Clinical change in anger, shame, and paranoia after a structured cognitive-behavioral group program: Early findings from a randomized trial with male prison inmates

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Abstract

Objectives: This study's main goal was to assess the efficacy of a structured cognitive-behavioral group program, Growing Pro-Social (GPS), in reducing anger, paranoia and external shame in male prison inmates.

Methods: In this randomized trial, a treatment group (n=24) was compared to a control group (n=24) and both groups were assessed at pre- and post-treatment. Participants answered the State-Trait Anger Expression Inventory, the Paranoia Scale, and the Other as Shamer Scale. Treatment effects were tested using ANCOVA with baseline as covariate and condition as fixed factor. Additionally, in order to assess significant clinical change after intervention, the Reliable Change Index (RCI) was computed.

Results: At baseline, no significant differences between conditions were found. ANCOVA with baseline as covariate showed significant differences between groups at post-treatment. When compared to controls, treatment subjects showed lower scores in anger-trait (temperament and reaction subscales) and paranoia. Concerning clinical change, a high percentage of treatment subjects presented improvements in anger, paranoia and external shame; the majority of controls showed significant deterioration in the same variables. After treatment, differences between groups were observed in the distributions by clinical change categories for anger-trait and its subscales, and paranoia. No differences between groups were found in anger-state and external shame.

Conclusions: These results point out the GPS's ability to promote significant change in cognitive and emotional relevant variables associated with antisocial behavior.

Keywords: Anger; Antisocial Behavior; Clinical Change; External Shame; Growing Pro-Social; Paranoia

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Meta-analytic research (Andrews et al., 1990; Garret, 1985; Lipsey, 1995; Lipsey & Wilson, 1998; Lösel, 1995; McGuire 2001; Redondo et al., 1997; Redondo et al., 1999) has shown that multimodal programs have a significant impact in the reduction of recidivism in offenders. These studies pointed out that cognitive-behavioral based programs are among the most effective, namely when cognitive variables are included as targets for change (Bogestad et al., 2009; Hollin et al., 2013; Pearson et al., 2002; Wilson et al., 2005). It has been suggested that these interventions can be improved in order to achieve even better outcomes in recidivism reduction obeying to the Risk-Need-Responsivity (RNR) model (Andrews & Bonta, 2010a, b; Andrews et al., 2006; Andrews & Dowden, 2005; Dowden & Andrews, 2000, 2004). The RNR model is based in "human service principles", which state that recidivism reduction should be achieved through some type of treatment instead of punishment. Research has shown that punitive strategies actually increase criminal recidivism (Andrews & Bonta 2010a, 2010b; Caldwell & Rybroek, 2005; Lipsey, 2009; Lipsey et al., 2010; McGuire, 2011, 2013). The RNR model also argues that more intensive interventions should be applied to offenders evaluated as being at higher risk of recidivism (risk principle), since they present more criminogenic needs (e.g., antisocial personality). Because these kinds of variables fall into the dynamic risk factors category (thus, changeable), they should be a major focus in any intervention program (need principle). This model recognizes the importance of the therapeutic relationship but also adds that a structured, cognitive behavioral intervention is an important component of effective programs (responsivity principle).

Cognitive-behavioral programs usually include different modules or sessions addressing cognitive, emotional and behavioral skills, assumed to be lacking in antisocial individuals. Nevertheless, each of these skills tends to be seen as independent from the others instead of seeing them as intertwined variables (Rijo et al., 2007). For example, emotional control sessions are carried out as if emotional control was totally independent from social reasoning or interpersonal behavior (Brazão et al., 2013). Another misconception of traditional approaches has to do with the methodologies adopted: there is a tendency to give preference to reasoning and school-like activities (e.g., paper and pencil), rather than experiential tasks that would be more suitable for increasing self-knowledge as well as promoting cognitive, emotional, and behavioral change (Brazão et al., 2013; Rijo et al., 2007). In order to overcome some of these limitations, Rijo et al. (2007) developed a new cognitive-behavioral rehabilitation program, the GPS – Growing Pro-Social, adapting its contents and methodology to the characteristics of the target population, and to the RNR model.

GPS is based on the developments of the cognitive-behavioral therapies for personality disordered individuals (Rafaeli et al., 2011; Safran & McMain, 1992; Safran & Segal, 1990; Young, 1990; Young et al., 1993; Young & Lindemman, 1992; Young & Klosko, 1994; Young et al., 2003), which conceptualize recurrent antisocial behavior as the result of cognitive malfunctioning in the attribution of meaning, underlying cognitive distortions, and cognitive core structures responsible for social information processing. GPS aims to achieve behavioral change, not only through the rehearsal of prosocial behaviors, but also through the promotion of change in cognitive and emotional correlates of antisocial behavior. The ultimate goal is to promote change in the dysfunctional cognitive structures underlying antisocial behavior (Brazão et al.,

2013; Rijo et al., 2007) by following a progressive strategy of change (for a program overview, see the intervention section).

