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THERAPEUTIC EFFECTS OF A COGNITIVE-BEHAVIOURAL TREATMENT WITH JUVENILE OFFENDERS

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Abstract

Several treatment evaluations have highlighted the effectiveness of cognitive-behavioural programmes with both youth and adult offenders. This paper describes the application and assessment of a cognitive-behavioural treatment (adapted to Spanish from Ross and Fabiano's *Reasoning & Rehabilitation Programme*) with juvenile offenders serving community orders in an educational measure called in Spanish 'libertad vigilada' (similar to parole). The intervention comprised six different therapeutic components: self-control, cognitive restructuring, problem solving, social skills/assertiveness, values/empathy, and relapse prevention. Treatment effectiveness was tested using a quasi-experimental design involving two groups and pre/post evaluation. The results show that the programme was effective (with low to moderate effect sizes) in improving participants' social skills and self-esteem, as well as in reducing their aggressiveness. However, the intervention had no positive influence on empathy, cognitive distortions or impulsiveness. These results are in line with those of many other correctional studies, in which the treatment applied had a significant but partial effect on participants.

Keywords: juvenile offenders; correctional treatment; cognitive-behavioural programmes; Reasoning & Rehabilitation; effectiveness assessment.

Resumen

Diferentes estudios han puesto de manifiesto la eficacia de los programas cognitivo-conductuales aplicados como tratamiento en delincuentes adultos y jóvenes. Este trabajo describe la aplicación y evaluación de un tratamiento cognitivo-conductual (una adaptación del programa "Razonamiento y Rehabilitación" de Ross y Fabiano), aplicado a delincuentes juveniles que cumplen sus sanciones en condiciones de libertad vigilada y en contextos comunitarios. El programa de intervención incluía seis componentes terapéuticos: autocontrol, reestructuración cognitiva, resolución de problemas, habilidades sociales / asertividad, valores/empatía y la prevención de recaídas. La efectividad del tratamiento se evaluó mediante un diseño cuasi-experimental en dos grupos y se realizó una evaluación pre / post-tratamiento. Los resultados muestran que el programa fue efectivo (con una magnitud del tamaño del efecto entre baja y moderada) en la mejora de las habilidades sociales de los participantes y la autoestima, así como en la reducción de su agresividad. Sin embargo, la intervención no tuvo influencia positiva en la empatía, las distorsiones cognitivas y la impulsividad. Estos resultados están en línea con muchos otros estudios análogos, en los que el tratamiento aplicado tuvo un efecto significativo, aunque parcial, en los participantes.

Palabras clave: delincuentes juveniles; tratamiento penitenciario; programas cognitivo-conductuales, Razonamiento y Rehabilitación, evaluación de la eficacia.

Introduction

Most current psychological treatments with youth and adult offenders are based on the social learning theory of delinquent behaviour, coupled with a cognitive-behavioural model (Andrews & Bonta, 2010; Hollin, 2006; McGuire, 2006; Moore, 2011; Thornberry, Lizotte, Krohn, Smith, & Porter, 2003). Social learning theory asserts that antisocial behaviour is learned by means of the differential association with offenders, the imitation of them, the acquisition of anti-social definitions or beliefs, and the differential reinforcement of criminal values and acts (Akers, 2009; Yarbrough, Jones, Sullivan, Sellers, & Cochran, 2011). In relation to this theory, the cognitive-behavioural model of treatment usually involves a combined intervention that addresses the thinking, emotions and social skills of juvenile offenders. It has been shown to be the most effective approach in this field (Day, 2009; Echeburúa, Fernández-Montalvo, & Amor, 2006; Lipsey, 2009; Piquero, Jennings, & Farrington, 2009; Redondo, 2008; Ross & Fontao, 2010).

Currently the most widely-accepted theory of offender rehabilitation is the risk-need-responsivity model (Andrews & Bonta, 2010), which distinguishes between static and dynamic risk factors for crime. Static risk factors are all those criminogenic influences that are related to an individual's past experiences (for instance, having suffered child abuse) and to his/her basic patterns of personality (such as a psychopathic profile). Although they contribute to an increased risk of crime, static risk factors are generally not modifiable. By contrast, dynamic factors are changeable variables. Some of them such as antisocial cognitions, criminal routines, drug addictions and social skills deficits, are typically connected with crime and can be modified by means of an appropriate intervention (Ogloff, 2002; Ogloff & Davis, 2004). In Andrews and Bonta's model the dynamic factors mentioned are considered as criminogenic needs when establishing the objectives of offender treatments (Andrews & Bonta, 2010; Hollin & Palmer, 2006).

