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What works for serious juvenile offenders? A systematic review

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This study examines the outcomes of best available empirical research regarding the effectiveness of treatment programs implemented in secure corrections to prevent the recidivism of serious (violent and chronic) juvenile offenders (from 12 to 21 years old). In this review 30 experimental and quasi-experimental studies are analyzed, comparing 2831 juveniles in the treatment groups and 3002 youths for the control groups. The global effect size of these 30 studies in terms of standarized mean difference was *d*= 0,14 in favour of the treatment groups. This size effect, in terms of «r» coefficient reached the value of 0,07, of low magnitude. The cognitive-behavioral methods of treatment were the most effective in decreasing recidivism. These results report that the rehabilitation programs for serious offenders achieve to reduce the general recidivism in comparison with the control juveniles in approximately seven percent.

¿Qué funciona con los delincuentes juveniles graves? Una revisión sistemática. Este artículo examina los resultados de la mejor evidencia empírica disponible con respecto a la efectividad de los programas de tratamiento implementados en centros cerrados o prisiones juveniles para prevenir la reincidencia de delincuentes juveniles graves (violentos y habituales), en edades comprendidas entre los 12 y los 21 años. Se revisan 30 estudios experimentales y cuasiexperimentales, con un total de 2.831 jóvenes en los grupos de tratamiento y 3.002 en los grupos de comparación. El tamaño del efecto global en términos de reducción de la reincidencia fue de d= 0.14 a favor de los grupos tratados, lo que supone una reducción de la reincidencia del 7%. Los métodos cognitivoconductuales fueron los más efectivos.

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

In 1995, Thornberry, Huizinga and Loeber reported results from the Program of Research on the Causes and Correlates of Delinquency, which consists of three well coordinated 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 Denver, however, they committed 75% of all the violent offenses reported in Rochester and 82% of all the violent offenses reported in Denver. 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).

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Similar conclusions can be drawn from many other studies: that those juveniles responsible for violent offenses are at high risk of becoming chronic offenders, committing many types of offense and to receive an institutional sentence. For example, in the classic Cambridge (UK) study, which included a sample of 400 subjects, 40% of the males received convictions before the age of 40. The prevalence of offending increased up to age 17 and then decreased, but the mean age was 21, showing the skewness of the age-crime curve. The peak age of increase in the prevalence of offending was 14, while the peak age of decrease was 23. These times of maximum acceleration and deceleration are hypothesised to be times when important social influences are at work. Clearly, in a residential setting, the deceleration influence can hardly act, while the modelling on antisocial peers is present (Farrington, 2003).

There is significant continuity between offending in one age range and offending in another. For example, 73% of males convicted in the Cambridge study 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. Nearly half (45%) of the juvenile offenders were reconvicted between ages 25 and 32, in comparison with only 8% of those not convicted as juveniles (also studies of Krohn et al., 2001, and Stattin and Magnusson, 1991, as quoted by Farrington, 2003). Effective interventions with juveniles should therefore affect later offending rates in adulthood.

As described above, violent juveniles are 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. The probability of committing a violent offense increased steadily with the number of offenses committed, from 18% of one-time offenders to 82% of those with 12 or more convictions (Farrington, 2003).

Those juveniles with multiple convictions are more likely to receive further periods of incarceration. A twenty-state research program sponsored by the Office of Juvenile Justice and Delinquency Prevention 'Juveniles Taken into Custody', reported programs that shared age 18 as the upper age of juvenile jurisdiction, permitting readmission rates to be calculated over a reasonable time period. Of the 8057 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 and Howell, 1998).

It is difficult to overstate the importance of targeting chronic offenders for crime prevention and treatment; considering that many violent juvenile offenders are also chronic/versatile offenders that receive institutionalised sentences, the effectiveness of the interventions becomes a critical issue (Farrington, 2005).

Current doubts in the intervention 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 programs had 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 be 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 problem behaviors. They are likely to have multiple risks factors and social deficits […] The consequence is a spiralling behavioral trajectory that is exceedingly hard for prosocial forces to penetrate, but this is precisely what we ask treatment programs to do, often with inadequate program resources and no after care services. Given these limitations, our expectations of treatment programs should be modest» (Thornberry, Huizinga and Loeber, 1995, p. 233).