Although a considerable amount of research has recognized the role that cognitive malfunctioning plays in the onset and maintenance of antisocial behavior, recent developments in the cognitive-behavioral therapies highlight the importance of evolutionary variables, such as anger, shame and paranoia, in psychopathology (Gilbert et al., 2005: Gilbert & Procter, 2006; Gilbert et al., 2009; Matos & Pinto-Gouveia, 2010; Matos et al., 2012; Nestor, 2002; Novaco, 2010).

From an evolutionary perspective, seeking dominance and displaying threat behaviors towards others can be conceptualized as a strategy to cope with the experience of shame and the consequent threat it represents to our position in the social rank (Gilbert, 1997, 2002). Many antisocial individuals, when faced with increased perceived threats and competitiveness, tend to use aggressive behaviors (externalizing anger) as a defensive strategy against feelings of insecurity, instead of displaying a submissive strategy (Gilbert, 1998). Anger is also a common response to rejection by others, criticism and social put-down (Downey et al., 1998a, b; Gilbert & Miles, 2000). From this point of view, anger can be seen as an effective coping strategy against perceived attacks to the self. The perception of being inferior, incompetent and socially devalued, which generally arises during the experience of shame (Farmer & Andrews, 2009; Tangney & Dearing, 2002; Thomaes et al., 2011; Tracy & Robins, 2004), can lead to the expression of anger. This shame-induced anger state is often perceived as a particular anger state where hostility prevails, called "humiliated fury" (Thomaes et al., 2011). The available empirical evidence points out that shame is a predictor of aggressive behavior and criminal recidivism

(Hosser et al., 2008), and anger plays a major role in the motivation to attack (Tangney & Dearing, 2002; Lobbelstael et al., 2009).

Additionally, individuals with negative beliefs about the self and others tend to adopt external attributions (blaming others) as a self-preserving bias, thus triggering paranoid schemas (Bentall & Kaney, 1996). Paranoia can be conceptualized as a defense system against the perception of threats in order to protect the individual in a social context where he/she perceives him/herself as an undesirable social object, due to the loss of attractiveness of the self (Gilbert, 1998). However, while individuals feeling shame tend to compete for social status (Gilbert, 1997, 1998, 2002), individuals with paranoid beliefs seek to protect themselves from malevolent intents from others (Gilbert at al., 2005), who, in turn, are seen as powerful and hostile, able to cause physical harm or even to kill (Gilbert et al., 2005; Gumley et al., 2011).

While the majority of the research on rehabilitation programs for antisocial individuals chooses recidivism rates reduction as the preferred measure of its efficacy, less is known about cognitive and emotional variables underlying behavioral change (Skeem et al., 2009). Further research is needed to assess not only behavioral change, but also change in other variables associated with the origins and maintenance of antisocial behavior. In this randomized trial, we looked at significant changes in shame, anger and paranoia in male prison inmates after GPS completion. We hypothesized that GPS can reduce paranoia, shame and anger, because it engenders a less threatening view of others. GPS tries to promote a different view of others, and to increase self-confidence about oneself when relating to them. After GPS completion, participants are expected to see themselves as more worthy individuals, thus decreasing the severity and frequency of feelings of shame. If change occurs at this level, it is likely that paranoia will also decrease, as a consequence of seeing others as less threatening. Following

these assumptions, we can also expect that an individual more confident about oneself and others should experience a decrease in the frequency and intensity of anger feelings, assuming that anger could result, at least partially, from a strategy to cope with shame and perceived external attacks.

Method

This trial was designed in accordance with the CONSORT (Consolidated Standards of Reporting Trials) 2010 Statement recommendations for reporting randomized trials.

Participants

Participants were selected from male prison inmates aged between 19 and 40 years old, from three Portuguese prisons. The initial selection of prisoners met a set of exclusion criteria: (1) presence of cognitive impairment (given that this kind of intervention is not suitable for the cognitively-impaired) or psychotic disorders (experiential strategies used in GPS are not suitable for psychotic patients), (2) active substance use (cessation or at least substantial reduction of drug or alcohol use must precede the GPS treatment), (3) being sentenced exclusively for sexual offenses (sex offenders are generally assigned to more specific intervention programs), and (4) remaining in prison for at least 12 months (programme length), since the beginning of the programme.

A sample of 60 Portuguese prison inmates, who did not meet the exclusion criteria, was invited to participate (see Figure 1). After this first selection, four inmates declined to participate. A total of 56 inmates were then randomly assigned to treatment and control conditions. Subjects in the treatment group attended the 40 sessions of the GPS for 12 months, while the control group did not participate in any intervention program. From the initial 27 treatment group

subjects, two dropped out of the program and one was transferred to another prison during

intervention. These three subjects were excluded from further analysis, because it was not

possible to obtain post-treatment measures. From the 29 controls, three refused to answer the

second evaluation and another two were transferred to another prison. These five subjects were

also excluded from analysis.

Insert Figure 1

Table 1 presents the main demographic characteristics of both groups (only completers'

characteristics are reported). The groups were similar regarding age, years of education, marital

status, and socioeconomic status.

Insert Table 1

Table 2 summarizes legal and criminal sample features. Concerning sentence length, no

differences were found between groups. However, the controls presented, on average, a longer

sentence than the treatment subjects, and that difference corresponds to a moderate effect.

