k	B _j	Q _R	p	R ² _{adj}
Treatment Attrition	30	-.00042	.025	.875	.0
Control Attrition	30	-.00113	.164	.686	.0
Differential Attrition	30	.00121	.103	.748	.0

B_j: Unstandardized regression slope.

Q_R: Chi-square statistic to test the influence of a moderator variable on the effect size.

p: Probability level associated to the Q_R statistic.

R²_{adj}: Adjusted R-squared index, that represents the explained variance percentage.

Table 7: Treatment Type and Odds Ratios for General Recidivism (Last Follow up and Completers Data)

Treatment Type	k	r	or ₊	95% C. I.	
				L _l	L _u
Behavioral	4	-.168	0.570	0.196	1.654
Cognitive	7	.058	1.213	1.088	1.351
Cognitive Behavioural	7	.146	1.629	0.794	3.337
Education	3	-.023	0.927	0.650	1.320
Non Behavioural	9	.051	1.184	0.865	1.619

$$Q_B(4) = 4.598, p = .331; \omega^2 = .0$$

Table 8. Focus Type and Odds Ratios for General Recidivism (Last Follow up and Completers Data)

Focus Type	k	r	or ₊	95% C. I.	
				L _l	L _u
Group	3	-.055	0.834	0.451	1.539
Individual	19	.045	1.161	0.982	1.372
Multi-focused	2	.180	1.829	1.432	2.335
Peers	5	.087	1.332	0.790	2.243

$$Q_B(3) = 11.272, p = .010; \omega^2 = .159$$

Note: the "Family" category was eliminated because it had only one study.

Table 9: Delinquent Type and Odds Ratios for General Recidivism (Last Follow up and Completers Data)

Delinquent Type	k	r	or ₊	95% C. I.	
				L _l	L _u
Chronic	5	-.078	0.773	0.445	1.346
Mixed	9	.091	1.352	1.164	1.573
Violent	16	.035	1.122	0.783	1.605

$Q_B(2) = 4.216, p = .121; \omega^2 = .025$

Table 10: Study Source and Odds Ratios for General Recidivism (Last Follow up and Completers Data)

Study source	k	r	or ₊	95% C. I.	
				L _l	L _u
Published	24	.047	1.166	0.962	1.415
Unpublished	6	.106	1.423	1.083	1.870

$Q_B(1) = 1.361, p = .243; \omega^2 = .0$

Table 11: Overall results, in terms of odds ratios, for the 15 studies that presented data for calculating an effect size for general and serious recidivism at the last follow up (completers data).

Type of Recidivism	k	r	or ₊	95% C. I.		Q	p	I ²	τ ²
				L _l	L _u				
Serious Recidivism	15	.091	1.354	1.073	1.709	10.585	.718	.0	.0
General Recidivism	15	.039	1.136	0.915	1.413	13.784	.466	.0	.0

k: Number of studies.

r: Average correlation coefficient obtained by translating the average odds ratio.

or₊: Average odds ratio.

95% C. I.: 95 per cent confidence interval around the average odds ratio.

Q: Heterogeneity test.

p: Probability level.

I²: I squared index.

τ²: Between-studies variance.

Table 12: Study Source and Odds Ratios for Serious Recidivism (Last Follow up and Completers Data)

Study source	k	r	or ₊	95% C. I.	
				L _l	L _u
Published	10	.117	1.475	1.011	2.151
Unpublished	5	.076	1.285	0.958	1.726