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 analyzed. In an attempt to clarify the situation in serious and violent 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 programs generally are capable of reducing the reoffending rates for serious delinquents? And if so, what types of programs are 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. In addition, most, or all, of the juveniles had a record of prior offenses and those offenses involved person or property crimes, or an aggregate of all offenses, but not primarily substance abuse, status offenses or traffic offenses» (p. 315). The juvenile samples were largely male and with an average age of 14 to 17 years old. They categorized the studies into non-institutionalized (N= 117) and institutionalized (N= 83).

With *non-institutionalized* 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 programs. The less effective interventions were wilderness/challenge programs, early release from probation or parole, deterrence programs (shock incarceration), and vocational programs (which is different from employment related programs).

The results with *institutionalized* juveniles contrasted markedly with those for non-institutionalized juveniles: with the offenders in institutions, the treatment effects are much the same for a given program 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 program (Achievement Place project). The least effective interventions were wilderness/challenge programs, drug abstinence, employment related programs and milieu therapy.

The mean effect sizes were similar for both non-institutional (.14) and institutional interventions (.10). Although Lipsey and Wilson categorized interventions as either institutional or non-institutional, they included in the institutionalized category many programs that were, in fact, residential community-based interventions, such as Achievement Place.

According to Andrews et a. (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: the most serious cases are the least amenable to treatment. The authors' meta-analysis supported the risk principle: for both groups of offenders, the average intervention program produced a positive effect equivalent to about 12% reduction in subsequent reoffense rates.

In spite of these results, it remains to be demonstrated what specific strategies are really promising in rehabilitating serious incarcerated juvenile offenders. Preliminary data suggest that some violent offenders are more amenable to treatment than chronic property offenders (Redondo, Sánchez-Meca and Garrido, 1999). These data, however, are far from conclusive, especially in Europe, in part as a result of the paucity of programmes that can be averaged to extract different conclusions in terms of the moderator variables.

Redondo et al (1997), in the first European meta-analysis study reported that in terms of crime typology, the most effective interventions were obtained with offenders against persons (r= .419). In a second meta-analysis, Redondo et al (1999) analysed the specific influence of 32 European treatment programmes on recidivism. The greatest effectiveness was achieved with violent offenders (not sex offenders), which seems to confirm the *risk principle* (Andrews et al, 1990).

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

Although the Lipsey and Wilson (1998) meta-analysis compared institutionalized and noninstitutionalized treatment for serious youth, they included in the institutionalized category many programs that were in fact residential community-based interventions. We still do not know which is the contribution of secure corrections treatment, meaning for that traditional juvenile prison, borstal and training schools as well as modern small units for some kinds of offenders (with individualised treatment as a philosophy in the program intervention). In our opinion, the theoretical idea of saying that non-secure interventions is superior to secure corrections has not been proved empirically in the case of the serious juvenile offenders.

Finally, althought it is necessary to study 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 in an early age versus a later age; male delinquents versus female delinquents) and their influence on the global effect size of the treatment for this specific kind of offenders, this discussion will not be included in this paper.

Objective

The main objective of this review was to collect and assess the quality, in a systematic way, of the outcomes of empirical research regarding the effectiveness of treatment programs implemented in secure corrections in order to decrease the reoffense rate and quality (i.e., type of offence) of serious (chronic and violent) delinquents (12-21 years old). In this paper are addressed two specific questions (as in Lipsey and Wilson review): Are intervention programs effective in reducing the recidivism of serious delinquents? And if so, what types of programs are most effective?

Criteria for inclusion and exclusion of studies for this review

Types of studies

This review includes experimental and quasi-experimental studies with control or comparison groups and with prior and later assessment of the intervention. The dearth of studies with this population prevent to select a stricter criterion (i.e., only randomized experimental designs; see Beelman and Lösel, this issue). Furthermore, the outcomes presented include relapse rates and offenses. In this review we used the scientific methods scale of Sherman et al (1997) and we included only those studies ranked 3, 4 or 5 (i.e., a experimental group and at least a comparable control group). As consequence, we excluded qualitative and pre experimental quantitative research papers (rank 1 or 2 in the same scale) as well as single case design reports.

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 and violent) delinquents.

We determined that the population in the selected studies corresponded to serious delinquents by inspecting the type of offense committed (violent offenses) and their previous convictions («persistent offender», juveniles with three or more previous legal adjudications).[1]

The term «secure corrections» means, in this review, environment 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, borstals, training schools, camps and ranches, which hold juveniles accountable for their delinquent acts and provides 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 programs 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.

