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Promoting emotion and behavior regulation in male prison inmates: A secondary data analysis from a randomized controlled trial testing the efficacy of the Growing Pro-Social Program

Abstract

This paper describes a secondary data analysis collected from inmates who participated in an independent randomized controlled trial, testing the efficacy of the Growing Pro-Social (GPS) Program. The current study aimed to test the program's ability to increase, on one hand, cognitive reappraisal (adaptive emotion regulation strategy) and, on the other hand, decrease expressive suppression (maladaptive emotion regulation strategy) over time. It was also assessed if the GPS was capable of reducing disciplinary infractions committed by inmates over time.

Participants were randomized to the GPS treatment (n = 121) or the control group (n = 133). The Emotion Regulation Questionnaire was completed at baseline, at mid-treatment, at post-treatment and at 12 months' follow-up. Disciplinary infractions were collected from prison records during the 12 months before the beginning of the program, during the GPS's 12-month length and during the 12 months after treatment completion. Treatment effects were analyzed with latent growth curve models.

Concerning cognitive reappraisal, while treatment participants showed a significant increase, controls presented a decrease over time. For expressive suppression, the treatment group presented a significant decrease, and the control group showed no change over time. Treatment participants also presented a significant decrease in the number of disciplinary infractions and in the number of days in punishment, while controls showed no change or an increase over time.

This study showed the GPS's ability to promote emotion and behavior regulation, which contributes not only to inmate's interpersonal adjustment, but also to a more efficient management of the prison system.

Keywords: Behavior regulation; Emotion Regulation; Growing Pro-Social Program; Latent Growth Curve Models; Male Prison Inmates.

Public Significance Statements:

Disciplinary infractions are highly prevalent in prisons and introduce significant costs to correctional systems. Research has shown that inmate's emotion regulation difficulties may play an important role in prison misconduct, emphasising the need to address emotion and behavior regulation in offender's treatment programs. This study demonstrated the efficacy of a rehabilitation program in reducing disciplinary infractions and emotion regulation difficulties in male prison inmates, contributing not only to inmate's interpersonal adjustment, but also to a more efficient management of prisons.

Introduction

The efficacy of cognitive-behavioral group interventions in the rehabilitation of young and adult offenders has been well documented (Bonta et al., 2011; Koehler, Lösel, Akoensi, & Humphreys, 2013; Raynor, Ugwudike, & Vanstone, 2014; Trotter, 2013). Among the most disseminated programs used in the rehabilitation of inmates are the Reasoning and Rehabilitation (Ross, Fabiano, & Ross, 1989) and the Enhanced Thinking Skills (ETS; Clark, 2000). These programs have shown to be effective in reducing criminal recidivism, as well as maladaptive cognitions and antisocial behavior (Cullen et al., 2012; McDougal, Perry, Clabour, Bowles, & Worthy, 2009).

These interventions have been identified as cognitive-restructuring programs, thus conceptualizing aggressiveness as the result of maladaptive or dysfunctional cognitions. It is well known that offenders use cognitive distortions when processing social information (e.g., Walters, 2007), and these program's ultimate goal is to promote a more adaptive social information processing, by reducing underlying cognitive distortions (Antonio & Crossett, 2016). However, a considerable amount of research (e.g., Chakhssi, Bernstein, & de Ruiter, 2012; Gilbert & Daffern, 2013) has also shown that early maladaptive schemas play a crucial role in the onset and maintenance of antisocial behavior.

Early maladaptive schemas (e.g., Rafaeli, Bernstein, & Young, 2011; Young, Klosko, & Weishaar, 2003) may be defined as negative themes about the self and the others, that have their origin in early dysfunctional interactions with significant others, who do not meet the children's core needs. Later in life, schemas can be triggered in any situation where schema-relevant information is available. Once a schema is triggered, it will guide information processing in a way that maintains and reinforces that same schema. In other words, schemas will elicit judgments, inferences, and attributions that are consistently biased in an erroneous manner (*i.e.*, cognitive distortions). From this

point of view, antisocial behavior can be conceptualized as a result of a distorted view of the self and the others, which leads to cognitive distortions in the social information processing (Brazão, da Motta, & Rijo, 2013; Brazão, da Motta, Rijo, Salvador, Pinto-Gouveia, & Ramos, 2015a; Brazão, Rijo, Salvador, & Pinto-Gouveia, 2017a).

Therefore, when trying to modify the offender's dysfunctional information processing, it seems relevant to promote change in early maladaptive schemas, which may contribute to a more longer-lasting and/or stable change in offender's cognitive functioning over time.

Although the link between early maladaptive schemas, cognitive distortions and antisocial behavior is known, few intervention programs take into account the need for promoting change at a deeper level (such as early maladaptive schemas) in order to modify aggressive and antisocial behavior. Moreover, most programs do not identify what should be the focus of change and what actually causes changes, nor define the relation between the variables that they try to modify during intervention (Rijo et al., 2007). For instance, emotional control sessions are carried out as if emotional control was totally independent from social reasoning or interpersonal behavior (Brazão et al., 2013). There has also been a tendency to use mainly reasoning and school-like activities (e.g., paper and pencil), rather than experiential exercises, which would be more adequate to increase self-knowledge, and promote cognitive and emotional change (Brazão et al., 2013; Rijo et al., 2007).

In order to overcome these shortcomings, Rijo and colleagues (2007) developed a new cognitive-behavioral intervention program, the GPS – Growing Pro-Social. The GPS is a structured and manualized group program grounded in schema theory and intervention methods (e.g., Rafaeli et al., 2011; Young et al., 2003), specifically designed to be used within a package of psychological interventions aiming the

rehabilitation of young and adult offenders. GPS can be used as a first choice cognitive-behavioral program (to be delivered a few months after prison intake) along with other group and/or individual interventions programs addressing specific criminogenic needs. The program could also be used along with individual cognitive-behavioral therapy, taking into account the added benefits that group and individual therapy have shown when combined (e.g., O'Brien, Sullivan, & Daffern, 2016).

The GPS was designed to target maladaptive behavioral patterns, disruptive emotions, cognitive products (negative automatic thoughts), cognitive distortions (thinking errors) and early maladaptive schemas (dysfunctional core beliefs about the self and the others), which underlie the offender's social information processing. Specifically, it aims to promote emotion and behavior regulation by changing the dysfunctional cognitive correlates of antisocial behavior (for a description on how GPS targets the cognitive correlates of antisocial behavior, see interventions section).

The majority of efficacy studies has chosen the reduction of recidivism rates as the preferred measure of the efficacy of rehabilitation programs. Although the positive effects of the intervention programs over recidivism rates have usually been presented as a major requirement for the selection of effective intervention practices (e.g., McGuire, 2011, 2013), less is known about the change in other variables that research has also found to be associated with re-offending (Antonio & Crossett, 2016; Skeem, Polaschek, & Manchak, 2009). A new trend in research has begun to identify and to assess other relevant variables as treatment outcome measures, namely cognitive and emotional correlates of antisocial behavior (Clarke, Cullen, Walwyn, & Fahy, 2010; Cullen et al., 2012; Emilsson et al., 2011; Redondo, Martínez-Catena, & Andrés-Pueyo, 2012). Following this new-wave of research, a randomized controlled trial (RCT) has been conducted in Portuguese prisons aiming to assess the efficacy of the GPS program

in adult offenders. This RCT analyzed the program's ability to reduce the offender's cognitive malfunctioning, namely the use of cognitive distortions and the prominence of early maladaptive schemas (Brazão et al., 2015a; Brazão et al., 2017a). The impact of the GPS in variables that, from an evolutionary perspective, have been proposed as relevant variables associated with antisocial behavior, specifically anger, shame and paranoia, was also addressed by recent studies (Brazão, da Motta, Rijo, Salvador, Pinto-Gouveia, & Ramos, 2015b; Brazão, Rijo, Salvador, & Pinto-Gouveia, 2017b).