$Q_B(1) = 0.316, p = .574; \omega^2 = .0$

Table 13. Summary variables by study

No.	Studies	Year	Agent Funding	Published	Locate	Sex	Type offenders	Theoretical Model Treatment Group
1	Botcher (1985)	1985	Governmental institution (Crime and Justice)	Unpublished	United States	Females	Mix	Cognitive
2	Bootoms and McClintock (1973)	1973	Educative Institution	Published	England	Males	Mix	Non Behavioral
3	Caldwell/ Rybroek (2001)	2001	Governmental institution (Crime and Justice)	Published	United States	Males	Violent	Cognitive Behavioral
4	Cann et al. St.1 (2003)	2003	Governmental institution (Crime and Justice)	Published	England	Males	Mix	Cognitive
5	Cann et al. St.2 (2003)	2003	Governmental institution (Crime and Justice)	Published	England	Males	Mix	Cognitive
6	Cornish/Clarke (1975)	1975	Governmental institution (Crime and Justice)	Published	England	Males	Chronic	Non Behavioral : Therapeutic community
7	Fagan St.1 (1990)	1990	Governmental institution (Crime and Justice)	Published	United States	Males	Violent	Cognitive Behavioral
8	Fagan St.2 (1990)	1990	Governmental institution (Crime and Justice)	Published	United States	Males	Violent	Cognitive Behavioral
9	Fagan St.3 (1990)	1990	Governmental institution (Crime and Justice)	Published	United States	Males	Violent	Cognitive Behavioral
10	Fagan St.4 (1990)	1990	Governmental institution (Crime and Justice)	Published	United States	Males	Violent	Cognitive Behavioral
11	Friedman/Friedman (1970) St.1	1970	Governmental institution (health).	Unpublished	United States	Males	Mix	Non Behavioral
12	Friedman/Friedman (1970) St.2	1970	Governmental institution (health).	Unpublished	United States	Males	Mix	Cognitive
13	Gordon (1996)	1996		Unpublished	United States	Males	Violent	Cognitive Behavioral
14	Guerra and Slaby (1990) St.1	1990	Governmental institution (Crime and Justice)	Published	United States	Half-males Half females	Violent	Cognitive
15	Guerra and Slaby (1990) St.2	1990	Governmental institution (Crime and Justice)	Published	United States	Half-males Half females	Violent	Education
16	Jesness (1971)	1971	Governmental institution working about health.	Published	United States	Males	Mix	Non Behavioral
17	Jesness (1975) St.1	1975	Governmental institution working about health.	Published	United States	Males	Mix	Non Behavioral
18	Jesness (1975) St.2	1975	Governmental institution working about health.	Published	United States	Males	Mix	Behavioral

Table 13. Summary Variables by study

No.	Studies	Year	Agent Funding	Published	Locate	Sex	Type offenders	Theoretical Model Treatment Group
19	Kawaguchi (1975)	1975	Governmental institution (Crime and Justice)	Published	United States	Males	Violent	Education
20	Moody (1997)	1997		Published	United States	Males	Violent	Cognitive Behavioral
21	Randall (1973)	1973	Educative Institution	Unpublished	United States	Males	Violent	Education
22	Robinson (1994)	1994		Unpublished	United States	Males	Violent	Cognitive
23	Ross and McKay (1976)St.1	1976	Multiple institutions (crime, justice and education).	Published	Canada	Females	Violent	Behavioral
24	Ross and McKay (1976)St.2	1976	Multiple institutions (crime, justice and education).	Published	Canada	Females	Violent	Behavioral
25	Ross and McKay (1976)St.3	1976	Multiple institutions (crime, justice and education).	Published	Canada	Females	Violent	Behavioral
26	Ross and McKay (1976) St.4	1976	Multiple institutions (crime, justice and education).	Published	Canada	Females	Violent	Cognitive
27	Sowles and Gill (1970) St.1	1970	Institution where the program was applied.	Published	United States	Males	Chronic	Non Behavioral
28	Sowles and Gill (1970) St.2	1970	Institution where the program was applied.	Published	United States	Females	Chronic	Non Behavioral
29	Sowles and Gill (1970) St.3	1970	Institution where the program was applied.	Published	United States	Males	Chronic	Non Behavioral
30	Sowles and Gill (1970) St.4	1970	Institution where the program was applied.	Published	United States	Females	Chronic	Non Behavioral