Types of intervention

This review analyzed interventions aimed at decreasing post-treatment recidivism when the juveniles are returned into the community. These interventions included psychological approaches (non-behavioural, behavioural and cognitive), social and educational procedures and methods, as well as environmental conditions directed to support the learning of prosocial behaviours and attitudes (for instance therapeutic communities).[2]

Types of outcome measures

Studies had to include at least one outcome of general recidivism. For this review we defined general recidivism in a broad sense, including any subsequent offending behaviour, as measured by such indices as official record 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.).

Search Strategy for Identification of Relevant Studies, Selection and Coding

We searched: (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 one of the following idioms: English, Spanish, French, Portuguese, German and Italian.

First, we did a hand search of a selection of specialized relevant journal contents that are held in our Universities. Second, we conducted a specific search of 13 available electronic databases relevant to the topic area (a summary of Databases and years reviewed are in the table 1). The keywords used to search in these databases were: delinquency (ts), criminal (s), convicted, offender(s), inmates; detention, facility(ies), prison (s,ers), incarceration (ed), hospital (s), borstal (s), correctional(s), reformatories; boy(s), girls(s), adolescent(ce,s), juvenile (es), youth, young; treatment(s), program(s), therapy (ies), rehabilitation, intervention(s); agression (ive), anger, violence, violent, serious, chronic, persistent. We did the search with the English and the Spanish key words. A search in the Campbell Collaboration Social, Psychological, Educational and Criminological Trials Register (C2-SPECTR) developed by the UK Cochrane Centre and supervised by the University of Pennsylvania Graduate School of Education, was also employed.

Selection of studies

The total number of references obtained from the search methods (excluding the Internet searches, which generated thousands of websites) was 1299. The text of each abstract was screened carefully to identify potentially eligible studies, according the criteria described above. From the 1299 studies identified, we first selected 122. The complete reports were obtained and examined. The reviewers assessed the eligibility of the studies using a checklist. Finally, we found 17 reports which fit the criteria of our review.

Coding procedures

A coding protocol to register the extracted data from each comparison was used. This coding protocol was constructed on the basis of the literature reviewed about correctional intervention programs for serious institutionalised delinquents. We have also taken into account previous experiences in others systematic reviews such as the Boot Camp review (MacKenzie, Wilson and Kilder, 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: (a) Substantive variables (participants, treatment and context); (b) Methodological variables (qualities of the study design); (c) Extrinsic variables (as country, publication year, etc.). Two of the researchers were coding separately the studies, discussing the discrepancies when necessary.

Results

Description of selected studies

This review consisted in the analysis of 17 documents (eight journals articles, two books, one published governmental report, two unpublished governmental reports, three unpublished dissertation and one unpublished research and demonstration project report). In these 17 documents we identified 30 comparisons between treatment and control groups. We named these comparisons «studies».

In these 30 studies, we only included groups with «n» (number of youths in the sample of each group) equal or above five. If the study had information about completers (juveniles who participated in the minimum sessions established for the treatment program) and no completers (juveniles who failed to attend the minimum sessions required), we preferred completers data. When the studies had information about more than one control or comparison group, we selected one of them in order to avoid the dependency in the data.

In general, the studies included in this review were published from the Untied States, with samples of male mix (i.e., chronic and violent) offenders, with a mean of age of 16 years. The most part of the programs used cognitive-behavioral intervention strategies, followed for these non-behavioral. Only a little part of them had an aftercare intervention component. The participants in the studies lived at juvenile prisons, as well as in special training schools and centers of juvenile reform. The studies were experimental and quasi-experimental, with attrition around 17% for the outcome of general recidivism. The size samples ranged from five to 660 juveniles. The last follow up in the studies presented a range between six and 120 months. In average, the last follow up period for the 30 studies had a median value of 12 months, while the mean was 31,59 months (SD= 36,11).

Meta-analysis

In the majority of the studies in this review we could calculate the odds ratio and its logarithm. Only in two studies there were no data of recidivism frequencies, but they reported means and standard deviations. Therefore, in order to unify the data in all the 30 studies we calculated the effect sizes (ESs) with the standardized mean difference («d») translating the odds ratio to «d» values.[3] Finally, we express these ESs values in terms of Pearson's correlation coefficient (r) and its translation to the BESD (Binomial Effect Size Display) with the purpose to facilitate the interpretation.