Results have shown that the GPS program was effective in reducing the frequency of self-reported cognitive distortions and the prominence of early maladaptive schemas, as well as anger, shame and paranoia. While the treatment group presented a significant decrease, controls showed no change or a worsening on those same variables over time (Brazão et al., 2017a, 2017b). Nonetheless, these previous studies did not assess behavioral change, as is the case of disciplinary infractions committed by inmates. As noted by several authors (e.g., McGuire, 2011, 2013), the ultimate goal of an intervention program should be changing actual behavior, and this outcome should be directly observable and quantifiable. This issue seems to be especially relevant taking into account that disciplinary infractions inside prisons are highly prevalent, which reduce order, threaten the strength of security and custody, and introduce significant costs to the entire correctional systems (Auty, Cope, & Liebling, 2017; Lahm, 2008; Memory, Guo, Parker, & Sutton, 1999; Toman, Cochran, Cochran, & Bales, 2015; Tewksbury, Connor, & Denny, 2014).

Disciplinary infractions come about many forms, ranging from serious and violent acts (e.g., inmate-on-inmate and inmate-on-staff assaults) to less serious nonviolent infractions (e.g., disobeying a direct order). The usual method for managing misconduct in most prisons is to segregate the disruptive inmates from the rest of the

prison population. Recent research (e.g., Morgan et al., 2016) has shown that segregation may not be as detrimental as previous studies have suggested. Nonetheless, it may still have a negative impact on inmate's mental health and well-being (Dante, 2012; Marcum, Hillinski-Rosick, & Freiburger, 2014). Taking into account these data, as well as the empirical evidence on the positive association between prison misconduct and recidivism (Dhami, Ayton, & Loewenstein, 2007; Duwe & Clark, 2011), identifying variables that contribute to disciplinary infractions seems of utmost importance (Tewksbury et al., 2014).

Recent developments on emotion-driven theories conceptualize prison misconduct as the result of emotion regulation difficulties (Fishbein et al., 2009; Robertson, Daffern & Bucks, 2014). Emotion regulation can be defined as the attempts individuals make to maintain, inhibit and enhance the experience and expression of emotions (Bridges, Denham, & Ganiban, 2004). According to Gross and colleagues (Gross, 2013, 2014; Gross & John, 2003), individuals may cope with their emotions using either cognitive reappraisal or expressive suppression strategies. Cognitive reappraisal is considered an adaptive emotion-regulation strategy and involves reinterpreting the meaning of an event in a way that changes its emotional impact, while expressive suppression, a maladaptive emotion-regulation strategy, encompasses inhibiting emotions, as well as emotion-expressive behaviors. According to the authors, expressive suppression is less effective in altering negative emotions in comparison with cognitive reappraisal and it has been found to be associated with psychopathology, social dysfunction, depressed mood, and aggressive behavior. Cognitive Reappraisal, in turn, has been found to be associated with better interpersonal outcomes and to be positively related to wellbeing.

A considerable amount of research has explored the associations between emotion regulation and aggression, and it has been found that emotion regulation difficulties tend to be associated with increased aggression (Ammerman, Kleimman, Uyeji, Knorr, McCloskey, 2015; Cohn, Jakupcak, Seibert, Hildebrandt, & Zeichner, 2010; McLaughlin, Hatzenbuehler, Mennin, & Nolen-Hoeksema, 2011; Roll, Koglin, & Petermann, 2012; Tager, Gold, & Brammer, 2010; Veloti et al., 2016). However, the majority of published studies was conducted with adolescents. Although these studies may not generalize to the adult population, they do provide valuable evidence concerning a possible relationship between emotion regulation and aggression. A review of longitudinal studies examining this relationship in children and adolescents was undertaken by Roll and colleagues (2012), who determined that, in general, earlier emotion regulation difficulties were associated with later externalizing and aggressive behaviors. A few studies have used adult offender samples to explore the association between emotion regulation and aggressive behavior. Tager and colleagues (2010) found that intimate partnership offenders who showed emotion regulation difficulties were more likely to report having abused their partners. Robertson and colleagues (2014), in turn, showed that offenders with a maladaptive emotion regulation style reported more extensive histories of aggression than those with an adaptive emotion regulation style. These results suggest that emotion regulation difficulties may play an important role on aggressiveness and behavioral problems, thus emphasizing the potential need to include complex emotion-related modules (beyond a few strategies aiming anger control) in treatment programs for offenders (Fishbein et al., 2009; Robertson et al., 2014).

Despite available findings, and to our best knowledge, there is a lack of RCTs testing the efficacy of intervention programs in emotion and behavior regulation

outcomes in adult offenders. The current study consisted of a secondary data analysis collected from inmates who participated in an independent RCT on the efficacy of the GPS program. This study added to the previous research by investigating the impact of the program in the frequency of use of two different emotion regulation strategies: cognitive reappraisal (adaptive strategy) and expressive suppression (maladaptive strategy). This study also moves beyond self-report measures by evaluating observable behavior inside prison, namely the frequency of disciplinary infractions, taken as indicators of behavior (dys)regulation. These same outcomes have not been analyzed on previous research on the GPS efficacy and, as stated above, there is a lack of RCTs analyzing change at emotion and behavioral (observable) levels in offenders.

The main goals of this study were, in a first step, to assess whether male prison inmates who participated in GPS showed, on one hand, an increase in cognitive reappraisal and, on the other hand, a decrease in expressive suppression over time, when compared to controls. In a second step, we assessed if the treatment group presented a significant reduction of disciplinary infractions while in prison (not only in the number of disciplinary infractions committed, but also in the number of days in punishment) when compared to the control group. An additional goal was to examine the extent to which any changes were maintained after treatment completion.

We hypothesized that GPS can have positive effects in emotion regulation, taking into account that the program's Module 4 – Function and Meaning of Emotions, was designed to promote emotion regulation (beyond anger control), by increasing the awareness and understanding about the function, meaning and adaptive value of emotions, and problems related to emotion dysregulation (see interventions section). If change occurs at this level and, taking into account that prison misconduct may, at least partially, be conceptualized as resulting from emotion regulation difficulties, it was

expected that the number of disciplinary infractions and the number of days in punishment would also decrease after GPS completion. We also expected that treatment effects would be maintained over time. Finally, we expected that participants who completed the GPS treatment would present higher improvements in behavior and emotion regulation when compared with non-completers.

Method

Trial design and participants

As previously specified, the current study consisted in a secondary data analysis collected from male prison inmates that participated in an independent RCT (that was designed in accordance with the CONSORT 2010 guidelines) with blind assessments. Recruitment into the original trial was conducted between 2013 and 2016 in nine prisons in three city areas in mainland Portugal (Lisbon, Oporto and Coimbra) and in the Madeira Island. This study was registered as a randomized controlled trial (ID: NCT03013738) at ClinicalTrials.gov, and was approved by the Head of the General Directorate of Reintegration and Prison Services of the Portuguese Ministry of Justice. The study was also approved by the Ethics Committee of the Faculty of Psychology and Educational Sciences of the University of Coimbra where the Research Center is based. Additionally, researchers sought authorization by the Portuguese Data Protection Authority, in order to assure data protection from all participants involved in the study.