At present, one of the best-known programmes of offender intervention is the *Reasoning & Rehabilitation Programme* (R&R) developed by Ross and Fabiano (1985). This comprises different treatment techniques, each of which has previously been shown to be effective in this field. The main purpose of the R&R programme is to improve participants' thinking skills, training them to be more reflexive (as opposed to reactive), open-minded, and capable of planning. In the intervention modeling, role-playing,

rehearsal, cognitive exercises and reinforcement strategies are used. The original design of this programme included 38 two-hour sessions in groups of 6 to 12 participants (Porporino & Fabiano, 2000). Nevertheless, different versions of the R&R programme have altered its format according to offence type and criminal severity of participants (Hollin & Palmer, 2006). The main components of the programme include interpersonal cognitive problem-solving skills, social skills, self-control, emotional management, creative thinking, critical reasoning, values enhancement, and meta-cognition (McGuire, 2006).

Several analyses of treatment programmes with adult and juvenile offenders in different countries, including the first evaluation of the R&R programme from the Pickering Experiment (Ross, Fabiano, & Ewles, 1988) have shown that the R&R programme is effective in changing certain psychological variables related to crime (social skills, assertiveness, cognitive skills and distortions, impulsivity and empathy), and in decreasing violent behaviour and recidivism (Blud, Travers, Nugent, & Thornton, 2003; Clarke, Simmonds, & Wydall, 2004; Friendship, Blud, Erikson, Travers, & Thornton, 2003; Hollin & Palmer, 2009; Kethineni & Braithwaite, 2010; Martín, Hernández, Hernández-Fernaud, Arregui, & Hernández, 2010; Piquero et al., 2009; Wilson, Bouffard, & Mackenzie, 2005). A specific meta-analysis of 19 applications of the R&R programme for reducing criminal recidivism reported a small average effect size, $r = .14$, equivalent to a 14% reduction in recidivism in treated groups compared with control groups. In that study effectiveness was obtained for both high-risk and low-risk offenders and for both institutional and community applications (Tong & Farrington, 2006). In a more general meta-analysis of 548 treatment programmes including different counselling styles, restorative programmes, skills building programmes and multiple coordinated services conducted with juvenile offenders between 1958 and 2002, Lipsey (2009) found a small, $\phi = .062$ (equivalent to a decrease of 6%), average effect size in terms of recidivism reduction. Similarly, Morales, Garrido, and Sánchez-Meca (2010) obtained an average small recidivism reduction, $r = .072$, in a meta-analysis of 31 experimental or quasi-experimental studies of treatments with serious juvenile offenders aged 12 to 21 years old. In this review behavioural, cognitive, cognitive-behavioural, educational and non-behavioural programmes were included. The highest effect size, $r = .175$, was obtained by cognitive-behavioural programmes. A meta-analysis by Piquero et al. (2009) reviewed 34 programmes including strategies of social and cognitive skills, modelling, reinforcement and relaxation training designed to improve self-control in boys

and adolescents. These programmes reduced previous problematic behaviours by between 13% and 33%.

Some of these meta-analyses of offenders' rehabilitation included different output measures of treatment effectiveness such as institutional, vocational or psychological adjustment, and recidivism (for instance, Garret, 1985; Özabaci, 2011; Redondo, Garrido, & Sánchez-Meca, 1997). In contrast, more recent meta-analyses normally offer only results on recidivism (for instance, Lipsey, 2009; Morales et al., 2010). In general, the effectiveness results for the short-term psychological or behavioural output variables are higher than for the long-term measure of recidivism. For example, in Redondo et al.'s (1997) meta-analysis of 57 European programmes the average effect of treatments on short-term variables such as social skills was $r = .20$, while the recidivism reduction was lower, $r = .12$.

According to the results of several meta-analyses (Hollin, 2006; Jolliffe & Farrington, 2009; Lipsey, 2009; Morales et al., 2010; Redondo, Sánchez-Meca, & Garrido, 1999, 2002) the average effectiveness of offender treatment can be improved if programmes have the following characteristics: they have a sound theoretical basis and are applied by trained therapists; they provide participants with training in pro-social skills and habits; they restructure offenders' thinking and values; they are of longer duration and greater intensity; and they use relapse prevention and other specific strategies to generalize social behaviour to the community context.