Table 13. Summary Variables by study

No.	Studies	Intervention focus or target	Place Treatment Group	Place Control Group	Assignment	Design
1	Bottcher (1985)	Multi-focused	Centre of juvenile reform	Other	non-random, post hoc matching	Quasi-experimental
2	Bootoms and McClintock (1973)	Individual	Youth prison	Youth prison	non-random, post hoc matching	Quasi-experimental
3	Caldwell/ Rybroek (2001)	Individual	Centre of juvenile reform	Centre of juvenile reform	non-random, post hoc matching	Quasi-experimental
4	Cann et al. St.1 (2003)	Individual	Youth prison	Youth prison	non-random, post hoc matching	Quasi-experimental
5	Cann et al. St.2 (2003)	Individual	Youth prison	Youth prison	non-random, post hoc matching	Quasi-experimental
6	Cornisa/Clarke (1975)	Group	Special training school	Special training school	random, simple	Experimental
7	Fagan St.1 (1990)	Individual	Centre of juvenile reform	Special training school	random, simple	Experimental
8	Fagan St.2 (1990)	Individual	Centre of juvenile reform	Special training school	random, simple	Experimental
9	Fagan St.3 (1990)	Individual	Centre of juvenile reform	Special training school	random, simple	Experimental
10	Fagan St.4 (1990)	Individual	Centre of juvenile reform	Special training school	random, simple	Experimental
11	Friedman/Friedman (1970) St.1	Family	Youth prison	Youth prison	non-random, post hoc matching	Quasi-experimental
12	Friedman/Friedman (1970) St.2	Peers	Youth prison	Youth prison	random, simple	Experimental
13	Gordon (1996)	Peers	Centre of juvenile reform	Special training school	non-random, post hoc matching	Quasi-experimental
14	Guerra and Slaby (1990) St.1	Individual	Youth prison	Youth prison	random, simple	Experimental
15	Guerra and Slaby (1990) St.2	Individual	Youth prison	Youth prison	random, simple	Experimental
16	Jesness (1971)	Individual	Youth prison	Youth prison	random, simple	Experimental
17	Jesness (1975) St.1	Multi-focused	Youth prison	Youth prison	non-random, other	Quasi-experimental
18	Jesness (1975) St.2	Individual	Youth prison	Youth prison	non-random, other	Quasi-experimental
19	Kawaguchi (1975)	Individual	Camp	Camp	non-random, other	Quasi-experimental
20	Moody (1997)	Peers	Special training school	Special training school	non-random, other	Quasi-experimental
21	Randall (1973)	Individual	Youth prison	Youth prison	non-random, post hoc matching	Quasi-experimental
22	Robinson (1994)	Individual	Centre of juvenile reform	Special training school	non-random, other	Quasi-experimental
23	Ross and McKay (1976)St.1	Individual	Special training school	Special training school	non-random, post hoc matching	Quasi-experimental
24	Ross and McKay (1976)St.2	Individual	Special training school	Special training school	non-random, post hoc matching	Quasi-experimental
25	Ross and McKay (1976)St.3	Peers	Special training school	Special training school	non-random, post hoc matching	Quasi-experimental
26	Ross and McKay (1976) St.4	Peers	Special training school	Special training school	non-random, post hoc matching	Quasi-experimental
27	Sowles and Gill (1970) St.1	Group	Special training school	Special training school	random, simple	Experimental
28	Sowles and Gill (1970) St.2	Group	Special training school	Special training school	random, simple	Experimental
29	Sowles and Gill (1970) St.3	Individual	Special training school	Special training school	random, simple	Experimental
30	Sowles and Gill (1970) St.4	Individual	Special training school	Special training school	random, simple	Experimental

Table 14. Summary Description of the control or comparison groups.

No.	Study	Description control or comparison group	Description control or comparison group
1.	Bottcher (1985)	There is not available information about the characteristics of the program received by the comparison group (if it was educative, vocational or only hardening of facility regimes), but it seems that if juveniles received any program, it was no highly structured.	The comparison group was generate from the total pool of subjects using all girls who received a 30 day or longer commitment to the juvenile hall, an out of home placement with wardship or a CYA commitment. This comparison group excluded all girls who were subsequently referred to Athena (experimental group).
3.	Caldwell and Van Rybroek St.1 (2001)	There is not available information about the characteristics of the program received by the comparison group (if it was educative, vocational or only hardening of facility regimes), but it seems that if juveniles received any program, it was no highly structured.	The comparison group were MJTC residents that had been primarily treated in the usual MJTC treatment program. Juveniles received assessment only.
4.	Cann, Falshaw, Nugent and Friendship St.1 (2003)	There is not available information about the characteristics of the program received by the comparison group (if it was educative, vocational or only hardening of facility regimes), but it seems that if juveniles received any program, it was no highly structured.	Comparison group consisted of 1534 young offenders who had not participated in a cognitive skills programm during their custodial sentence.
4.	Cann, Falshaw, Nugent and Friendship St. 2 (2003)		
9.	Guerra and Slaby St. 1 (1990)	There is not available information about the characteristics of the program received by the comparison group (if it was educative, vocational or only hardening of facility regimes), but it seems that if juveniles received any program, it was no highly structured.	Control Group juveniles participated in pretesting and posttesting only.
9.	Guerra and Slaby St. 2 (1990)		
10.	Jesness (1971)	There is not available information about the characteristics of the program received by the comparison group (if it was educative, vocational or only hardening of facility regimes), but it seems that if juveniles received any program, it was no highly structured.	Subjects designated as controls were assigned to one of five living units, according to previously established institutional procedures, that did not take account personality characteristics of the juveniles offenders.
11.	Jesness HoltonPre-Ex (1975)	There is not available information about the characteristics of the program received by the comparison group (if it was educative, vocational or only hardening of facility regimes), but it seems that if juveniles received any program, it was no highly structured.	Control group was composed by Holton parole release cohort for 2 year baseline period (1968- 1969) prior to the full implementation of the experimental programs.
15.	Robinson (1994)	There is not available information about the characteristics of the program received by the comparison group (if it was educative, vocational or only hardening of facility regimes), but it seems that if juveniles received any program, it was no highly structured.	Comparison group was constituted by 64 residents of the center prior to implementation of a cognitive skills curriculum. There had been no consistent or organized effort to teach the skills identified in the curriculum.