Inclusion criteria were set for male prison inmates aged between 18 and 40 years old, taking into account that most offenders incarcerated at the onset of the RCT were within this age range. Exclusion criteria included: (1) cognitive impairment (because GPS is not suitable for the cognitively-impaired); (2) psychotic disorders (the experiential exercises used in the program are contraindicated for psychotic patients);

(3) being treated for substance abuse/dependence (cessation or at least substantial reduction of substances use must precede GPS treatment); (4) being sentenced exclusively for sexual offenses (sex offenders would benefit from more specific intervention programs); and (5) remaining in prison less than 24 months since the beginning of the program (taking into account GPS's 12-month length and 12-month follow-up assessment). Female offenders were also excluded from the sample because women represent less than 6% of the total inmates in Portugal, and any possible idiosyncrasies from this cohort would be underrepresented.

Sample size. A power analysis was conducted with the G*Power v3.1 software (Faul, Erdfelder, Buchner, & Lang, 2009). Results showed that a sample of 203 inmates was necessary to detect medium effects with a significance level of .05 and a power of .90. The power analysis was conducted a priori, i.e., before the RCT onset, and Repeated Measures ANOVA was planned as the data analytic strategy. However, taking into account the advantages of latent growth curve models over Repeated Measures ANOVA (see data analysis section), as well as the enough large sample size to perform latent growth curve models, these analyzes were selected.

Interventions

As previously specified, the GPS is based in schema therapy (e.g., Rafaeli et al., 2011; Young et al., 2003) and one of the program's main goals encompasses the promotion of emotion and behavior regulation, by changing specific early maladaptive schemas, cognitive distortions and cognitive products underlying the offenders' social information processing. GPS is a manualized program of 40, 90-minute, sessions which runs on a weekly basis. Sessions must be delivered by two therapists who should be skillful in cognitive-behavioral techniques and schema therapy.

The GPS's structure follows a progressive strategy of change, which begins by: (1) increasing knowledge about the nature and ambiguities of human communication, (2) changing maladaptive behavioral patterns in specific interpersonal contexts, (3) learning about cognitive distortions and counteracting their influence in the attribution of meaning to events, (4) experiencing and understanding the function and meaning of emotions and their influence on human behavior, and (5) learning about early maladaptive schemas and fighting against their influence on thoughts, emotions and behaviors. This gradual strategy of change requires the program to be delivered in a predefined sequence of five modules (preceded by an initial session for the presentation of the program): (1) human communication, (2) interpersonal relationships, (3) cognitive distortions, (4) meaning and function of emotions, and (5) early maladaptive schemas (see Table 1). GPS ends with a final session, and follow-up sessions can be carried out afterwards.

[Insert Table 1]

Modules 1 and 2 are focused in communication and interpersonal skills. The main goal of these sessions is to increase participants' awareness about the ambiguity of human communication and the subjectivity of information processing in interpersonal contexts (although not addressing the issue of cognitive distortions and/or early maladaptive schemas). In Module 1, participants learn about the communication processes and are challenged to identify its obstacles (e.g., the incongruences between verbal and non-verbal language) and to cope with those same obstacles in a healthy and prosocial way. In Module 2, the participants are guided to discover the advantages of assertiveness over aggressiveness, and they are challenged to behave assertively in

specific interpersonal contexts (e.g., saying no, asking for help, apologizing) and to use negotiation skills to cope with interpersonal conflicts.

In turn, Modules 3, 4 and 5 directly address cognitive and emotional correlates of antisocial behavior. In Module 3, participants are encouraged to understand the way our mind processes social information. Common thinking errors (cognitive distortions) are identified, and participants are trained to think in a more realistic way about relevant daily events. In Module 4, participants are guided to understand the function and meaning of emotions, namely its adaptive value. Participants are also challenged to understand the link between their problems and emotion regulation difficulties. In Module 5, early maladaptive schemas are identified as well as their influence over the attribution of meaning to events and the triggering of disruptive emotions. Participants are encouraged to fight against their own schemas, diminishing the schema's influence over thoughts, emotions and behavior.

All sessions include experiential exercises, and participants are encouraged to achieve insight through systematic questioning about the reactions noticed during activities (guided discovery approach), and to apply this knowledge to real life scenarios. Homework assignments between sessions are also included, in which participants are asked to use the strategies learned in everyday life situations in the following week.

The treatment group attended the GPS program for about 12 months, in addition to the Treatment As Usual (TAU) delivered at Portuguese prisons: supervision of school frequency, occupational and job-related tasks, sentence planning supervision over time, and counselling by a psychologist in a regular basis (once per week). Participants in the control group received TAU and did not attend the GPS program or any other kind of structured intervention during the research period.

Outcome measures

Participants completed a self-report measure of emotion regulation. Disciplinary infractions committed by each inmate were collected from prison records. Additionally, socio-demographic and legal data on participants were collected from prison staff members.

ERQ – Emotion Regulation Questionnaire (Gross & John, 2003; Portuguese version by Pinto-Gouveia & Dinis, unpublished). ERQ is a 10-item scale designed to measure the respondents' tendency to regulate their emotions in two ways: cognitive reappraisal (e.g., “When I’m faced with a stressful situation, I make myself think about it in a way that helps me stay calm”) and expressive suppression (e.g., “When I am feeling positive emotions, I am careful not to express them”). Respondents answer each item on a seven-point scale ranging from 1 (strongly disagree) to 7 (strongly agree). The original version of the ERQ presented good internal consistency values, with alphas of .79 for the cognitive reappraisal subscale and .73 for the expressive suppression subscale (Gross & John, 2003). In the Portuguese version, the Cronbach’s alpha was .80 for both cognitive reappraisal and expressive suppression (Dinis & Pinto-Gouveia, unpublished). In the current study, internal consistency values were .76 for cognitive reappraisal and .72 for expressive suppression.

Participants completed the ERQ at baseline, after the 20th session of the program (mid-treatment assessment), at the end of treatment and at 12 months’ post-treatment (follow-up assessment).

Disciplinary infractions grid. A grid was developed by researchers in order to collect the following data from prison records: the total number of disciplinary infractions (e.g., work-absence, defiant/oppositional behavior, aggressive and violent behavior, destruction of prison property, alcohol/drug-related offenses) committed by

each inmate, as well as the total number of days of the punitive measures applied by the prison administration. These data were collected for three time-intervals: during the 12 months before the beginning of the program, during the GPS's 12-month length and also during the 12 months after GPS completion. The average number of disciplinary infractions and the average number of days in punishment for each time-interval were computed and taken as indicators of behavior (dys)regulation.

Procedures

All potential participants (who did not meet the exclusion criteria) were identified by psychologists from the justice system. Afterwards, a large sample of participants was randomly selected using a random number table by a research assistant who was blind to any personal information about each inmate. Then, a first meeting between the research team and the randomized inmates occurred, in which researchers invited inmates to participate voluntarily. In this meeting, researchers explained the goals of the study and presented a brief overview of the intervention program. It was also explained to inmates that their participation in the study would not impact their sentencing in any way.

Participants who agreed to participate, gave written informed consent, completed the ERQ at baseline assessment, and were randomly assigned to treatment conditions (treatment and control groups) using a random number table by a research assistant who was blind to any information about each participant. Afterwards, the research team informed the psychologists in each prison of the result of the randomization so that GPS could be initiated. In total, nine GPS groups were run (one group in each prison, with eight to 15 participants), and groups meet once a week.

Participants in the control group were informed that they would be offered the GPS treatment after the study's completion (after the end of the follow-up period).

Staff who conducted randomization did not serve as therapists or assessors, and assessors were blind to condition assignment. Disciplinary infractions were collected by independent research assistants who were blind to group assignment or any personal information of participants.