Groups were also compared regarding the number of crimes for which they were sentenced to

prison, as well as the legal category of the most severe crime for which they were sentenced. No

differences in the distributions were found between groups. Nevertheless, there were more

individuals with several crimes in the control group than in the treatment group. This difference

corresponds to a moderate effect. Subjects were further divided into primary and relapse

categories (according to the existence of previous sentences in their criminal records). Equivalent

distributions were found for this variable.

Insert Table 2

Measures

Subjects reported on the measures of anger, paranoia and external shame before the start and after the *terminus* of the intervention program (or the equivalent time period for the control group). Socio-demographic and legal data on participants were collected from prison staff members.

Other as Shamer Scale (OAS; Allan et al., 1994; Portuguese version by Matos et al., 2011)

The OAS is an 18-item scale that assesses the subject's perception of being negatively judged by others. Each item is rated on a 5-point Likert scale reporting how frequently one experiences the feelings described in each statement (0 = never to 4 = almost always) (Goss et al., 1994).

The original version revealed a high internal consistency, both in clinical and non-clinical samples (α = .96 and .92, respectively) (Goss et al., 1994); in the Portuguese version, Cronbach's alpha was .91 (Matos et al., 2011). In the current study, internal consistency was .86.

Paranoia Scale (Fenigstein & Vanable, 1992; Portuguese version by Lopes & Pinto-Gouveia, 2005)

This scale is a 20-item self-report measure developed to assess paranoid ideation in non-clinical individuals. Items are rated on a 5-point Likert scale (1 = never to 5 = always), where higher scores indicate the existence of more paranoid ideation, for example, suspicion of conspiracy against the self; of being observed, judged or talked behind their back; that other people or instances can exert some kind of thought-control; and lack of trust in others (Fenigstein & Vanable, 1992). The original study presented internal consistencies ranging between .78 and .89 for the general population (Fenigstein & Vanable, 1992). In a Portuguese clinical sample

(C. Barreto, personal communication, June 18, 2012), internal consistency was .92, whereas in the current sample internal consistency was .85.

State-Trait Anger Expression Inventory (STAXI; Spielberger, 1988; Portuguese version by Silva et al., 1999)

STAXI was developed to assess anger experience and expression as a multidimensional construct, evaluating two main components of anger: (1) anger-state, an emotional state with subjective feelings of variable intensity, and (2) anger-trait, a more stable predisposition to evaluate several situations as unpleasant and frustrating, as well as a tendency to react more frequently with intense anger states (Spielberger, 1991).

STAXI is a 44-item questionnaire divided in to three parts: the first assesses anger-state (how one feels in the present moment), the second assesses anger-trait (how one generally feels) and the third assesses anger-expression (how one generally reacts or behaves when feeling enraged or angry). According to Spielberger (1988), anger-trait encompasses two factors: temperament and angry reaction. For the purpose of the present study, only the anger-state and anger-trait were selected.

Internal consistency of the different subscales ranged from .73 to .93 (Spielberger, 1988), while in the Portuguese version the same values ranged between .60 and .85 (Silva et al., 1999). In the present study, internal consistency values were .81 for anger-state, .80 for anger-trait, .78 for anger temperament and .61 for anger reaction.

Interventions

Growing Pro-Social (GPS; Rijo et al., 2007) is a manualised group rehabilitation program for individuals with antisocial behavior. It is run in small groups, ranging from 8 to 12

participants, in 40 weekly sessions, which are grouped into five sequential modules. The theoretical framework underlying GPS is based on a cognitive-interpersonal perspective (Rafeeli et al., 2011; Safran & McMain, 1992; Safran & Segal, 1990; Young, 1990; Young et al., 1993; Young & Lindemman, 1992; Young & Klosko, 1994; Young et al., 2003), which conceptualizes aggressive behavioral patterns as a result of distorted views of the self and others.

In an effort to improve the traditional group exercises in this kind of program, GPS sessions include experiential exercises. Participants are encouraged to achieve insight through systematic questioning about the reactions noticed during the activities (guided discovery approach), and to apply this knowledge to real life situations (Brazão et al., 2013; Rijo et al., 2007). The program was built to promote gradual change in behavior and emotional reactions, while working towards a more adaptive information processing style. The ultimate goal of GPS is to promote change in particular dysfunctional core beliefs about the self and others, which underlie the social information processing (e.g., social isolation/alienation, mistrust/abuse, and defectiveness/shame), and are related to antisocial and aggressive behavior (Ball & Cecero, 2001; Bernstein, 2008; Calvete, 2008; Chakhssi et al., 2012; Thimm, 2010; Tremblay & Dozois, 2009). It is expected that a change at a cognitive level (e.g., less endorsement of dysfunctional core beliefs and cognitive distortions) will encourage prosocial behavior.

Concerning the program's structure, GPS consists of 40 sessions, each lasting about 90 minutes. Sessions must be carried out by two psychologists who should be skillful in cognitive-behavioral therapy. As summarized in Table 3, sessions are grouped into five modules, preceded by an initial session for the presentation of the program. While Modules 1 and 2 are focused in interpersonal behavior and communication skills, Modules 3, 4 and 5 directly address cognitive and emotional variables. GPS ends with a final session, and follow-up sessions can be carried out

afterwards. The extension of each module varies depending on the contents and the time needed to achieve the defined goals.