Table 14. Summary Description of the control or comparison groups.

No.	Study	Description control or comparison group	Description control or comparison group
16.	Ross and McKay St. 1 (1976)	There is not available information about the characteristics of the program received by the comparison group (if it was educative, vocational or only hardening of facility regimes), but it seems that if juveniles received any program, it was no highly structured.	The results of the treatment groups were compared with a matched group of non-treatment control subjects.
16.	Ross and McKay St. 2 (1976)		
16.	Ross and McKay St. 3 (1976)		
16.	Ross and McKay St. 4 (1976)		
17.	Sowles and Gill Boys St. 1 (1970)	There is not available information about the characteristics of the program received by the comparison group (if it was educative, vocational or only hardening of facility regimes), but it seems that if juveniles received any program, it was no highly structured.	In the control group, workers did not encouraged the delinquents to develop stable and acceptable relationships with peers and staff, to explore their experiences and feelings which may have contributed to the delinquent offences, and to cope with their feelings of frustration in more acceptable ways. Control group interviews resembled those typical of the institution's routine for handling complaints and adjustment problems, that is, interviews were approximately 15 minutes in length and were scheduled only on the request of S. These meetings occurred not more than once or twice during the course of the experiment.
17.	Sowles and Gill Girls St. 2 (1970)		
17.	Sowles and Gill Boys St. 3 (1970)		
17.	Sowles and Gill Girls St. 4 (1970)		
2.	Bottoms and McClintock (1973)	Hardening of facility regime and work and vocational training.	Comparison group of juveniles received a more traditional regime which existed at the Dover institution (experimental condition) prior to the development programme. The main emphasis was upon a hard day's work, firm discipline and the attempted inculcation of personnel responsibility.
6.	Fagan St. 1 (1990)	It is possible that the intervention with comparison groups was characterized by hardening of facility regime. There is no available information about the characteristics of the program received by the comparison group, but it seems that if juveniles received any program, it was no highly structured.	Control groups invested most of their supervision and resources in secure care and in treatment interventions within closed institutional programs. There also were critical substantive differences in supervision between treatment and control group: (a) Caseloads in experimental programs were smaller; (b) Services were intensive and strategically planned; and (c) Community social networks were formed for each youth to facilitate adjustment to community living.
6.	Fagan St. 2 (1990)		
6.	Fagan St. 3 (1990)		
6.	Fagan St. 4 (1990)		
7.	Friedman and Friedman St. 1 (1970)	Residential educational, vocational and group living program.	One or more barracks counselors took responsibility for the boy's counseling rehabilitation effort as well as for guiding his entire vocational and educational program. Counselors had the decision-making power over the boy in regard to awarding of week end passes, recommendations for discharge from the institution and all the other important privileges, as well as the restrictions and punishments.
7.	Friedman and Friedman St. 2 (1970)		

Table 14. Summary Description of the control or comparison groups.