Each one of the 30 studies included in this review reported measures about general recidivism and these data were assessed in different periods of follow up. In order to avoid the dependency in the data the analysis distinguished between three temporal

Table 1
Summary of database, years reviewed and number of found references

Database	Years	No. references
Criminal Justice Abstracts	1970 - 2003	103
Current Contents	1997 - 2003	9
ERIC (Education Resource Information Clearinghouse)	1970 - 2003	175
Humanities Abstracts	Until 2003	1
Medline	1970 - 2003	113
NJRS	1970 - 2003	247
Pais International (Public affaire Information Service) and Sigle	1970 - 2003	36
Psychological Abstracts (PsycINFO) and Dissertation Abstracts	1970 - 2003	571
Serfile	1970 - 2003	10
Sociofile (Sociological Abstracts and Social Planning and Development abstracts)	1970 - 2003	9
Psyke	Until 2003	25
Total references		**1299**

moments of each register (longest follow up —six to 120 months—, first follow up —six to 15 months— and follow up period between 17 to 33 months) on an independent way. At the beginning of the data analysis we assumed both random and fixed effects models for the ES analysis. However, as the results were very similar in the two models, we decided to present only the results with the fixed effects model.

From the 30 studies analyzed, nineteen obtained positive ESs favoring the treatment groups, eight programs showed negative ESs, and in three cases the ES was zero (table 2).

In the last follow up period, the total of meta-analyzed studies involved 5833 juveniles (2831 treated and 3002 non-treated). The mean ES was positive (d= 0,143) in favour of the treatment groups, with a confidence interval statistically significant (0,092 to 0,193). This result corresponds to a correlation coefficient *r*= 0,07, of low magnitude. The translation of the «r» ES value to the BESD indicated 46,52% of recidivism for the treatment groups and 53,48 for the control groups. These data revealed that the rehabilitation programs for serious offenders to reduce the general recidivism in comparison with the control juveniles of approximately, 7%. Figure 1 shows the forest plot for the effect size distribution in the last follow up period. It is important to take into account that the values upper zero mean a lowest rate of general recidivism in the treatment group in comparison to the control group.

The results were similar in the other two groups of studies. In the period of follow up between 6 to 15 months, as well as in the period of follow up between 17 and 33 months, the global ES in terms of «d» was 0,16. This value is equal to a «r» value of 0,08.

One of the most important research question is wether there are any variations in the effectiveness of diferent types of treatment program. Considering this variable, in seven studies, the treatment was cognitive. Eleven studies corresponded to cognitive – behavioral treatment. Three studies applied an educative approach. Other eight studies used a non-behavioral treatment. Only one study applied a therapeutic community approach treatment (see table 3).

We did a meta-analysis taken into account the type of treatment applied in the experimental groups. As there was only one study with a therapeutic community approach (Cornish and Clarke, 1975), it was eliminated from the analysis. Thus, the final assessment by type of intervention contained 29 studies.

Data showed that in general the interventions are effective in favor of the treatment groups with confidence intervals statistically significant, with exception of the educative intervention. Additionally, as Q_B was proximate to the significance level [$Q_B(3)$= 7.197, p= 0.066], we can say that the result is marginally significant, with this variable explaining 9% of the variance. This result points out the differences between types of treatment. That means that the variable of type of treatment has influence on the ES, at least marginally. The model seems to be well specified,

Table 2
Effect size of general recidivism (6 to 120 months) in the last follow up for each study

Studies	d	Variance
Bottcher (1985)	0,263	0,158
Bootoms and McClintock (1973)	0,010	0,026
Caldwell/ Rybroek (2001)	1,845	0,583
Cann et al St.1 (2003)	0,103	0,001
Cann et al St.2 (2003)	0,159	0,019
Cornish/Clarke (1975)	**-0,077**	**0,047**
Fagan St.1 (1990)	0,246	0,299
Fagan St.2 (1990)	0,555	0,266
Fagan St.3 (1990)	0,802	0,563
Fagan St.4 (1990)	0,585	0,261
Friedman/Friedman (1970) St.1	0,227	0,039
Friedman/Friedman (1970) St.2	0,208	0,039
Gordon (1996)	0,282	0,022
Guerra and Slaby (1990) St.1	0,288	0,118
Guerra and Slaby (1990) St.2	0,073	0,115
Jesness (1971)	0,061	0,021
Jesness (1975) St.1	0,369	0,006
Jesness (1975) St.2	0,242	0,007
Kawaguchi (1975)	**-0,077**	**0,017**
Moody (1997)	0,000	0,209
Randall (1973)	0,000	0,060
Robinson (1994)	0,215	0,044
Ross and McKay (1976)St.1	**-0,501**	**0,208**
Ross and McKay (1976)St.2	**-0,840**	**0,222**
Ross and McKay (1976)St.3	**-0,666**	**0,212**
Ross and McKay (1976) St.4	1,179	0,503
Sowles and Gill (1970) St.1	0,000	0,197
Sowles and Gill (1970) St.2	**-0,086**	**0,765**
Sowles and Gill (1970) St.3	**-0,165**	**0,200**
Sowles and Gill (1970) St.4	**-1,086**	**0,765**