Insert Table 3

Treatment subjects attended the GPS program for about 12 months, in addition to the Treatment As Usual (TAU) delivered at Portuguese penitentiaries: supervision of school frequency, occupational and job-related tasks and sentence planning supervision over time. Subjects in the control group received TAU and did not attend the GPS sessions or any other kind of structured intervention during the research period.

Procedures

At each prison, individuals who did not meet the exclusion criteria were invited to participate in the study. An explanation about the research project and a brief overview of the treatment program were presented and inmates were invited to participate voluntarily. Subjects were then randomly assigned to the treatment or control conditions using a random number table. At a first meeting, prison staff explained the aims of the study to the selected inmates and asked for their informed consent.

Data collection was carried out by psychologists of the national prison system (not responsible for the GPS delivery) and by the authors of this paper. Subjects in the treatment group were assessed a week before the first session of GPS and one week after its *terminus*, while individuals in the control group were assessed with the same time interval. All treatment completers' attended at least 80% of the GPS sessions (32 or more sessions). At each prison, two senior psychologists specially trained and supervised in the program's methodology by the

authors were chosen to deliver the GPS intervention. At the time of the study these psychologists already had experience in delivering the GPS intervention.

Data analysis

Data analysis was carried out in accordance with the Treatment Received (TR) principle, in which outcomes were measured by comparing the outcomes for inmates who completed the program with those in the control group. Treatment and control groups were compared at baseline, using Independent-Samples *t*-tests. Between group-differences in outcome measures at post-treatment were tested with ANCOVA with baseline as covariate and condition as a fixed factor. Additionally, within-group *t*-tests were performed for each group. All effect sizes were calculated using Cohen's d.

In order to evaluate intra-subject clinical change, the Reliable Change Index (RCI; Jacobson and Truax, 1991) was used. According to the literature, this is an index that ensures very high reliability (Atkins et al., 2005). The RCI was designed to test the effectiveness of a particular therapy or program. Instead of focusing on the differences of mean scores, it provides information about treatment effects for each individual, allowing to test whether an individual improves or deteriorates in comparison to his initial assessment (Conboy, 2003). In order to ascertain whether the observed change in the individual is in fact genuine and not just due to measurement errors, and whether the change places the individual inside the norms of functional groups (Conboy, 2003), RCI allows the testing of the null hypothesis of no clinically meaningful change, depending on the normal distribution (Maaseen, 2001), and taking into account the measurement error of the instruments (Jacobson & Truax, 1991). This index is computed using the formula: $RCI = \frac{(X\ post - X\ pre)}{\sqrt{2(SD0 * \sqrt{1 - \alpha})2}}$, where *X post* represents the result of the individual in the

post-test, *X pre* represents the result of the individual in the pre-test, SD0 represents the standard deviation of the variable in a normal sample, and α represents the internal consistency of the scale in the present sample.

According to Wise (2004), if the results are greater than |.84| we can assert, with a confidence interval of 80%, that real, reliable and significant change has been verified; however, if the result exceeds |1.28| or |1.96|, that confidence interval increases to 90% and 95%, respectively. On the contrary, if the result is less than |.84|, we can say that deterioration has occurred. For the interpretation of the RCI in this study, three broad categories were defined to encompass different confidence intervals: "Global Improvement" (GI), "Global Deterioration" (GD) and "No Change" (NC). To compare both groups in the distributions by clinical change categories, Chi-square statistics with Fisher's exact tests with a .05 level of significance was performed. Effect sizes of the differences found in the distributions by clinical change category between groups were calculated with Cramer's *V*.

Results

Baseline differences

Baseline differences between groups were compared for all outcome measures (see Table 4). No differences were found between the control and treatment groups at the onset of the study. However, in the STAXI Temperament subscale, controls presented a lower score when compared with treatment subjects, and, although this difference failed to reach statistical significance, the effect size was moderate.

Insert Table 4

Analysis of covariance

ANCOVA with baseline as covariate demonstrated that there was a significant difference between the groups in the majority of the outcomes at post-treatment (Table 5). When compared with the control group, the treatment group had significantly lower scores at the end of GPS in anger-trait (total score and subscales) and paranoia. These differences correspond to strong or moderate effects. For anger-state and external shame, no differences between groups were found. However, the treatment group had lower scores at post-treatment in these variables when compared to the control group. For external shame, the difference was near the threshold of significance and the effect was moderate.

Insert Table 5

Within-group t-tests of changes

Additionally, within-group t-tests were also carried out in each group (see Tables 6 and 7). In the treatment group, significant differences were found between baseline and post-treatment for anger-trait, with subjects presenting a lower score after GPS completion. The observed effect size was moderate. For the reaction subscale a similar result was found but the difference failed to reach statistical significance. For the remaining variables no significant differences were found between pre- and post-treatment.

Insert Table 6

In the control group, significant differences were found between baseline and post-treatment time points for the majority of the variables (with the exception of anger-state), with subjects presenting higher scores when measured at the post-treatment time point. The observed effect sizes were all moderate.