The *Reasoning & Rehabilitation Programme* (R&R), initially designed in Canada (Ross & Fabiano, 1985), has been adapted in different countries and for several distinct types of offenders and application settings. One of these adaptations is the *Prosocial Thinking Programme*, adapted in Spain by Garrido (2005) for interventions with juvenile offenders. This is a manual-based programme that includes components of self-control, meta-cognition, interpersonal and emotional skills, critical reasoning and values training (Redondo, 2008). Following this, a number of versions have been generated in Spain for specific contexts. The objective of the present study was to conduct a pilot evaluation of one of these R&R treatment versions, in this case, one applied to youth offenders serving community orders.

Method

Participants

The sample comprised juvenile offenders from Barcelona (Spain), all of whom were serving educational and probation sentences for property or violent crimes. Initially, 33 participants (23 boys and 10 girls) aged 15 to 20 years old ($M = 17.67$; $SD = 1.42$) were assessed, although due to programme drop-out the analysis presented here is based on the final sample of 28 subjects. The participants were chronic property and violent youth offenders living with their families or in governmental facilities. The participants were selected according to their intervention needs and the following two criteria: sufficient motivation for treatment and adaptability to the timing application of the treatment programme. These criteria were evaluated in the context of the initial interviews. The sample was divided into two study groups: 17 youths were assigned to the *treatment group* and 11 to the *control group*. The two groups were matched in relation to several sociodemographic and criminal features that were considered relevant as risk factors (Ellis, Beaver, & Wright, 2009; Farrington, 2010; Loeber, Farrington, Stouthamer-Loeber, & White, 2008; Lösel & Bender, 2003; Murray, Farrington, & Eisner, 2009): age, sex, criminal records, offence type, and structure and characteristics of the family. In order to guarantee that the two groups were broadly similar, statistical tests were applied (see Table 1).

The treatment programme

The psychological programme tested here is a group-based cognitive-behavioural treatment for juvenile offenders. The *Prosocial Thinking Programme* (Garrido, 2005) is the Spanish adaptation of the *Reasoning & Rehabilitation Programme* for youths (Ross & Fabiano, 1985). The treatment aims to help offenders develop more adaptive and prosocial interactions and to reduce the participants' probability of relapse as regards antisocial and aggressive behaviours. The programme taps the following treatment domains:

Self-control aims to teach the participants different strategies of self-observation and self-control (Hay, Meldrum, Forrest, & Ciaravolo, 2010; Ross & Fontao, 2008). To this end, the participants were trained in functional analysis (i.e. in paying attention to the background and consequences) of their cognitive, emotional and behavioural responses.

In this treatment component, special attention is paid to the emotion of anger. Juveniles are taught to recognize cognitive and emotional precursors and the initial stages of anger, as well as how to respond to them. Specifically, written exercises, pooling of ideas, role-playing and the viewing of a movie are used. In the current application, the juveniles watched the film *Falling Down*, in which the protagonist often loses control.

Cognitive restructuring aims to teach the participants how to detect and modify the cognitive distortions that frequently precede anger and trigger off violent behaviour (McGuire, 2006). Here, juveniles are taught, through various examples and exercises, about the cognitive biases most frequently observed among young people, and are introduced to what might be more realistic and appropriate ways of thinking.

Social problem-solving trains the participants in the use of more effective cognitive strategies with which to face and solve interpersonal problems and conflicts (Biggam & Power, 2002; Calvete, 2007; D’Zurilla & Nezu, 1999; McMurrin & McGuire, 2005).

Social skills and assertiveness seeks to improve the participants’ basic social skills and assertiveness in order to facilitate their interpersonal relationships, acceptance of others, and achievement of rewards (Hollin & Palmer, 2001). They are trained (especially by means of role playing) in verbal and non-verbal communication, in the identification of factors that facilitate or hinder their interactions, and in how to communicate assertively rather than through aggression or passivity.

Values and empathy addresses the participants’ moral development, or their lack of positive beliefs and attitudes concerning values such as respect for life, integrity, freedom and the rights of other people. Moral development has shown an inverse correlation with the probability of recidivism (Van Vugt et al., 2011). The therapeutic intervention is essentially based on the discussion of moral dilemmas (Palmer & Begum, 2006).

Relapse prevention aims to help the participants to consolidate the personal improvements made during treatment. To this end, the subjects are taught to identify their own risk factors and those situations (i.e. the cognitive, physiological, behavioural and environmental signals) that have frequently been precursors of their crimes. The participants are also trained in appropriate strategies and coping styles in an attempt to break the cycle of relapse into aggression and antisocial behaviour (Dowden, Antonowicz, & Andrews, 2003; Marlatt & Donovan, 2005).