No.	Study	Description control or comparison group	Description control or comparison group
1.	Bottcher (1985)	There is not available information about the characteristics of the program received by the comparison group (if it was educative, vocational or only hardening of facility regimes), but it seems that if juveniles received any program, it was no highly structured.	The comparison group was generate from the total pool of subjects using all girls who received a 30 day or longer commitment to the juvenile hall, an out of home placement with wardship or a CYA commitment.
2.	Bottoms and McClintock (1973)	Hardening of facility regime and work and vocational training.	Comparison group of juveniles received a more traditional regime which existed at the Dover institution (experimental condition) prior to the development programme. The main emphasis was upon a hard day’s work, firm discipline and the attempted inculcation of personnel responsibility.
3.	Caldwell and Van Rybroek St.1 (2001)	There is not available information about the characteristics of the program received by the comparison group (if it was educative, vocational or only hardening of facility regimes), but it seems that if juveniles received any program, it was no highly structured.	The comparison group were MJTC residents that had been primarily treated in the usual MJTC treatment program. Juveniles received assessment only.
4.	Cann, Falshaw, Nugent and Friendship St.1 (2003)	There is not available information about the characteristics of the program received by the comparison group (if it was educative, vocational or only hardening of facility regimes), but it seems that if juveniles received any program, it was no highly structured.	Comparison group consisted of 1534 young offenders who had not participated in a cognitive skills programm during their custodial sentence.
4.	Cann, Falshaw, Nugent and Friendship St. 2 (2003)	There is not available information about the characteristics of the program received by the comparison group (if it was educative, vocational or only hardening of facility regimes), but it seems that if juveniles received any program, it was no highly structured.	
5.	Cornish and Clarke (1975)	Therapeutic community	Program emphasized the traditional approved school ingredients of a structured environment, a clear defined system of rewards and punishments based on extrinsic motivation and a belief in the importance of habit training and character development through obedience. The purpose of this program is to establish and maintain a community based on the Christian Ethic, in which a deprived, maladjusted delinquent boy may, through precept, example and experience, assimilate a scale of values which will enable him to live at peace with himself, in harmony with his family, and in conformity with society. Decisions tended to be taken by the house staff, about boys’ behavior and about rules and regulations.
6.	Fagan St. 1 (1990)	It is possible that the intervention with comparison groups was characterized by hardening of facility regime. There is no available information about the characteristics of the program received by the comparison group, but it seems that if juveniles received any program, it was no highly structured.	Control groups invested most of their supervision and resources in secure care and in treatment interventions within closed institutional programs. There also were critical substantive differences in supervision between treatment and control group: (a) Caseloads in experimental programs were smaller; (b)Services were intensive and strategically planned; and (c) Community social networks were formed for each youth to facilitate adjustment to community living.
6.	Fagan St. 2 (1990)		
6.	Fagan St. 3 (1990)		
6.	Fagan St. 4 (1990)		

Table 14. Summary Description of the control or comparison groups.

No.	Study	Description control or comparison group	Description control or comparison group
7.	Friedman and Friedman St. 1 (1970)	Residential educational, vocational and group living program.	One or more barracks counselors took responsibility for the boy's counseling (therapy) rehabilitation effort as well as for guiding his entire vocational and educational program. The barracks personal had the decision-making power over the boy in regard to awarding of week end passes, recommendations for discharge from the institution and all the other important privileges and rewards, as well as the restrictions and punishments.
7.	Friedman and Friedman St. 2 (1970)		
8.	Gordon (1996)	Remedial education and vocational training.	The comparison sample consisted of youths who were admitted to an Ohio training school. The training institute for Central Ohio (TICO) placed a heavy emphasis on remedial education and vocational training.
9.	Guerra and Slaby St. 1 (1990)	There is not available information about the characteristics of the program received by the comparison group (if it was educative, vocational or only hardening of facility regimes), but it seems that if juveniles received any program, it was no highly structured.	Control Group juveniles participated in pretesting and posttesting only.
9.	Guerra and Slaby St. 2 (1990)		
10.	Jesness (1971)	There is not available information about the characteristics of the program received by the comparison group (if it was educative, vocational or only hardening of facility regimes), but it seems that if juveniles received any program, it was no highly structured.	Subjects designated as controls were assigned to one of five living units, according to previously established institutional procedures, that did not take account personality characteristics of the juveniles offenders.
11.	Jesness (1975)	There is not available information about the characteristics of the program received by the comparison group (if it was educative, vocational or only hardening of facility regimes), but it seems that if juveniles received any program, it was no highly structured.	Control group was composed by Holton parole release cohort for 2 year baseline period (1968- 1969) prior to the full implementation of the experimental programs.
11.	Jesness (1975)	Therapeutic community	Control group was in the C house programme: This program emphasized the traditional approved school ingredients of a structured environment.
13.	Moody (1997)	Behavioral intervention	The Division of Youth Services points system is based on a behavioral token economy. Movement through the levels is contingent on the number of points earned and maintained. All students lose points after violating the Code of Conduct. Students can earn 185 points a week that are based on six institutional goals: personal grooming, participation in basic chores, group/peer relations, self-control, and satisfactory school performance. Students lose points as a consequence of infractions.
12.	Kawaguchi (1975)	Educational and vocational training. There is not available information about the characteristics of the program received by the comparison group, but it seems that if juveniles received any program, it was no highly structured.	The program at Camp Afflerbaugh (comparison condition) was constituted by: (1) Orientation; (2) Case work conference; (3) Academic classroom observation and vocational and prevocational training; (4) Job placement is performed by individual vocational instructors.