Insert Table 7

Clinical change in anger, paranoia and external shame after GPS completion

Data relating to clinical change in anger, paranoia and external shame on both groups are presented in Table 8. Results indicated differences between groups in the distribution by clinical change categories for anger-trait. For this variable, the number of subjects falling into the Global Improvement category in the treatment group was identical to the number of subjects falling into the Global Deterioration category in the control group. Differences in the distributions between groups for this variable had a strong effect. Similar results were found for the anger-trait subscales (temperament and anger reaction). For the temperament subscale, there were differences between both distributions and the effect size was moderate; for the anger reaction subscale, there were also differences in the distributions between groups, with a moderate effect size. No differences between groups were found for anger-state. Results in the Paranoia Scale indicated a clear difference between the distributions by clinical change categories in both groups: a high percentage of individuals in the treatment group presented significant improvements while an even higher percentage of controls revealed clinical deterioration. These differences correspond to a strong effect. Concerning external shame, no significant differences were found in the distributions between groups. However, the improvement rates of the treatment group were almost as high as the deterioration rates observed for controls, following the same tendency of the results found for paranoia.

Insert Table 8

Discussion

While the majority of the research on the efficacy of cognitive-behavioral programs for offender rehabilitation focuses mainly on recidivism reduction as the major outcome, a recent trend (e.g., Skeem et al., 2009) focuses on change in cognitive and emotional correlates of antisocial behavior. Following this tendency, this randomized trial studied the impact of a new structured cognitive-behavioral program, Growing Pro-Social (GPS; Rijo et al., 2007), in producing significant change in cognitive and emotional variables, which, from an evolutionary perspective, are associated with antisocial behavior. Differences between mean scores in treatment and control groups at post-treatment (statistically significant change at a group level) were analyzed, as well as within group comparisons, but special attention was given to clinical change for each of the participants (clinical significance). Significant clinical change has been addressed in the assessment of treatment efficacy with several clinical samples but it has been used less often with offenders (Hollin et al., 2013).

Post-treatment scores in the studied variables showed significant differences between groups, with treatment subjects presenting a significant reduction in anger-trait (including the temperament and reaction subscales) and paranoia. Differences between groups for anger-state and external shame did not reach statistical significance, but inmates who attended the GPS sessions presented lower scores in these variables at post-treatment, when compared to controls. When looking at within-group comparisons, data suggested that differences at post-treatment may result not only from the improvement achieved by treatment subjects, but also from the deterioration observed in controls on the majority of the studied variables. These findings raise important questions about the impact of incarceration on inmates' psychological correlates of

antisocial behavior. The worrisome deterioration observed in controls over a one year period in variables such as anger, shame, and paranoia, raises the question of whether traditional prison practices work towards rehabilitation or may be bolstering psychological and emotional processes related to maladaptive behavior (Ashkar & Kenny, 2008; Lambie & Randell, 2013; Lane et al., 2002; Myers, 2003). The traditional penitentiary treatment, together with the controls' harsh criminal features (e.g., longer sentence length), may be responsible for the observed deterioration in these subjects. From this point of view, outcomes in subjects who completed GPS may indicate that such a program can be useful in buffering this tendency to get worse over time.

Results also pointed out to significant clinical changes in the treatment group, with a pattern of higher numbers of subjects falling into the Global Improvement category, while a similar number of subjects from the control group fell into the opposite category, Global Deterioration. This pattern was observed for anger-trait (and its subscales) and for paranoia. Concerning external shame, the effect size was not strong enough to distinguish both groups in terms of the clinical change category, even though the same distribution tendency was observed.

According to GPS theoretical assumptions, by the end of the program, participants should be able to look at themselves in a more valuable and healthy manner (Brazão et al., 2013; Rijo et al., 2007), thus decreasing the severity and intensity of feelings of shame. Considering the results on the association between external shame and paranoia found by Matos et al. (2012), a decrease in shame should also be accompanied by a decrease in paranoid ideation. A similar decrease in anger would also be expected, as anger could be conceptualized as a defensive strategy to cope with shame (Downey et al., 1998; Gilbert & Miles, 2000; Thomaes et al., 2011), and a reaction against perceived external attacks (Gilbert, 1998; Gilbert et al., 2005; Gumlet et al., 2011). It is

important to add that GPS provides experiences of acceptance and of social desirability (Brazão et al., 2013; Rijo et al., 2007). This may also contribute to an increase in feelings of being more attractive in the eyes of others, and to a decrease in the fear of being attacked or threatened by competitors.

The decrease in paranoia observed in the treatment group subjects may also be attributed to the fact that GPS works towards changing participants' view of others as malevolent and/or abusive in several different manners: first, by recognizing the subjectivity of information processing in interpersonal contexts; second, by recognizing the frequent misattribution of others' behavior towards us; and third, by becoming conscious of cognitive distortions underlying the attribution of meaning to interpersonal behaviors (Brazão et al., 2013; Rijo et al., 2007). This knowledge may help the individual to reduce paranoid ideation through the development of less distorted/more realistic social information processing.