Table 3
Type of intervention variable coded in the meta-analysis

Type of intervention	Frequencies	N treatment groups	N control groups
Cognitive-behavioral	7	957	889
Cognitive	11	614	792
Educative	3	246	252
Non behavioral	8	944	999
Therapeutic community	1	70	70
Total	30	2831	3002

Table 4
Effect size by type of intervention

Treatment type	K	d_+	95% C I L_l L_u	Q_{wj}	df	p
Cognitive-behavioral	11	0.215	0.082 to 0.348	17.792	10	.059
Cognitive	7	0.117	0.051 to 0.183	3.295	6	.771
Education	3	-0.046	-0.261 to 0.169	0.214	2	.898
Non-behavioral	8	0.235	0.121 to 0.350	10.002	7	.188

$Q_B(3)$= 7.197, p= 0.066

$Q_W(25)$= 31.303, p= 0.179

R^2= 0.089; 8.9% of explained variance

because the global test Q_W and the Q_{wj} for each category are not significant, although the cognitive-behavioral category is slight above of 0,05. This can indicate that this kind of treatment can explain the most part of variability in the ES (see table 4).

In the meta-analysis, the non-behavioral treatments obtained the higher global ES (d= 0,235), followed by the cognitive – behavioral programs (d= 0,215) and then by the cognitive programs (d= 0,117).

It seems curious that the non-behavioral treatments achieved the higher ES (d= 0,235), because the studies with ES higher are in the category of cognitive behavior treatments.

As it is shown in table 5, the studies with cognitive interventions presented ESs from 0,05 to 0,51 in terms of coefficient r, all in favor of treatment groups. The ESs for cognitive – behavioral programs were between r= -0,39 and r= 0,68; seven of the eleven ESs were positives in favor of the treatment groups. Non behavioral programs achieved ESs between r= -0,477 and r= 0,18; five from the eight studies in this category had positive values in favor of the treatment groups.

Maybe the main reason for these results is that the study in the non-behavioral treatments with higher ES (d= 0,37; r= 0,182) is the research of Jesness (1975). This study presents the higher sample size in this category with 453 juveniles in the treatment group and 660 in the control group. In the other categories, for instance in the cognitive – behavioral, there are higher ESs (for example, r= 0,678), but the sample size is smaller than in the Jesness study, for instance 15 or 10 juveniles for each group.

As we suspected the influence of the Jesness study on the ES of this category, we did an analysis of sensitivity. This analysis consisted in the elimination of this study. The objective was to check how much this study influences the ES for the non-behavioral category. Effectively, in the sensitivity analysis, the ES of the non-behavioral programs decreased significantly from d= 0,235 to d= 0,053 (see table 6). With these results, it is clear that the global ES for non-behavioral programs decreases a lot, and let the cognitive-behavioral (d= 0,215) and the cognitive (d= 0,117) as the most effective methods of intervention

Discussion

One of the main objectives of this review was to identify empirical published and unpublished studies (in different languages) with high methodological rigor, in relation to the evaluation of correctional intervention programs for institutionalized serious (chronic and or violent) juvenile offenders. Considering this objective, we found few studies with the criteria of a clear definition of serious offenders and with high methodological rigor. Only 17 studies met the inclusion criteria for our review. In spite of these criteria were flexible (because we included experimental studies as well as quasi-experimental ones), the number of studies founded was low.