Table 14. Summary Description of the control or comparison groups.

No.	Study	Description control or comparison group	Description control or comparison group
14.	Randall (1973)	Educational and vocational training	50 youths confined at the Connecticut Correctional Institution, Cheshire, who did not attend a vocational training program in the community at H.C. Wilcox Vocational –Technical School were the comparison group. The training has emphasized service to the institution, or other state agencies, rather than preparation for job opportunities in the communities to which the inmates will be released.
15.	Robinson (1994)	There is not available information about the characteristics of the program received by the comparison group (if it was educative, vocational or only hardening of facility regimes), but it seems that if juveniles received any program, it was no highly structured.	Comparison group was constituted by 64 residents of the center prior to implementation of a cognitive skills curriculum. There had been no consistent or organized effort to teach the skills identified in the curriculum.
16.	Ross and McKay St. 1 (1976)		
16.	Ross and McKay St. 2 (1976)	There is not available information about the characteristics of the program received by the comparison group (if it was educative, vocational or only hardening of facility regimes), but it seems that if juveniles received any program, it was no highly structured.	The results of the treatment groups were compared with a matched group of non-treatment control subjects.
16.	Ross and McKay St. 3 (1976)		
16.	Ross and McKay St. 4 (1976)		
17.	Sowles and Gill Boys St. 1 (1970)		In the control group, workers did not encouraged the delinquents to develop stable and acceptable relationships with peers and staff, to explore their experiences and feelings which may have contributed to the delinquent offences, and to cope with their feelings of frustration in more acceptable ways.
17.	Sowles and Gill Girls St. 2 (1970)	There is not available information about the characteristics of the program received by the comparison group (if it was educative, vocational or only hardening of facility regimes), but it seems that if juveniles received any program, it was no highly structured.	Control group interviews resembled those typical of the institution’s routine for handling complaints and adjustment problems, that is, interviews were approximately 15 minutes in length and were scheduled only on the request of S. These meetings occurred not more than once or twice during the course of the experiment.
17.	Sowles and Gill Boys St. 3 (1970)		
17.	Sowles and Gill Girls St. 4 (1970)		

13. Figures

Figure 1: Forest plot of the odds ratios obtained for general recidivism at the last follow up (completers data).

Figure 2: Forest plot of the odds ratios obtained for serious recidivism at the last follow up (completers data).