GPS's facilitators were chosen among the psychologists who already had training and experience in delivering the program with inmates. In order to assure program integrity and consistency, facilitators received training and regular supervision by the research team (including the program's main author) during the time GPS was run in prisons. Moreover, the program's structured and manualized design contributes to treatment integrity once every procedure and guidance is offered in detail. As a strategy to increase treatment integrity, the GPS sessions were carried out by two therapists (a male and a female therapist for each group). While one therapist was leading the session, the other one observed the implementation and helped in keeping it close to the program handbook. This second therapist only intervened when the first one deviated from the protocol, and an established codebook for helping this therapist determine what counted as a deviation (e.g., discussing topics not related or irrelevant to the session's goals) was provided in the GPS's handbook. Moreover, protocol deviation was one of the topics covered in the program's training and supervision. Quality control procedures, such as recording sessions and/or the presence of external assessors in the GPS sessions, were not allowed in prisons.

Data analysis

Data analyses were conducted with the Mplus v7.4 (Muthén & Muthén, 2010) and the IBM SPSS Statistics v22.0 software. The IBM SPSS was used for comparisons between the treatment and the control group on demographic and criminal characteristics, using independent-samples *t*-tests or chi-square tests depending on the nature of the data. Groups were also compared on the dependent variables at baseline, using independent-samples *t*-tests.

Treatment effects were tested with latent growth curve models (LGCM; Duncan & Duncan, 1995), using Mplus. Although repeated measures statistical methods (e.g., ANOVA) can handle multiple data points, there is a growing recognition that these approaches may not be adequate when assessing change over time (Curran, Obeidat, & Losardo, 2010; Duncan & Duncan, 2009; Hesser, 2015). These traditional methods only analyze change in observed group means, thus being incapable of capturing individual differences in change (differences in trajectories are treated as error variance). Also, these methods assume that change in participants is linear. Alternatively, LGCM analyze both linear and non-linear change, and individuals are allowed to differ on the rate of change in the dependent variables over time. Therefore, LGCM is a reliable method to assess individual variation in the growth of the dependent variables, and to examine if treatment condition might predict changes over time (Duncan & Duncan, 1995, 2009; Malmberg et al., 2005; Múthen, 1997; Múthen & Múthen, 2010).

All LGCM were carried out in accordance with both intention-to-treat and per-protocol approaches. For the emotion regulation outcomes (*i.e.*, cognitive reappraisal and expressive suppression), the intercept (*i.e.*, initial status) and slope (*i.e.*, change over time) were modeled as latent variables from data at baseline (Time 1), at the middle of the treatment (Time 2), at the post-treatment (Time 3) and at the follow-up assessment

(Time 4). For the behavior regulation outcomes (*i.e.*, average number of disciplinary infractions and average days in punishment), the intercept and slope were modeled as latent variables from data during the 12 months before the beginning of the treatment (Time 1), during the GPS's 12-month length (Time 2) and also during the 12 months after treatment completion (Time 3). For all outcome measures, unconditional models testing a linear and a non-linear (*i.e.*, quadratic trend) of change in the outcome measures over time were estimated separately in each group without any predictors. Effect sizes for the rate of change observed in the dependent variables in each group were computed using Cohen's *d*, with 0.2 indicating a small effect, 0.5 a medium effect and 0.8 a large effect (Cohen, 1988).

After establishing the unconditional models, the association between condition and change over time was examined by including condition (control group vs. treatment group coded as 0 and 1, respectively) as a predictor of the growth factors (*i.e.*, intercept and slope). The path from condition to intercept reflects group differences at the baseline and should be non-significant due to randomization. The path from condition to slope reflects group differences on the trajectory of change in the outcome measures over time. The association between treatment dosage and change over time in the outcome measures was also analyzed in the treatment group by including the number of sessions (≤ 32 sessions vs. ≥ 32 sessions coded as 0 and 1, respectively) as a predictor of change over time. A cut-off of ≥ 32 sessions (80% of attendance) was used to classify participants as completers, in accordance with the guidelines by Cullen and colleagues (2012).

When following an intent-to-treat approach, Full Information Maximum Likelihood Estimation was used to handle missing data according to a proposal by Muthén and Muthén (2010). Chi-Square (χ^2), Comparative Fit Index (CFI), Root-Mean

Square Error of Approximation (RMSEA) and the Standardized Root-Mean Square Residual (SRMR) were used as model fit indices. In accordance with the guidelines by Hair Jr. and colleagues (2005), and taking into account the sample size (< 250), a CFI $\geq .95$ combined with either RMSEA $\leq .08$ or a SRMR $\leq .08$ were considered as indicators of acceptable/good fit. For a graphical representation of a LGCM, see Appendix A.

Results

Recruitment and retention

Nine Portuguese prisons, including 270 male prison inmates were invited to participate in this study (see Figure 1). Sixteen (5.9%) inmates declined participation, and a total of 254 (94.1%) inmates completed the baseline assessment. Of these, 121 (47.63%) were randomly assigned to the GPS treatment and 133 (52.37%) were randomly assigned to the control group.

From the initial 121 treatment group, 108 (89.2%) completed the mid-treatment assessment, 97 (80.16%) completed the post-treatment assessment and 69 (57.0%) completed the follow-up assessment. Only 17 (14.0%) inmates dropped out the program. The majority of losses to subsequent assessments was due to transference to another prison or parole. Seventy-nine treatment participants (65.4%) attended more than 32 sessions, 19 (15.7%) attended between 31 and 21 sessions, 12 (9.9%) attended between 20 and 11 sessions, and 11 (9.0%) attended less than 10 sessions. Participants attended in average 30 sessions ($M=30.18$; $SD=11.45$) of the program.

Of the 133 inmates assigned to the control group, 104 (85.9%) completed the mid-treatment assessment, 89 (66.9%) completed the post-treatment assessment and 67 (50.3%) completed the follow-up assessment.

[Insert Figure 1]

Baseline differences

Groups were compared on demographic features, and no significant differences were found (all $p > .05$). The mean age was 28.24 years ($SD = 6.32$) in the treatment group and 28.74 years ($SD = 6.14$) in the control group. Most participants were single (69.4% in the treatment group and 70.7% in the control group), with a low socioeconomic status (94.2% in the treatment group and 97.0% in the control group).

Regarding legal and criminal features, no significant differences were found (all $p > .05$). The average sentence length was 111.53 months ($SD = 59.25$) in the treatment group and 120.76 months ($SD = 63.22$) in the control group. The majority of participants committed several crimes (56.2% in the treatment group and 50.4% in the control group) and were first-time offenders (62.8% in the treatment group and 60.9% in the control group). Crimes for which they were sentenced to prison were predominantly against property, followed by crimes against people, drug-related offences, and crimes against the State (e.g., counterfeiting and forgery of documents).

Baseline differences between groups were also tested for the outcome measures (see Table 2). No differences were found between conditions at baseline, thus indicating that randomization was successful.

[Insert Table 2]

Intervention effects in emotion and behavior regulation in accordance with the intention-to-treat approach

As previously stated, unconditional models were carried out separately for each group. Afterwards, conditional models with group as a predictor of the growth factors

(*i.e.*, intercept and slope) were tested. All analyses were carried out in accordance with the intention-to-treat approach.

Unconditional models in the treatment group. A linear and non-linear (*i.e.*, quadratic) trend of the unconditional models of change in emotion (*i.e.*, cognitive reappraisal and expressive suppression) and behavior regulation (*i.e.*, average number of disciplinary infractions and average days in punishment) were carried out. None of the models presented a significant quadratic trend. Therefore, only the linear trend was included in the subsequent analyses, which presented good fit indices to the observed data (see Table 3).