Concerning differences between groups for anger, a strong effect size was verified for anger-trait, and moderate effect sizes were observed in both anger-trait subscales (anger-temperament and anger reaction). As previously stated, anger-trait is related to a higher propensity to experience and express anger. Thus, a decrease in this variable may suggest an increase in tolerance to mistakes, frustrations and interpersonal stress (Spielberger, 1991). The main goal of GPS Module 4, Function and Meaning of Emotions, is emotional regulation, and participants are encouraged to trigger basic emotions (e.g., anger, fear, sadness, happiness), to feel them in their body and relate them to real life scenarios. By learning about the feelings and the expression of these emotions, they are invited to discover the usefulness of the diversity of the emotional states that humans can experience. Finally, participants are challenged to assess in daily life situations the adequacy and usefulness of their own emotional experiences (Brazão et

al., 2013; Rijo et al., 2007). The specific work done in these sessions may be responsible for the change observed in anger-trait, thus contributing to a reduction in anger feelings and related disruptive behavior.

Differences between groups did not occur for anger-state. One possible explanation for this result may be that the prison environment is quite effective in constraining outbursts of anger. Bursts of anger inside prison are immediately reported and punished, and prison inmates are frequently encouraged to exert control over the externalization of negative emotional states. Another possible explanation has to do with the procedures and instructions when answering the anger-state measure. Subjects were instructed to answer these items according to their emotional state in that same moment (Spielberger, 1991), which, due to research procedures, was a quiet and stable environment.

Overall, these findings show that a structured cognitive-behavioral group program can produce significant clinical changes in emotional and cognitive correlates of antisocial behavior when delivered inside a prison. Nevertheless, generalizations should be made carefully: all the subjects were male inmates and the sample size was small in both groups. Future trials should increase sample size. The GPS's impact on behavioral change (e.g., in the reduction of disciplinary incidents and prison records) should also be tested in future studies to ascertain if changes observed in cognitive and emotional variables are reflected in a more adjusted behavioral pattern. In the present study, the integrity of GPS delivery was assured by training and supervising all senior psychologists who run the program. In future research, more systematic quality control procedures of the program's delivery could be implemented.

Because the GPS is divided into different modules and is carried out over a considerable period of time, further research should also focus whether each module may had a particular

significant effect in promoting change. Follow-up studies should also focus on possible delayed effects of the intervention and the stability of change in participants' behavior over time.

Conclusion

This paper focused on the GPS's ability to promote significant change in evolutionary variables that recent research conceptualizes as associated with diverse forms of behavioral malfunctioning (Gilbert & Procter, 2006; Gilbert et al., 2005, 2009; Matos & Pinto-Gouveia, 2010; Matos et al., 2012; Nestor, 2002; Novaco, 2010) and antisocial behavior (Farmer & Andrews, 2009; Gilbert, 1998; Hosser et al., 2008; Lobbelstael et al., 2009; Thomaes et al., 2011). To our knowledge, it is one of the few studies investigating the efficacy of a structured cognitive-behavioral program for male prison inmates. This study provides preliminary support for the efficacy of GPS in producing clinical changes at an emotional level (anger-trait) and at a cognitive level (paranoia) in adult offenders. It is probable that a larger sample would also produce significant differences in external shame between conditions, demonstrating the GPS's ability to induce changes in negative self-representations and feelings of shame. The findings from this study are encouraging for future research, not only for future efficacy and effectiveness testing of the GPS, but also for the development of other interventions based on the manipulation of cognitive and emotional variables as therapeutic mechanisms of change in antisocial and aggressive behaviour.