Overall, the programme encourages the youths to participate actively in the group in order to exchange experiences, to facilitate positive modelling between one another, and to foster the generalization of new behaviours that have been learned in the treatment sessions. The programme implies a total treatment dosage of about 40 hours. All the applications were carried out by skilled psychologists and supervision was also provided: a senior psychologist directly participated in six sessions on the programme (one for each intervention ingredient), and then gave feedback to the psychologists in charge of the study.

Instruments

A semi-structured interview was used with each participant to collect data about his/her personal and family circumstances and history of delinquent and violent behaviour, in addition to the official records held by the Juvenile Justice System. In relation to family circumstances, family composition, the socioeconomic and educational level of the family members and their relationships were explored. In terms of participants' variables, the interview focused on their educational and vocational levels, their interpersonal relationships, and their personal skills and social support. The following self-report instruments were chosen to assess the psychological adjustment and social skills variables, which served as indicators of treatment effectiveness:

Empathy, measured by means of the Interpersonal Reactivity Index (Davis, 1983; adapted to Spanish by Mestre, Pérez-Delgado, Frías, & Samper, 1999); this is a self-report questionnaire comprising 28 items on a 5-point Likert-type scale (range: 28-140).

Social skills and assertiveness, evaluated through the Escala de Habilidades Sociales [Social Skills Scale] (Gismero, 2000); this is a self-report scale comprising 33 items rated on a 4-point Likert scale (range: 33-132).

Cognitive style, assessed by means of the Attitude Toward Interpersonal Peer Violence (Slaby, 1989; translated to Spanish using the back-translation method [Berry, 1980]); this scale includes 14 items that score between 1-4 points (range: 14-56).

Aggressiveness, measured with the Aggression Questionnaire-Refined version (Bryant & Smith, 2001; Spanish adaptation by Gallardo-Pujol, Kramp, García-Forero, Pérez-Ramirez, & Andrés-Pueyo, 2006). The Spanish version of this questionnaire composed by 12 items rated on a 5-point Likert-type scale (range: 12-60).

Self-esteem, evaluated through the Rosenberg's Self-Esteem Scale (Rosenberg, 1965; Spanish adaptation by Martín, Núñez, Navarro, & Grijalvo, 2007); it is a self-report scale comprising 10 items answered on a 4-point scale (range: 10-40).

Impulsiveness, assessed by means of Barratt Impulsiveness Scale, BIS-10 (Barratt, 1985; adapted to Spanish by Luengo, Carrillo-de-la-Peña, & Otero, 1991). BIS-10 is scale composed of 34 items rated on a 4-point a Likert self-report scale (range: 34-136).

Procedure and Design

Only the treatment group subjects participated in the programme described before, while the control subjects were taken from those on the waiting list for future applications. Nevertheless, all the subjects (treatment and control) also received the training and social assistance usually administered by the juvenile justice services.

The programme was assessed using a quasi-experimental design involving two equivalent groups, treatment and control, and pre/post evaluation. The equivalence of the groups was explored by means of Chi-square and Mann-Whitney *U* tests.

Treatment effectiveness was assessed on the basis of participants' pre/post scores on the six abovementioned indicators of therapeutic change (empathy, social skills, cognitive style, aggressiveness, self-esteem and impulsiveness).

Data analysis

In terms of data analysis, the main statistical procedure used was mixed design analysis of variance (ANOVA). As there are six dependent variables, six repeated measures ANOVAs were performed, one for each of these variables. In each ANOVA the within-subjects factor corresponds to the assessment time (pre/post) and the between-subjects factor to the group (treatment/control). Taking into account that the population size, as a clinical one, is not too much large, and that with the design of this study, an alpha of .05 is associated with a beta of .721 (that is, the assumption of the standard .05 alpha-level implies a risk about 1/4 to reject falsely the hypothesis of interest), a compromise analysis was performed to estimate the correspondent alpha for .05 with alpha/beta = 1. Results showed an alpha and beta = .136. Nevertheless, it does not change results interpretation for the hypothesis of the interest of the study: time X group interaction (see Table 3).

Results

Descriptive results

As the subjects were not randomly assigned to the groups, the first analysis presented here aimed to check that the treatment and control groups were equivalent (Table 1). To this end, various sociodemographic and criminal characteristics that are often related to criminal risk were compared in the two groups. The only variable to present a significant difference between the groups was the proportion of subjects sentenced for a violent crime, which was higher in the treatment group. The treatment group and the control group showed equivalent pre-treatment mean scores in all domains except for social skills, where the treatment group scored significantly lower than the control group. A Mann-Whitney U test was conducted to evaluate the differences between control and pre-treatment groups. The results of the test were in the expected direction and significant, $z = -2.14$, $p < .05$.