As reported in Table 4, results in the treatment group showed that the average intercept was significant for all the outcome measures, indicating that the mean at baseline was significantly different from zero. With the exception of cognitive reappraisal, the average variances of the intercept were also significant, indicating significant individual variation around the mean of the outcome measures at baseline. Concerning change over time, and for cognitive reappraisal and expressive suppression, the average slopes were significant. While cognitive reappraisal increased over time, expressive suppression decreased over time. The observed effect sizes were small for cognitive reappraisal and large for expressive suppression. The average slopes were also significant for the number of disciplinary infractions and number of days in punishment, with both variables presenting a decrease over time. The effect size was medium for the number of disciplinary infractions and large for the number of days in punishment. In addition, individual differences around the mean of the growth trajectory of all outcome measures were found, except for cognitive reappraisal.

[Insert Table 3]

[Insert Table 4]

Unconditional model in the control group. Similarly to what was observed in the unconditional models in the treatment group, unconditional models testing a quadratic trend in the control group did not present acceptable fit indices to the observed data. So, only the linear trend was included in the subsequent analyses, which presented good fit indices to the data (see Table 3).

As reported in Table 5, the average intercept was significant for all the outcome measures, indicating that the mean at baseline was significantly different from zero. With the exception of cognitive reappraisal, individual differences around the mean of the outcome measures at baseline were found, as indicated by the significant intercept factor variances. Regarding change over time, and for cognitive reappraisal, the significant slope showed that scores on this variable decreased over time, and the observed effect size was medium. For the expressive suppression and the average number of disciplinary infractions, the slope was non-significant, showing no change over time. The average days in punishment increased over time (as indicated by the significant slope), and the observed effect size was large. Additionally, the average variances of the slopes were significant, indicating individual variation around the mean of the growth trajectories of all outcome measures.

[Insert Table 5]

Conditional models with group as a predictor of the growth factors. The conditional models with group (control vs treatment) as a predictor of the growth factors provided good fit indices to the observed data (see Table 3).

As presented in Table 6, condition did not predict variation in the intercept, indicating that the groups did not differ in the outcome measures at baseline. Regarding the slope factor, condition was a significant predictor of change over time observed in all the outcome measures. Specifically, the treatment group showed a greater increase (of 2.09 units) in cognitive reappraisal than the control group, as indicated by the positive B value. Treatment participants also showed a greater decrease (of almost 2 units) in expressive suppression, as indicated by the negative B value. Finally, the treatment group presented a greater decrease in the number of disciplinary infractions (of 1.80 units), as well as in the number of days in punishment (of 8.26 units), when compared to the control group.

[Insert Table 6]

Conditional models with treatment dosage as predictor of the rate of change in the treatment group. Conditional models with treatment dosage (*i.e.*, ≤ 32 sessions vs. ≥ 32 sessions) as predictor of the rate of change in emotion and behavior regulation were also analyzed in the treatment group. As previously specified, participants that completed at least 32 sessions were considered completers. In turn, participants that attend less than 32 sessions were considered non-completers.

All conditional models presented good fit indices to the data (see Table 3). Results showed that treatment dosage was a significant predictor of change over time observed in the outcome measures. Specifically, completers showed a greater increase in cognitive reappraisal ($B = 2.12, p = .008$), and a greater decrease in expressive suppression ($B = -2.99, p = .023$), number of disciplinary infractions ($B = -1.18, p <$

.001), and number of days in punishment ($B = -4.56, p < .001$), when compared with non-completers.

Intervention effects in emotion and behavior regulation in accordance with the per-protocol approach

In addition to the intent-to-treat analysis, latent growth curve unconditional and conditional models were also carried out in accordance with the per-protocol approach.

Unconditional models in the treatment group. Concerning the rate of change observed in emotion regulation outcomes, results showed, on one hand, that cognitive reappraisal increased over time ($S = 2.05, p < .001$) and, on the other hand, expressive suppression decreased over time ($S = -1.94, p < .001$) in treatment participants who fulfilled the protocol. Regarding behavior regulation outcomes, results showed that the number of disciplinary infractions ($S = -0.57, p < .001$), as well as the number of days in punishment ($S = -5.87, p < .001$) decreased over time.

Unconditional models in the control group. For the emotion regulation outcomes, results pointed out to a significant decrease in cognitive reappraisal ($S = -2.41, p < .001$) in controls who fulfil the protocol. Concerning the expressive suppression, the slope was non-significant ($S = 0.29, p = .191$), showing no change over time. For the behavior regulation outcomes, while the number of disciplinary infractions showed no change over time ($S = 0.57, p = .227$), the number of days in punishment increased over time ($S = 3.29, p = .008$).

Conditional models with group as a predictor of the growth factors. Results showed that condition was a significant predictor of change over time observed in all the outcome measures. When compared to the control group, the treatment group showed, not only a greater increase in cognitive reappraisal ($B = 2.34, p < .001$), but

also a greater decrease in expressive suppression ($B = -2.24, p < .001$), number of disciplinary infractions ($B = -1.49, p < .001$) and number of days in punishment ($B = -8.49, p < .001$) over time.

Conditional models with treatment dosage as predictor of the rate of change in the treatment group. Results showed that treatment dosage was a significant predictor of change over time observed in the outcome measures. The completers showed a greater increase in cognitive reappraisal ($B = 1.83, p < .001$), and a greater decrease in expressive suppression ($B = -2.07, p < .001$), number of disciplinary infractions ($B = -1.54, p < .001$), and number of days in punishment ($B = -4.52, p < .001$) when compared with non-completers.

Discussion

A randomized controlled trial has been conducted in Portuguese prisons in order to assess the efficacy of the Growing Pro-Social (GPS) with male prison inmates. Previous studies (Brazão et al., 2015a, 2015b, 2017a, 2017b) have already confirmed the GPS efficacy in reducing cognitive distortions and the endorsement of early maladaptive schemas, as well as anger, shame and paranoia. However, these studies did not assess behavioral change, namely disciplinary infractions committed by inmates, or emotion regulation outcomes that research has shown to be associated with prison misconduct (Fishbein et al., 2009; Robertson et al., 2014). Moreover, these same studies relied only on self-report methods, thus, not including observable outcome measures. The current study tried to address this issue and consisted in a secondary data analysis collected from inmates who participated in the RCT.

This study's main goal was to test the efficacy of the Growing Pro-Social (GPS) program in promoting emotion and behavior regulation in male prison inmates.

Specifically, it was tested the program's ability to, on one hand, increase cognitive reappraisal (adaptive emotion regulation strategy) and, on the other hand, decrease expressive suppression (maladaptive emotion regulation strategy) over time. It was also assessed the GPS impact in reducing disciplinary infractions (the number of disciplinary infractions and the number of days in punishment) committed by inmates. To our best knowledge, this was the first study to test the efficacy of a structured cognitive-behavioral group program in promoting emotion regulation (beyond anger control) and behavior regulation, adding to self-report measures direct and observable behavior.

Data on recruitment and retention, showed that most treatment participants completed the program. It is noteworthy that only a small number of inmates dropped out the program, suggesting that GPS's length and methodology accounted for the favorable program retention. Attrition rates in the treatment group were mainly due to external variables (e.g., transference to another prison, parole) that researchers could not control. The same tendency was observed in the control group, although a considerable number of inmates refused to complete assessments. Taking into account that including only completers in the analyses would introduce bias into the findings (Antonio & Crosset, 2016), an intent-to-treat analysis was followed and all participants (including the non-completers) were included in subsequent analyses. Nonetheless, analyses were also carried out in accordance with the per-protocol approach, in order to assess treatment effects in the participants who fulfilled the protocol.