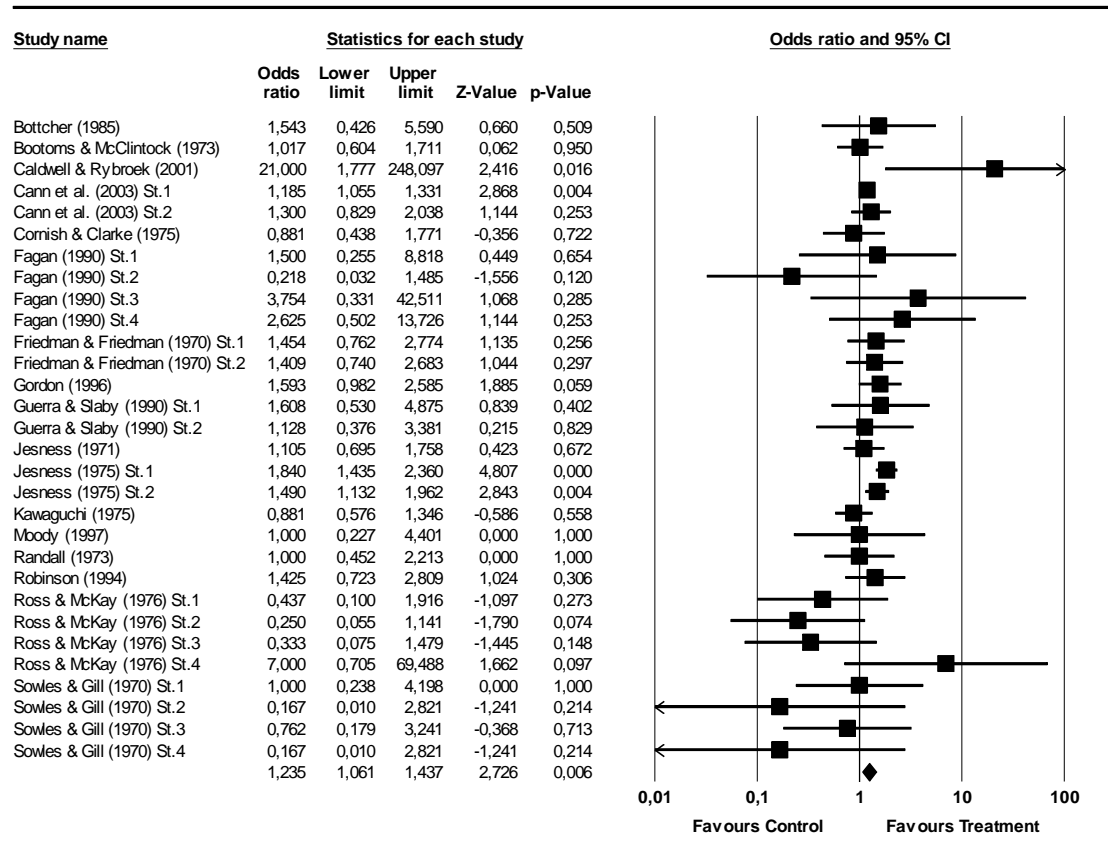


Figure 1: Forest plot of the odds ratios obtained for general recidivism at the last follow up (completers data).

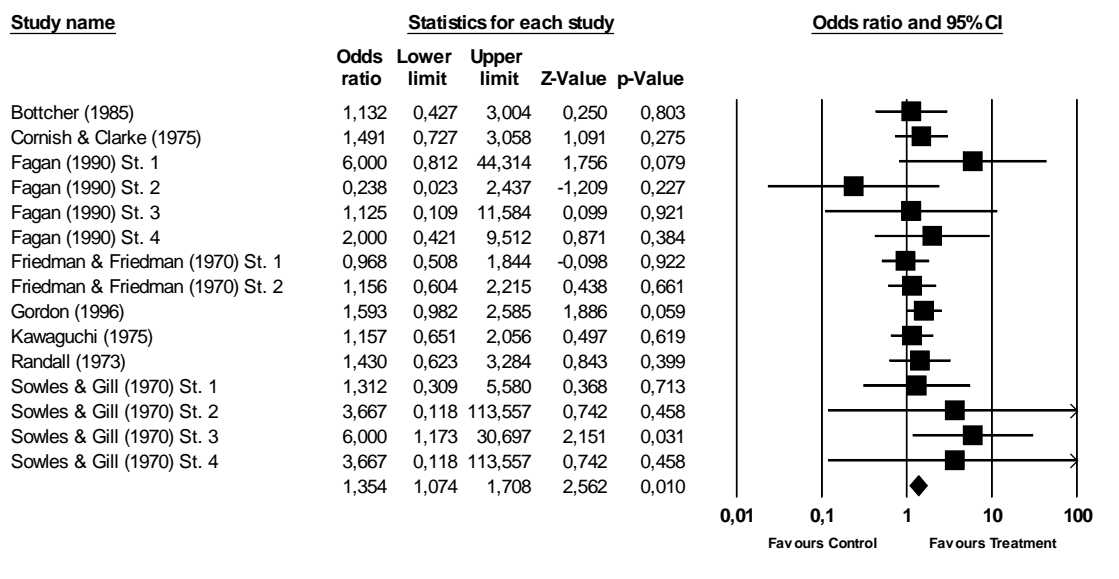


Figure 2: Forest plot of the odds ratios obtained for serious recidivism at the last follow up (completers data).