Additionally, in spite of our efforts we could not find studies with these characteristics in of languages different of English. Almost all the studies in this review were done in the United States. This condition limits our conclusions for other countries

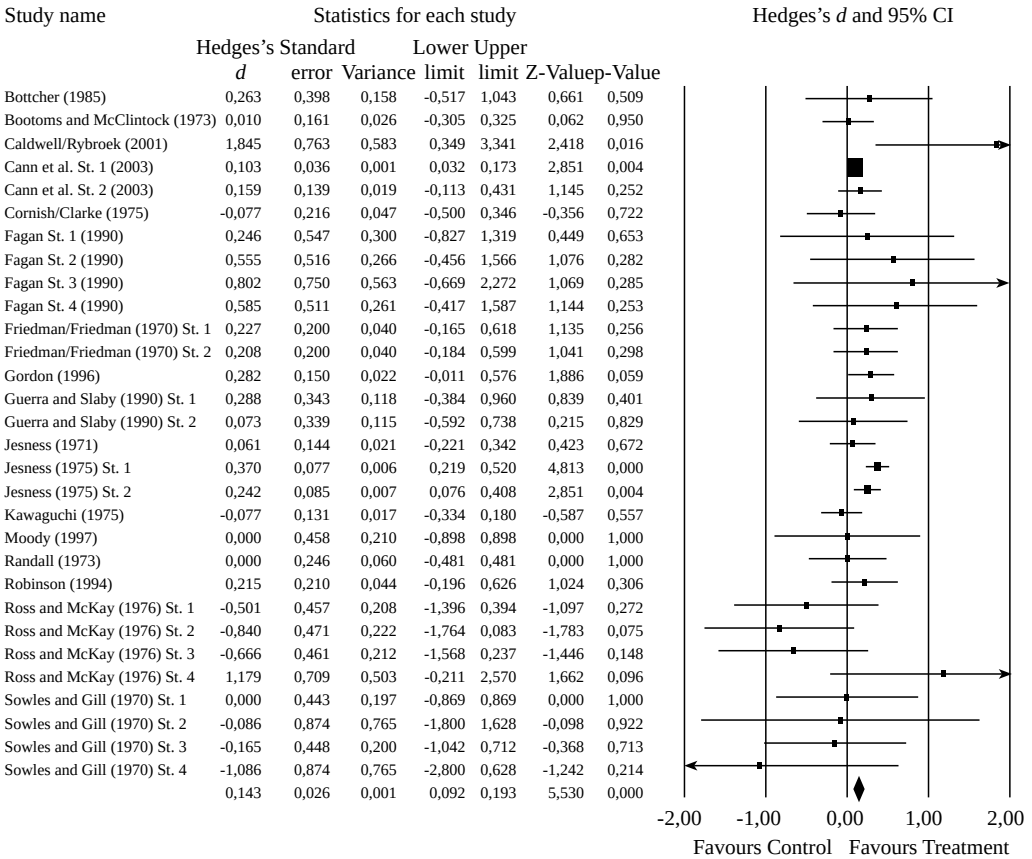

Figura 1

and cultures, and supports the need to foster this kind of researches in other countries.

This systematic review addressed the following questions: Are correctional treatments effective in reducing the recidivism among institutionalized serious (violent and chronic) juvenile offenders? Which method of intervention seems to be more effective?

Table 5
Effect size by type of intervention in each one study

Comparisons	Intervention	DGR	VarDGR	r
Cann et al St.1 (2003)	Cognitive	0,103	0,001	0,051
Cann et al St.2 (2003)	Cognitive	0,159	0,019	0,079
Robinson (1994)	Cognitive	0,215	0,044	0,107
Friedman/Friedman (1970) St.2	Cognitive	0,208	0,040	0,103
Bottcher (1985)	Cognitive	0,263	0,158	0,130
Guerra and Slaby (1990) St.1	Cognitive	0,288	0,118	0,142
Ross and McKay (1976) St.4	Cognitive	1,179	0,503	0,508
Ross and McKay (1976)St.2	Cognitive behavioral	-0,840	0,222	-0,387
Ross and McKay (1976)St.3	Cognitive behavioral	-0,666	0,212	-0,316
Ross and McKay (1976)St.1	Cognitive behavioral	-0,501	0,208	-0,243
Moody (1997)	Cognitive behavioral	0,000	0,210	0,000
Jesness (1975) St.2	Cognitive behavioral	0,242	0,007	0,120
Fagan St.1 (1990)	Cognitive behavioral	0,246	0,300	0,122
Gordon (1996)	Cognitive behavioral	0,282	0,022	0,140
Fagan St.2 (1990)	Cognitive behavioral	0,555	0,266	0,268
Fagan St.4 (1990)	Cognitive behavioral	0,585	0,261	0,281
Fagan St.3 (1990)	Cognitive behavioral	0,802	0,563	0,372
Caldwell/ Rybroek (2001)	Cognitive behavioral	1,845	0,583	0,678
Kawaguchi (1975)	Education	-0,077	0,017	-0,038
Randall (1973)	Education	0,000	0,060	0,000
Guerra and Slaby (1990) St.2	Education	0,073	0,115	0,037
Sowles and Gill (1970) St.4	Non behavioral	-1,086	0,765	-0,477
Sowles and Gill (1970) St.3	Non behavioral	-0,165	0,200	-0,082
Sowles and Gill (1970) St.2	Non behavioral	-0,086	0,765	-0,043
Sowles and Gill (1970) St.1	Non behavioral	0,000	0,197	0,000
Bootoms and McClintock (1973)	Non behavioral	0,010	0,026	0,005
Jesness (1971)	Non behavioral	0,061	0,021	0,030
Friedman/Friedman (1970) St.1	Non behavioral	0,227	0,040	0,113
Jesness (1975) St.1	Non behavioral	0,370	0,006	0,182
Cornish/Clarke (1975)	Therapeutic community	-0,077	0,047	-0,038