Comparisons between the treatment and the control group on demographic and criminal features revealed non-significant differences between conditions. The same result was obtained when comparing groups in the outcome measures at baseline. These results sustained that the process of randomization was successful, which allowed for

reliable conclusions on the predictor effect of condition on the rate of change observed in emotion and behavior regulation over time.

Results from Latent Growth Curve Models (in accordance with both intention-to-treat and per-protocol approaches) showed that condition was a significant predictor of change over time observed in all outcome measures. Concerning emotion regulation, and for cognitive reappraisal, while the treatment group showed a significant increase, controls presented a decrease over time. A different tendency was observed for expressive suppression, i.e., while the treatment group presented a significant decrease, the control group showed no change over time. This result supports the assumption that GPS is capable of promoting emotion regulation, which is one of the program's main goal (although this goal is pursued throughout all modules, it is specially addressed during the Module 4, Function and Meaning of Emotions). In these sessions, participants were guided to discover the richness and diversity of the human emotional experience, looking at emotions as serving an evolutionary purpose. All emotions were conceptualized as adaptive and useful for human survival, and for the adaptation of any human being throughout the lifespan. In this sense, there are no negative emotions, but instead, emotional responses that should be adjusted to specific contextual needs. By leading participants in the experience of different emotions, and increasing knowledge about their usefulness, GPS tries to promote emotion regulation in everyday life situations (Brazão et al., 2013; Rijo et al., 2007). This specific work may be responsible, on one hand, for an increased cognitive reappraisal which involves constructing a potentially emotion-eliciting situation in a way that changes its emotional impact, and on the other hand, for a decreased expressive suppression in which the individual inhibits emotion-expressive behaviors (Gross, 2013, 2014; Gross & John, 2003).

The stability or worsening observed for emotion regulation strategies over time in controls may be explained by the inmate's dysfunctional beliefs about emotions, namely beliefs stating that expressing emotions could be dangerous because it sends a message of weakness and vulnerability to others, thus becoming potential victims of abuse by other inmates or even correctional officers. These dysfunctional beliefs may be reinforced by the current aggressive status of prison interpersonal culture (e.g., Dante, 2012). In this sense, inhibiting emotions and emotion-expressive behaviors could be an adaptive response to a perceived harsh environment. In contrast, results in the treatment group suggested that GPS may have had a positive effect in these dysfunctional beliefs, thus promoting emotion regulation and interpersonal adjustment inside prison.

Concerning behavior regulation, results showed that the number of disciplinary infraction and the number of days in punishment significantly decreased over time in the treatment group. In turn, the control group showed no change or a worsening in those same variables over time. These results pointed out the GPS's ability to reduce, not only disciplinary infractions committed by inmates, but also the number of days inmates were in punishment. Therefore, GPS achieved the ultimate goal of any intervention program that, as pointed by several authors (e.g., McGuire, 2011, 2013), should be changing actual behavior. Further, these outcomes were directly observable and quantifiable, thus not relying on self-report measurement methods.

Considering the empirical evidence on the association between aggressiveness and emotion regulation difficulties (Ammerman et al., 2015; Cohn et al., 2010; McLaughlin et al., 2011; Roll et al., 2012; Tager et al., 2010; Veloti et al., 2016), these results are concurrent with findings in emotion regulation outcomes, which stressed the need to address both behavior and emotion regulation in treatment programs for offenders (Fishbein et al., 2009; Robertson et al., 2014). Moreover, improvements for

both emotion and behavior regulation outcomes were maintained over time (12 months after GPS completion), suggesting that those who participated in the program continued to use and consolidate the strategies learned along the intervention. Promoting behavior and emotion regulation seems paramount, taking into account that behavior and emotion regulation difficulties may compromise inmate's adhesion to penitentiary treatment (Brazão, da Motta, Rijo, & Pinto-Gouveia, 2015).

The implications of the reported results are of considerable relevance to the current practices in the justice system. Fewer disciplinary infractions and, consequently, fewer days in punishment (or in segregation, if the inmate committed a violent offense) have been found to be associated with increased offender's mental health and well-being (Dante, 2012; Marcum et al., 2014). Beyond these issues related directly to inmates, correctional institutions largely devoid of inmate misconduct may also feature more efficient management. Staff members may be less burdened with detection, documentation, and resolution of inmate disciplinary infractions, which may allow them to become more productive by devoting more time to additional responsibilities (Tewksbury et al., 2014). This may contribute to reducing costs associated with employing large numbers of correctional officers and may offset the negative impact of high staff member turnover rates (Auty et al., 2017; Memory et al., 1999). Safer correctional institutions are also likely to be more attractive workplaces to both current and future prison employees (Marcum et al., 2014). Moreover, fewer incidents of inmate misconduct may lead to reduced costs associated with the negative repercussions of such behavior, such as inmate and staff member injury and destruction of prison property and infrastructure (Tewksbury et al., 2014). Finally, penitentiary treatment resort less to punitive strategies that a considerable amount of research has shown to be

associated with increased recidivism (Andrews & Bonta, 2010a, 2010b; Bonta & Wormith, 2013; Bonta et al., 2011; McGuire, 2011, 2013).

Results on the control group (who showed no change in the number of disciplinary infraction and a worsening in the number of days in punishment) suggested that the treatment as usual in Portuguese prisons may not be effective enough to promote a desirable change at this level, which raises the question of whether treatment as usual work towards rehabilitation or may be bolstering psychological and emotional processes related to maladaptive behavior (Ashkar & Kenny, 2008; Constantine et al., 2012; Lambie & Randell, 2013; Morgan et al., 2012). In contrast, results in the treatment group support the idea that it is possible to achieve emotion and behavioral (observable) change with structured interventions (Andrews & Bonta, 2010a, 2010b; Bonta & Wormith, 2013; McGuire, 2011, 2013; Holin, Palmer, & Hatcher, 2013), and that the GPS is an appropriate intervention program in changing emotion and behavioral patterns underlying aggressiveness.

Finally, analyses on treatment dosage as predictor of change over time in the treatment group showed that completers (*i.e.*, participants that completed at least 32 sessions) presented, on one hand, a greater increase in cognitive reappraisal and, on the other hand, a greater decrease in expressive suppression when compared with non-completers (*i.e.*, participants that attended less than 32 sessions). Results also showed that completers showed a greater decrease in the number of disciplinary infractions, as well as in the number of days in punishment, when compared with non-completers. These findings stress the need for facilitators to engage inmates with the full treatment, in order to optimize the GPS's effects. This issue is especially relevant, taking into account that research has shown that non-completers re-offend at a higher rate than

treatment completers (Bennett, Stoops, Call, & Flett, 2007; Kronner & Takahashi, 2012; Prendergast, Hall, Wexler, Melnick, & Cao, 2004).

One limitation of the current study has to do with the fact that no systematic quality control procedures of the program's delivery were carried out. As previously stated, recording sessions or the presence of external assessors in sessions were not allowed in prisons. Researchers tried to overcome this issue by training and supervising the GPS's facilitators during 12 months (program's length). Moreover, the GPS's structured and manualized design, as well as the simultaneous presence of two experienced therapists in sessions ensured, at least partially, treatment fidelity.

Further research is need in order to advance current knowledge about GPS's effects over emotion and behavior regulation. Future studies on causal mechanisms of change that inform about the mechanisms of change underlying the improvements observed in emotion and behavior regulation seems of the utmost importance. Taking into account the individual variability of change observed in emotion and behavior regulation over time in the current study, future studies should test for relevant variables that could explain this same variability. Testing moderators of treatment effects is another relevant topic to be addressed in further research. The effects of the GPS over criminal recidivism rates should also be addressed in future studies. Finally, replication of the present findings with other type of offenders (e.g., older male prison inmates – taking into account that the current study only included young adult offenders, aged between 18 and 40 years old – female offenders, juvenile offenders) and/or in other settings (e.g., community-based interventions), as well as in other countries, should be addressed in a way to warrant the generalizability of the current findings and confirm the GPS's positive effects. When delivering the GPS program with young and female offenders, the program's structure, modules and contents should be maintained.