Acknowledgements

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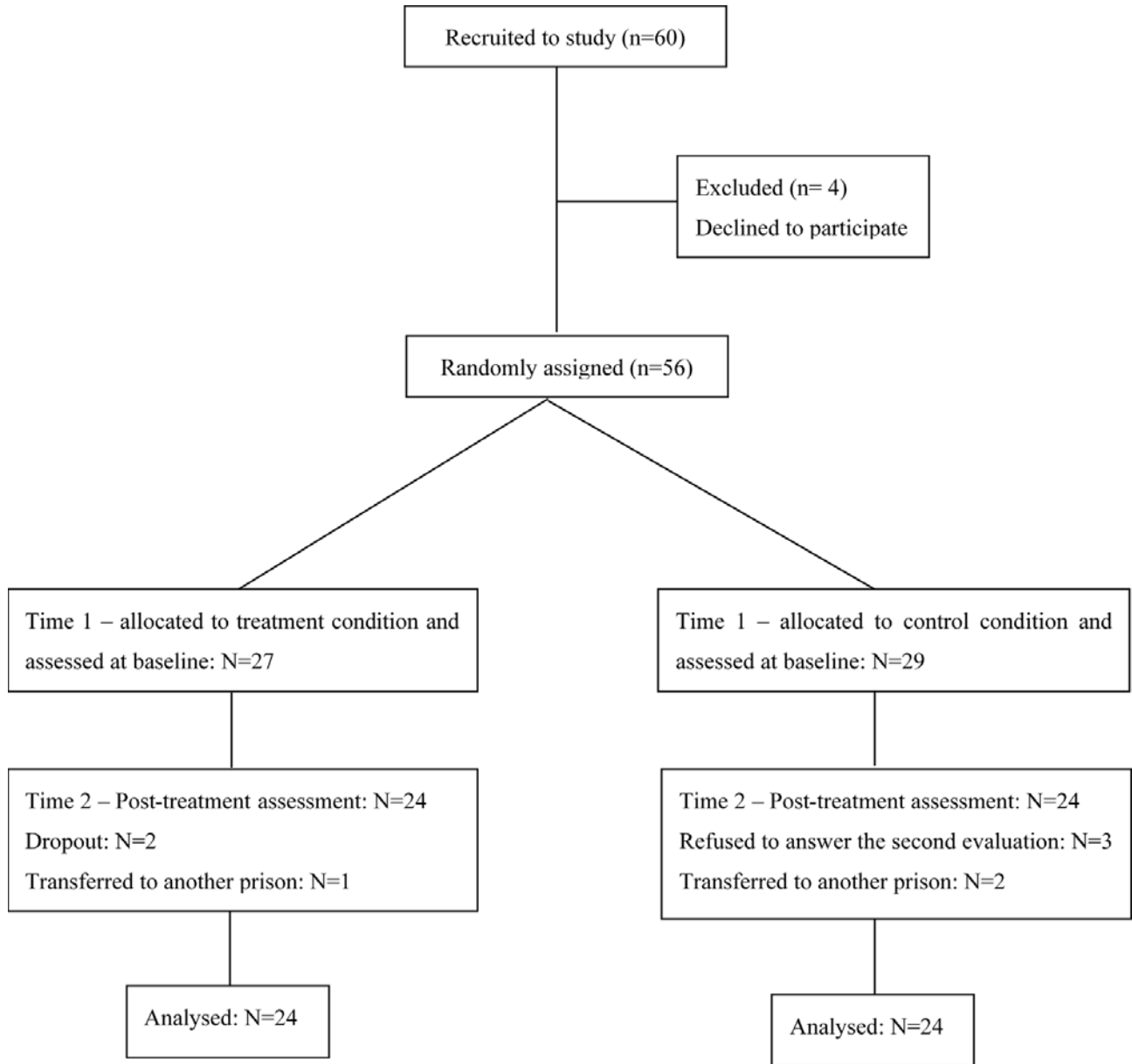
Figure 1. Flowchart of inmate participation

Table 1.

Socio-Demographic Sample Characteristics By Group

	TG (n=24)		CG (n=24)		*t*	*p*	*Cohen's d*
	M	*SD*	*M*	*SD*			
Age	27.26	7.37	29.50	5.83	-1.15	.25	.33
Years of education	8.17	1.76	8.58	2.13	-.74	.46	.20
	n	*%*	*n*	*%*	*Fisher's*	*p*	*Cramer's V*
Marital status							
Single	19	79.17	18	75			
Married	0	0	2	8.33	3.06	.66	.26
Civil Union	2	8.33	2	8.33			
Divorced	3	12.50	2	8.33			
Socioeconomic status							
Low	21	87.50	24	100			
Medium	2	8.33	0	0	4.36	.27	.31
High	1	4.17	0	0			

Note. TG = treatment group; CG = control group.

Table 2.

Legal and Criminal Sample Characteristics By Group

	TG (n=24)		CG (n=24)		*t*	*p*	*Cohen's d*
	M	*SD*	*M*	*SD*			
Setence duration[a]	129.75	59.55	155.42	54.61	-1.55	.12	.45
	n	*%*	*n*	*%*	*Fisher's*	*p*	*Cramer's V*
Quantity of crimes							
Single crime	11	45.83	6	25	6.13	.30	.36
Several crimes	13	54.17	18	75			
Type of crimes[b]							
Against property	12	50	8	33.33			
Against people	10	41.67	12	50	12.12	.22	.24
Against the State	1	4.17	0	0			
Drug trafficking	1	4.17	4	16.67			
Criminal record							
Primary	19	79.17	18	75	.11	.73	.05
Relapsed	5	20.83	6	25			

Note. TG = treatment group; CG = control group.

[a]Sentence duration in months.

[b]Crimes against property include robbery, theft and qualified theft; Crimes against people include homicide, attempted homicide, kidnapping, and rape; Crimes against the State include falsification.

Table 3.

GPS Modules and Contents

Modules	Number of sessions	Contents summary
Initial session	1	Presentation of the participants, the structure and the methodology of the program.
1. Human communication	5	The communication process and its obstacles; verbal and non-verbal communication skills, the ambiguity of human communication; the (in)congruences between digital and analogical languages.
2. Interpersonal relationships	10	Behavioral styles (assertive, aggressive, passive and manipulative) in relationships; self-concept and interpersonal behavior; ideas about the others and interpersonal behavior; specific interpersonal contexts and assertive behavior; negotiation as a strategy to deal with conflicts.
3. Cognitive distortions	6	Understanding cognitive distortions (thinking errors); identifying and changing cognitive distortions: Selective Abstraction, Overgeneralization, Mind Reading, Crystal Ball, Minimization, Disqualifying the Positive Experiences, Dichotomous Thinking, Labeling and Personalization.
4. Function and meaning of emotions	7	The diversity of the emotional experience; the nature and function of emotions: sadness, shame, fear, anger, guilt, and happiness
5. Dysfunctional core beliefs	10	The role of core beliefs about the self and the others; dysfunctional core beliefs and their influence in giving meaning to reality; identifying and changing relevant core beliefs: Failure, Social Isolation/Alienation, Mistrust/Abuse, Defectiveness/Shame, Emotional Deprivation, Abandonment/Instability, Grandiosity/Entitlement; fighting core belief's influences in thoughts, emotions, and behavior.
Final session	1	Reflection and consolidation of learning, and generalization of gains made during the program.