Table 1. Sociodemographic and Criminal Descriptive Analysis of the Sample.

Sample descriptives	Treatment Group	Control Group	χ^2/U	p
Sociodemographic				
Sex (male)	70.6%	63.6%	0.15	1
Age	17.41 (1.42)	17.67 (1.32)	85.5	.276
Unemployed/ not studying	17.6%	27.3%	0.45	.647
Drug use	82.4%	100.0%	2.17	.258
Non-traditional family	41.2%	55.6%	0.49	.682
Number of siblings	3.18 (3.05)	2.33 (2.45)	108.00	.684
Dysfunctional family	29.4%	55.6%	1.70	.232
Low socioeconomic level	17.6%	22.2%	0.08	1
Criminal				
Age of first offense	14.82 (1.02)	15.56 (0.73)	64.00	.293
Sentenced for a violent crime	76.5%	33.3%	4.63	.051
Offence committed in group	62.5%	33.3%	1.96	.234
Previous criminal records	41.2%	85.7%	3.96	.082
Recognition of responsibility for offence	25.0%	28.6%	0.03	1

Effectiveness results

The ANOVA results regarding the different criterion variables are shown in tables 2 and 3. In Table 2, the main results of the analysis for the treatment and control groups. In Table 3 shows the ANOVA outcome results related with the time and group effects and the groups x time interaction effect.

Table 2. Mean and Standard Deviation for Outcome Variables for the Treatment and Control Groups.

Outcome Variables	Treatment Group (<i>n</i> = 17)		Control Group (<i>n</i> = 11)	
	Pre	Post	Pre	Post
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)
Empathy	77.71(8.54)	76.41(12.29)	81.36(9.28)	77.82(8.62)
Social Skills	86.00(12.85)	93.12(14.19)	97.64(12.47)	94.82(15.08)
Cognitive Style	30.69(3.36)	29.38(3.93)	30.64(6.79)	30.45(7.16)
Aggressiveness	30.82(6.45)	20.00(5.81)	29.91(7.56)	32.64(6.38)
Self-Esteem	28.24(5.25)	29.41(4.47)	31.18(4.07)	29.27(5.10)
Impulsiveness	53.88(13.95)	50.29(19.04)	62.46(21.62)	59.82(10.11)

On the social skills measure there was a significant interaction between Group X Time, $F(1, 26) = 6.80$, $p < .05$, with the partial eta squared statistic indicating a small-to-medium effect size ($\eta_p^2 = .21$). The results for the aggressiveness measure also showed a significant interaction between the independent variables Group X Time, $F(1, 26) = 7.42$, $p < .01$, with the partial eta squared statistic again indicating a small-to-medium effect size ($\eta_p^2 = .22$). A significant effect for the Group X Time interaction was likewise observed on the self-esteem measure, $F(1, 26) = 4.22$, $p < .05$, with the partial eta squared statistic indicating a small effect size ($\eta_p^2 = .14$). Finally, the results for the three remaining variables (empathy, cognitive style and impulsiveness) showed neither a main group effect nor a time effect nor a Group X Time interaction effect.

Table 3. Analysis of Variance of the Outcome Variables for the Treatment and Control Groups.

Outcome Variables	Effect	F	p	η_p^{2*}	1-β
Empathy	Group	0.51	.483		
	Time	2.53	.128		
	Group x Time	0.55	.471	.019	.116
Social Skills	Group	1.83	.181		
	Time	1.28	.274		
	Group x Time	6.81	.024	.212	.712
Cognitive Style	Group	0.08	.796		
	Time	0.97	.332		
	Group x Time	0.55	.464	.025	.114
Aggressiveness	Group	0.66	.425		
	Time	0.01	.961		
	Group x Time	7.42	.016	.228	.751
Self-Esteem	Group	0.69	.415		
	Time	0.24	.631		
	Group x Time	4.22	.055	.142	.517
Impulsiveness	Group	2.44	.132		
	Time	1.13	.309		
	Group x Time	0.03	.875	.003	.054

Note. $\ast\eta_p^2$ = Effect size: Eta partial square; $df(1, 26)$.