However, the language (especially in the case of young offenders), as well as the experiential exercises and practices should be adapted to the characteristics of these sub-groups of offenders.

Overall, findings presented in this paper sustained that the GPS program was effective in promoting emotion regulation, which have been identified as a relevant outcome to be addressed in treatment programs for offenders (Fishbein et al., 2009; Robertson et al., 2014). GPS also proved to be effective in reducing prison misconduct and disciplinary infractions, which contributes to a better interpersonal adjustment of inmates during imprisonment, as well as to a more efficient management of the prison system.

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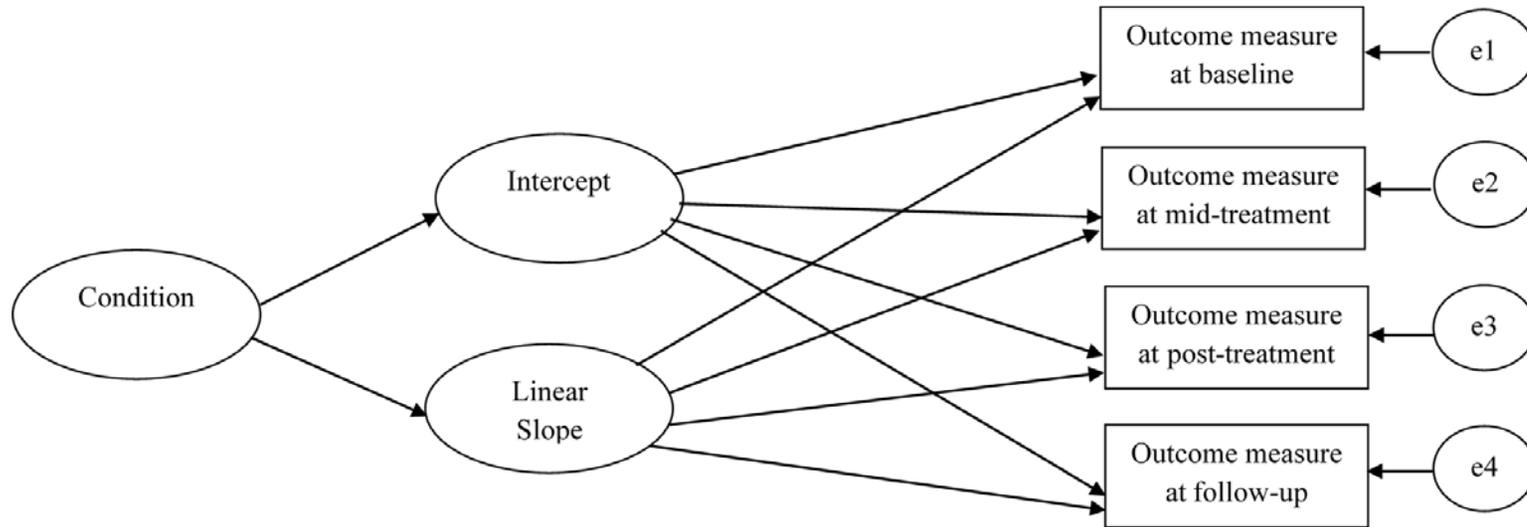
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APPENDIX A.

Latent Growth Curve Model for one outcome measure measured on four timepoints with condition as predictor



Note. The factor loadings for the intercept were set to 1, and the factor loadings for the linear slope were fixed to 0 at baseline, 1 at mid-treatment, 2 at post-treatment and 4 at follow-up. Condition was coded as 0 = control group and 1 = treatment group.

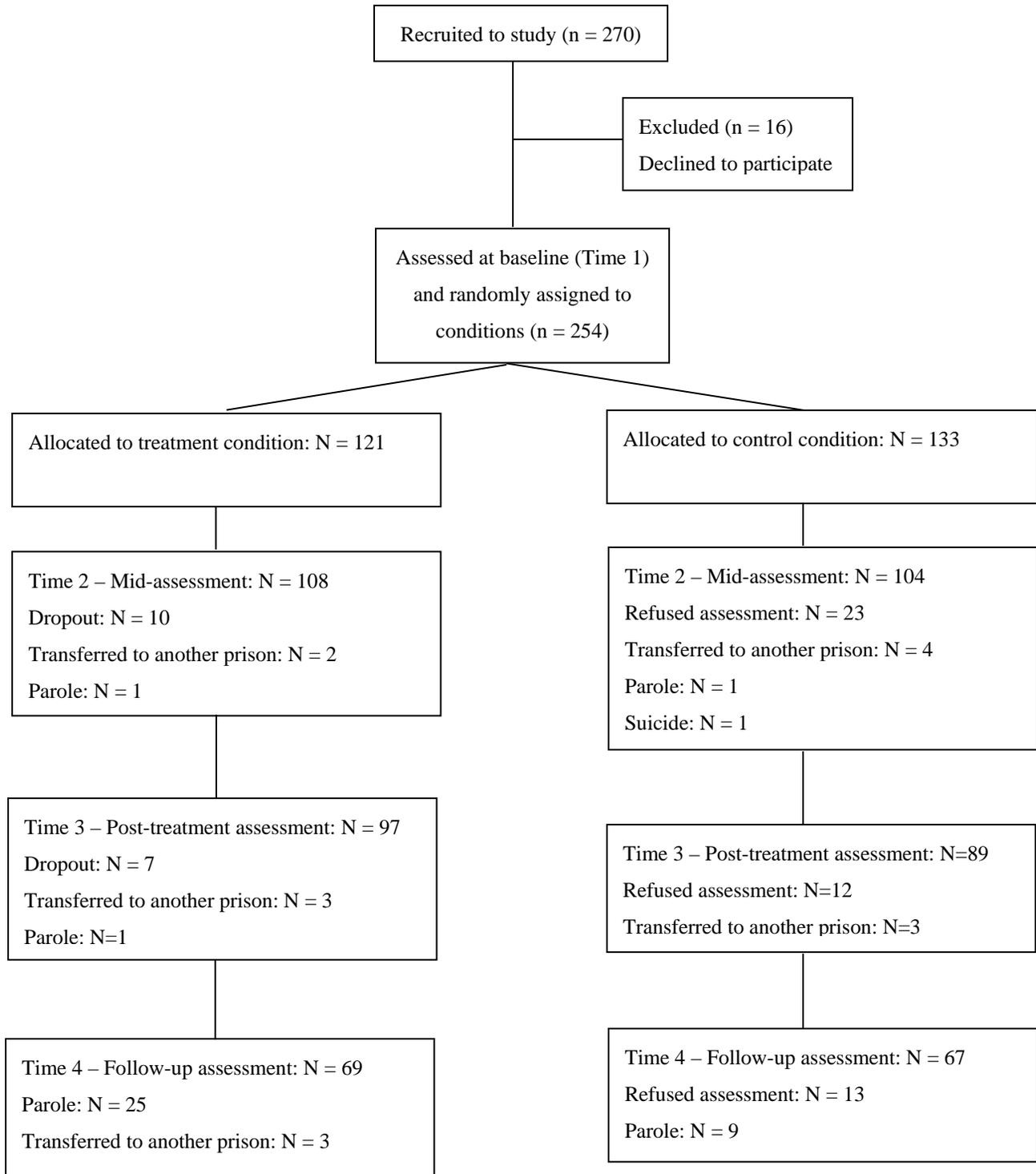


Figure 1. Flowchart of inmate participation

Table 1.