Note. Adapted from "From multimodal programs to a new cognitive-interpersonal approach in the rehabilitation of offenders", by N. Brazão, C. da Motta and D. Rijo, 2013, *Agression and Violent Behavior*, *18*, 640.

Table 4.

Baseline Differences on the Outcome Measures By Group

	TG (n=24)		CG (n=24)		*t*	*p*	*Cohen's d*
	M	*SD*	*M*	*SD*			
Outcome measures							
Anger state	12.00	2.95	11.38	3.09	.71	.47	.20
Anger-trait	17.79	4.13	17.42	4.71	.29	.77	.08
Temperament	6.75	2.59	5.79	1.64	1.53	.13	.44
Reaction	7.79	1.67	7.88	2.32	-.14	.88	.04
Paranoia	47.21	10.61	50.25	10.96	-.97	.33	.28
External shame	24.83	10.22	23.13	9.70	.59	.55	.17

Note. TG = treatment group; CG = control group.

Table 5.

Means and SDs of the Outcome Measures by Group at Post-treatment, and Analysis of Covariance

	TG (n=24)		CG (n=24)		F	*p*	Cohen's *d*
	M	*SD*	*M*	*SD*			
Outcome measures							
Anger state	11.58	2.88	12.12	3.79	.41	.52	.16
Anger-trait	16.29	4.40	19.50	5.79	10.43	.022	.62
Temperament	6.25	2.00	7.12	2.77	8.17	.006	.36
Reaction	6.95	2.42	8.70	2.44	7.84	.007	.72
Paranoia	45.58	12.36	59.37	15.25	11.53	.001	.99
External shame	22.33	13.98	29.04	12.28	3.70	.061	.50

Note. TG = treatment group; CG = control group.

Table 6.

Within-Group T-test of Changes in Treatment Group

	Pre-treatment		Post-treatment		*t*	*p*	*Cohen's d*
	M	*SD*	*M*	*SD*			
Outcome measures							
Anger state	12.00	2.94	11.58	2.88	.47	.64	.14
Anger-trait	17.97	4.13	16.29	4.40	2.32	.029	.39
Temperament	6.75	2.59	6.25	2.00	1.51	.14	.21
Reaction	7.79	1.66	6.95	2.42	1.69	.10	.40
Paranoia	47.20	10.61	45.58	12.36	.78	.43	.14
External Shame	24.83	10.22	22.33	13.98	.72	.47	.20

Table 7.

Within-Group T-test of Changes in Control Group

	Pre-treatment		Post-treatment		*t*	*p*	*Cohen's d*
	M	*SD*	*M*	*SD*			
Outcome measures							
Anger state	11.38	3.09	12.12	3.79	-.91	.37	.21
Anger-trait	17.42	4.71	19.50	5.79	-2.32	.029	.39
Temperament	5.79	1.64	7.12	2.77	-2.96	.007	.58
Reaction	7.88	2.32	8.70	2.44	-2.09	.047	.34
Paranoia	50.25	10.96	59.37	15.25	-3.24	.004	.68
External Shame	23.13	9.70	29.04	12.28	-2.44	.023	.53

Table 8.

Reliable Change Index for Anger, Paranoia and External Shame By Group

Outcome measures	Categories	TG (n=24)		CG (n=24)		*Fisher's*	*p*	*Cramer's V*
		n	*%*	*n*	*%*			
Anger-state	GI	6	25	4	16.67			
	NC	12	50	12	50	.57	.86	.10
	GD	6	25	8	33.33			
Anger-trait	GI	11	45.83	4	16.67			
	NC	9	37.50	7	29.17	8.76	.012	.42
	GD	4	16.67	13	54.17			
Temperament	GI	10	41.67	4	16.67			
	NC	9	37.50	6	25	7.30	.027	.34
	GD	5	20.83	14	58.33			
Reaction	GI	10	41.67	3	12.5			
	NC	11	45.83	11	45.83	7.39	.025	.39
	GD	3	12.50	10	41.67			
Paranoia	GI	13	54.17	4	16.67			
	NC	1	4.17	5	20.83	8.20	.012	.41
	GD	10	41.67	15	62.50			
External shame	GI	13	54.17	7	29.17			
	NC	4	16.67	2	8.33	5.27	.081	.33
	GD	7	29.17	15	62.50			

Note. TG = treatment group; CG = control group; GI = Global Improvement; NC = No Change; GD = Global Deterioration.