Discussion

The main purpose of this study was to assess the effectiveness of a Spanish version of the R&R programme, applied to juvenile offenders serving community orders. The results obtained show that the treatment partially improved some of the psychological target variables. Specifically, the programme was effective (with low to medium effect sizes) in increasing participants' social skills and self-esteem, as well as in reducing their aggressiveness.

Scores for social skills in the treatment group showed a positive ascending trend of medium magnitude. Scores for aggressiveness in the treatment group showed a positive decreasing trend of medium magnitude between the pre and post assessment points, whereas aggressiveness scores increased in the control group. Finally, in relation

to self-esteem the ANOVA for the treatment group revealed a positive ascending pattern (of low magnitude in this case), while scores in the control group fell.

These positive results in terms of short-term psychological and behavioural variables are consistent with the general improvements reported for various juvenile offender treatments (Garret, 1985; Lipsey, 2009; Morales et al., 2010; Redondo et al., 1997) and specific R&R applications (Tong & Farrington, 2006). The literature suggests that social skills, aggressiveness and self-esteem may be considered as dynamic risk factors that can be influenced, to some extent, by treatment. The present results confirm this. However, the applied intervention did not have a positive influence on empathy, cognitive style or impulsiveness, which are also regarded as dynamic risk factors. Both the treatment and the control group showed similar scores for these three variables on the pre- and post-intervention measures, and the comparison of means showed no statistically significant within-subjects differences.

Although the objectives of this intervention were also to improve empathy and reduce impulsiveness, these variables are probably personal factors that are not completely dynamic or susceptible to change in the treatment setting. More disconcerting is that no significant change was observed in cognitive distortions, which are clearly considered changeable dynamic factors. The reasons for this may be both substantive and methodological. Firstly, the treatment application described had a restricted intensity which probably limited its effects. Secondly, the small group sizes may have made it difficult to detect statistical significant differences between the groups given that the effects of treatment are probably low.

In addition to the abovementioned dynamic factors, most of the participants (91%) exhibited another important dynamic risk factor, namely drug abuse, which was not addressed by the treatment programme. It is possible, therefore, that this widespread problem negatively interfered with the potential improvement in other therapeutic targets such as anti-social cognitions, empathy or impulsivity. In addition, one can speculate that other possible uncontrolled static risk factors (as erratic family education, experienced victimization, risk personality traits, etc.) had a negative influence on the participants, making it more difficult for them to benefit from treatment.

In summary, the cognitive-behavioural intervention applied here did significantly improve some of the dynamic risk factors it targeted, although it failed to achieve all the proposed aims. As the literature about correctional interventions has shown, treatment efficacy increases when a programme has a sound theoretical basis

and is applied by well-trained therapists, when it teaches participants new pro-social skills, thinking styles and values, when it has greater duration and intensity, and when it applies relapse prevention. In principle, the programme described here meets all these prior requirements, with the exception perhaps of its limited duration and intensity. Indeed, it is likely that in the context of such a complex and multifactor problem as delinquency, the intensity and duration of the applied intervention were insufficient to produce more relevant changes in the participants.

From a methodological point of view the main limitations of this study concern the small sample size, the fact that subjects were not randomly assigned to groups and the measurement of treatment effectiveness exclusively by means of short-term and self-report data. Although these problems are quite frequent in the field of offender treatment, for both practical and ethical reasons, the small number of participants in the two groups does constitute an important limitation, which probably reduces the likelihood of obtaining statistically significant results. This aspect needs to be resolved in future studies through the inclusion of more subjects in both groups. As regards the evaluation of the effectiveness of the programme, we plan to assess recidivism among participants over a longer follow-up period. Up to now only psychological measures of treatment efficacy can be offered.

Another limitation has to do with the method of data analysis, since the literature (Walker & Maddan, 2009) recommends using multivariate analysis of variance (MANOVA). Although this approach was initially considered, the use of MANOVA requires additional assumptions that need not be fulfilled in an ANOVA. Hence, the statistical procedure chosen was another robust test, the bivariate analysis of variance (ANOVA), which is also useful as regards the goals of this paper.

Finally, it must be acknowledged that even if some of these difficulties could have been resolved, one would not expect a psychological treatment to produce a radical transformation in participants' behaviour. A more reasonable goal would be for treatment, in conjunction with other environmental and social interventions, to produce certain significant changes in the behaviours and values of participants. In this context, and in line with the general results of the evaluative correctional literature, this cognitive-behavioural programme has been partially but significantly effective in improving specific psychological variables, namely social skills, self-esteem and aggressiveness, all of which are relevant correlates of delinquent behaviour.

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