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. Maladaptive schemas	10	The role of core schemas about the self and the others; maladaptive schemas and their influence in giving meaning to reality; identifying and changing core schemas: Failure, Social

		Isolation/Alienation, Mistrust/Abuse, Defectiveness/Shame, Emotional Deprivation, Abandonment/Instability, Grandiosity/Entitlement; fighting core schema'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, *Aggression and Violent Behavior*, 18, 640.

Table 2.

Baseline Differences on the Outcome Measures by Group

	TG		CG		<i>t</i>	<i>p</i>	95% <i>CI</i>	<i>Cohen's d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>				
Emotion regulation								
Cognitive Reappraisal	26.19	8.38	26.82	6.89	.322	.748	[-1.88, 1.35]	0.03
Expressive Suppression	16.19	5.52	17.45	4.86	1.920	.056	[-2.53, .031]	0.24
Behavioral regulation								
Number of disciplinary infractions	2.00	2.87	2.16	3.85	.902	.699	[-1.01, .682]	0.04
Number of days in punishment	14.02	8.70	12.92	2.84	1.524	.129	[-.910, 711]	0.16

TG = Treatment Group; CG = Control Group; M = mean; SD = standard deviation; CI = Confidence Interval.

Table 3.

Model Fit Indices for the Unconditional Models in Treatment and Control Groups, and for the Conditional Models with Condition and Treatment Dosage as Predictors

	χ^2	χ^2 p- value	RMSEA	90% CI for RMSEA	CFI	SRMR
Unconditional model in the TG						
Emotion Regulation						
Cognitive Reappraisal	6.021	.304	.049	[.000, .164]	.977	.064
Expressive Suppression	.240	.625	.000	[.000, .200]	1.000	.009
Behavior Regulation						
Number of disciplinary infractions	7.614	.178	.072	[.000, .258]	.959	.059
Number of days in punishment	1.412	.239	.058	[.000, .122]	.997	.028
Unconditional model in the CG						
Emotion Regulation						
Cognitive Reappraisal	1.664	.197	.081	[.000, .291]	.980	.029
Expressive Suppression	6.021	.304	.049	[.000, .164]	.977	.064
Behavior Regulation						
Number of disciplinary infractions	1.371	.927	.000	[.000, .065]	1.000	.037
Number of days in punishment	.443	.994	.000	[.000, .061]	1.000	.014
Conditional model with condition as predictor						
Emotion Regulation						
Cognitive Reappraisal	5.565	.350	.036	[.000, .152]	.982	.064
Expressive Suppression	5.686	.338	.037	[.000, .158]	.986	.051
Behavior Regulation						
Number of disciplinary infractions	1.641	.440	.000	[.000, .117]	1.000	.018

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Number of days in punishment	1.288	.525	.000	[.000, .110]	1.000	.016
Conditional model with treatment dosage as predictor						
Emotion Regulation						
Cognitive Reappraisal	.862	.353	.000	[.000, .220]	1.000	.021
Expressive Suppression	1.238	.265	.042	[.000, .236]	.999	.027
Behavior Regulation						
Number of disciplinary infractions	1.253	.534	.000	[.000, .148]	1.000	.022
Number of days in punishment	3.094	.212	.063	[.000, .193]	.995	.036

TG = Treatment Group; CG = Control Group; CI = Confidence Interval.

Table 4.

Unconditional Model of the Initial Status (Intercept) and the Rate of Change (Slope) in Emotion and Behavior Regulation in the Treatment Group

	T1	T2	T3	T4					
	M	M	M	M					
	(SD)	(SD)	(SD)	(SD)	Cohen's <i>d</i>	Intercept	Slope	Intercept (V)	Slope (V)
Emotion Regulation									
Cognitive Reappraisal	26.19	27.57	28.50	28.56	0.32	28.52***	2.46**	14.99 ^{ns}	3.87 ^{ns}
	(8.38)	(6.90)	(7.91)	(6.16)					
Expressive Suppression	16.19	16.27	14.50	9.84	1.21	16.90***	-1.63***	7.81***	1.97**
	(5.52)	(5.16)	(5.43)	(4.87)					
Behavior Regulation									
Number of disciplinary infractions	2.00	.77	.33	-	0.75	1.59***	-0.62***	3.81***	0.74***
	(2.87)	(1.76)	(1.28)						
Number of days in punishment	14.02	7.03	2.30	-	1.42	13.93***	-5.67***	18.92***	16.95***
	(8.70)	(5.93)	(7.71)						

Note. Emotion regulation outcome measures were collected in four timepoints: pre-treatment (T1), mid-treatment (T2), post-treatment (T3) and follow-up (T4).

Effect sizes (Cohen's *d*) were calculated for the difference between T1 and T4. Behavior regulation outcome measures were collected for three time-intervals:

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during the 12 months before the beginning of the program (T1), during the GPS's 12-month length (T2) and during the 12 months after GPS completion (T3).

Effect sizes (Cohen's *d*) were calculated for the difference between T1 and T3.

M = mean; SD = standard deviation; ns = non-significant.

*** $p < .001$

** $p < .05$

Table 5.

Unconditional Model of the Initial Status (Intercept) and the Rate of Change (Slope) in Emotion and Behavior Regulation in the Control Group

	T1	T2	T3	T4					
	M	M	M	M					
	(SD)	(SD)	(SD)	(SD)	Cohen's <i>d</i>	Intercept	Slope	Intercept (V)	Slope (V)
Emotion Regulation									
Cognitive Reappraisal	26.82	26.39	25.30	21.37	0.68	22.24***	-2.17***	15.04 ^{ns}	6.70**
	(6.89)	(7.05)	(9.27)	(8.99)					
Expressive Suppression	17.45	18.09	17.10	18.26	0.16	17.53***	0.11 ^{ns}	12.08***	2.01**
	(4.86)	(5.56)	(5.51)	(4.97)					
Behavior Regulation									
Number of disciplinary infractions	2.16	2.63	3.03	-	0.19	2.16***	0.45 ^{ns}	10.99***	4.32***
	(3.85)	(4.82)	(4.88)						
Number of days in punishment	12.92	13.69	16.43	-	1.70	10.92***	2.75***	15.96***	17.08***
	(2.84)	(2.44)	(3.55)						

Note. Emotion regulation outcome measures were collected in four timepoints: pre-treatment (T1), mid-treatment (T2), post-treatment (T3) and follow-up (T4).

Effect sizes (Cohen's *d*) were calculated for the difference between T1 and T4. Behavior regulation outcome measures were collected for three time-intervals:

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during the 12 months before the beginning of the program (T1), during the GPS's 12-month length (T2) and during the 12 months after GPS completion (T3).

Effect sizes (Cohen's *d*) were calculated for the difference between T1 and T3.

M = mean; SD = standard deviation; ns = non-significant.

*** $p < .001$

** $p < .05$

Table 6.

Conditional Model with Condition as Predictor of the Initial Level (Intercept) and Rate of Change (Slope) in Emotion and Behavior Regulation

	<i>Intercept</i>		<i>Slope</i>	
	B	<i>p</i>	B	<i>p</i>
Emotion Regulation				
Cognitive Reappraisal	-1.37	.110	2.09	< .001
Expressive Supression	-0.79	.245	-1.80	< .001
Behavior Regulation				
Number of disciplinary infractions	-0.23	.574	-1.30	< .001
Number of days in punishment	3.03	.129	-8.26	< .001