Table 6
Sensitivity analysis, excluding Jesness (1975) Study 1

Treatment type	K	d_+	95% C I L_l L_u	Q_{wj}	df	p
Cognitive-behavioral	11	0.215	0.082 to 0.348	17.792	10	0.059
Cognitive	7	0.117	0.051 to 0.183	3.295	6	0.771
Education	3	-0.046	-0.261 to 0.169	0.214	2	0.818
Non-behavioral	7	0.053	-0.122 to 0.229	2.804	6	0.833

$Q_B(3)= 4.807$, $p= 0.186$

$Q_W(24)= 24.105$, $p= 0.456$

$R^2= 0.062$; 6.2% of explained variance

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

The mean ES for general recidivism was positive in favor of the treatment groups, with a confidence interval statistically significant. This result corresponds to 7 percentage points of difference between the treatment and the comparison groups. This data is similar to the result referred in the meta-analysis of Lipsey, where the average intervention effect for these studies was positive, and equivalent to a recidivism reduction of about 6 percentage points. Thus, the evidence suggests that implementing programs is better than not doing it.

Data from some studies in this review reported that the treatment group did it better than the comparison group in terms of general recidivism reduction. Meanwhile, other studies showed that comparison samples did it better than the experimental groups, and others did exactly the same for the treatment and the comparison groups. The variation around of the overall mean ES of r= 0,07 was considerable. Some studies and groups of studies reported effects much larger than the global ES, and others reported effects considerably smaller. The average effect, therefore, does not provide a good summary of what can be expected from the correctional intervention with this juvenile population.

As in other meta-analyses, the cognitive and cognitive-behavioral methods of treatment were the most effective, although the inclusion of the large sample of the Jessness' study in the non-behavioral category increased this to achieve the first position in effectiveness. A conclusion of that result is the necessity to analyze in detail the characteristics of this treatment, because can be drawn important considerations for the effective offending treatment.

However, the high value of some effect sizes for some individual studies remarks the importance of studying possible moderator variables and the utility of the treatment in the objective to reduce the delinquency. For instance, the study of Caldwell and Rybroek (2001) had an effect size of d= 1,845 or r= 0,678; and the fourth study of Ross and McKay (1976) had an effect size of d= 1,179 or r= 0,508.

There are many plausible reasons for these differences, including participant and treatment characteristics, methodological variation across studies, differences in the context and plenty diversity in the general characteristics of the studies.

Implications for practice, research and criminal policy

Although the data showed positive results in favor of the treatment groups of serious offenders, there are few studies interested in assess the efficacy of correctional intervention for them. 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 present lack of knowledge.

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

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Notes

1 Studies in which more than a half of the samples are sexual offenders were excluded, as this is the focus of another Campbell Collaboration systematic review (lead author Friedrich Lösel). Studies that included juveniles committing minor offenses such as shoplifting, minor public order, traffic offenses and status offenses for the first time were excluded as well.

2 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 We calculated the odds ratio and its translation to standardized mean difference, *d*, through the translation formula proposed in Haddock, Rindskopf and Shadish (1998; see also Sánchez-Meca, Marín-Martínez and Chacón-Moscoso, 2003). We have used the meta-analytic procedures developed by Hedges and Olkin (1985) and by Cooper and Hedges (1994).

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