The Efficacy of the PSYCHOPATHY.COMP Program in Reducing Psychopathic Traits: A Controlled Trial With Male Detained Youth

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Objective: To assess the efficacy of the PSYCHOPATHY.COMP program in reducing psychopathic traits among male detained youth. *Method:* In this controlled trial, a treatment group ($n = 58$) and a control group ($n = 61$) answered the Youth Psychopathic Traits Inventory-Short (YPIS) and the Proposed Specifiers for Conduct Disorder (PSCD) at baseline, posttreatment, and 6-month follow-up. Treatment participants attended the PSYCHOPATHY.COMP; controls only received Treatment As Usual (TAU). Treatment effects were tested with latent growth curve models (LGCM). *Results:* At baseline, no significant differences between groups were found. Results from LGCM showed that condition was a significant predictor of change over time observed in almost all outcome measures. Concerning the YPIS, treatment participants presented a significant decrease both in the total score and in the YPIS factors scores when compared with the controls (medium/large effect sizes; growth modeling analysis—GMA d ranging from .58 to 1.12). Considering the PSCD, treatment participants also showed a significant decrease both in the total score and in the PSCD factors scores (except for the grandiose-manipulative factor) when compared with controls (medium effect sizes; GMA d ranging from .53 to .72). Results also showed that treatment effects were maintained 6 months after the PSYCHOPATHY.COMP completion. *Conclusions:* Findings indicate that the PSYCHOPATHY.COMP is a promising treatment approach to reduce psychopathic traits among male detained youth, suggesting that interventions targeting these traits should be considered in their rehabilitation, as the absence of tailored interventions may increase the levels of psychopathic traits and their associated risks.

What is the public health significance of this article?
To reduce the costs and suffering that psychopathic trait has in detained youth and in the society at large, there is a critical need to deliver and test evidence-based interventions tailored to this at-risk population. This study suggests that the PSYCHOPATHY.COMP is a promising treatment approach to reduce psychopathic traits among detained youth.

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Detained youth with Conduct Disorder (CD) and high levels of psychopathic traits (i.e., Grandiose-Manipulative/GM, Callous-Unemotional/CU; and Impulsive-Irresponsible/II traits [also termed Daring-Impulsive/DI traits]), compared with their counterparts with CD only, present a more persistent and severe pattern of antisocial behavior, higher recidivism rates, and less engagement and responsiveness to treatment efforts (American Psychiatric Association [APA], 2013; Edens et al., 2007; Geerlings et al., 2020; Gretton et al., 2004; Leistico et al., 2008; Ribeiro da Silva et al., 2019b, 2020a; Salekin et al., 2018). Although there is a long debate whether psychopathic traits are treatable or not (Cleckley, 1988; Harris & Rice, 2006; Salekin, 2002), few studies have tested the efficacy of intervention programs in reducing psychopathic traits among detained youth[1] and few psychotherapeutic interventions have been designed to specifically target these sets of traits (Ribeiro da Silva et al., 2019a, Salekin et al., 2012). To reduce the costs that psychopathic traits have in detained youth and in the society at large it is required an effort to deliver evidence-based interventions tailored to this at-risk population (Anderson & Kiehl, 2014; Caldwell, 2011; Hecht et al., 2018; Polaschek & Skeem, 2018; Ribeiro da Silva et al., 2019b, 2020a).

While a considerable number of meta-analyses have shown that criminal recidivism rates and other emotional, cognitive, and behavioral correlates of antisocial behavior were reduced after the delivery of behavioral and cognitive-behavioral therapy (CBT) group interventions, few studies have tested the efficacy of psychotherapeutic interventions in reducing psychopathic traits among detained youth (see Andrews & Bonta, 2010; Bonta & Andrews, 2016; Hecht et al., 2018; Polaschek & Skeem, 2018 for a review on this topic). More problematic, just five of these studies (Butler et al., 2011; Caldwell, 2011; Caldwell et al., 2006; Manders et al., 2013; Ribeiro da Silva et al., 2020b) used treatment and control groups to test if treatment effects could be strongly ascribed to the intervention (Hollin, 2008).

Caldwell et al. (2006), in a controlled trial design, assigned 141 male detained youth with high scores on the Psychopathy Checklist:Youth Version (PCL:YV > 27) to either the Mendota Juvenile Treatment Center (MJTC—an intensive treatment program using CBT techniques; n = 56) or to "Treatment As Usual" (TAU; n = 85) in conventional juvenile detention facilities. Results showed that participants from the MJTC group were less likely to violently recidivate in the community during the 2-year follow-up period than those from the TAU group, with small effect sizes measured by estimated odds ratios. In another controlled trial, Caldwell (2011) examined the association between the facets of psychopathy (assessed with the PCL:YV) and changes in disruptive behavior and criminal recidivism. The author assigned 248 male detained youth to either the MJTC (n = 101) or to TAU (n = 147) in conventional juvenile detention facilities. Treatment was associated with a significant decrease in criminal recidivism at a 5-year follow-up period, with small to medium effect sizes measured by eta-squared coefficients. In the study of Butler et al. (2011), the research team randomly assigned 108 families of young offenders to either Multisystemic Therapy (MST; n = 56) or to the services delivered by Youth Offending Teams (YOT; n = 52). Both MST and YOT interventions decreased offending, but the MST reduced significantly further the likelihood of non-violent offending during the 18-month follow-up period. MST was also more effective in reducing posttreatment parent ratings (but not youth ratings) of psychopathic traits (measured by the Antisocial Process Screening

Device [APSD]) than YOT; effect sizes were not reported in this study. Manders et al. (2013), in a pre and posttreatment design, randomly assigned 256 adolescents referred for conduct problems to either MST (n = 147) or TAU (n = 109). Using the Inventory of Callous-Unemotional traits (ICU) and the APSD, the authors found that CU traits did not decrease significantly in either treatment conditions, II traits decreased in both conditions, and GM traits decreased significantly only in the MST condition (reporting small to medium effect sizes measured by Cohen's d).

Although the encouraging findings about the changeability of psychopathic traits in youth, these studies presented some shortcomings. Two studies included a mixed sample of male and female young offenders from clinical and forensic settings (Butler et al., 2011, Manders et al., 2013), which may bias results, as different types of participants usually present distinct treatment needs (Hecht et al., 2018). Treatment description was lacking in two studies (Caldwell, 2011; Caldwell et al., 2006) and treatment integrity was not controlled in three studies (Caldwell, 2011; Caldwell et al., 2006; Manders et al., 2013), both essential criteria for the empirical testing of treatment efficacy and for the dissemination of evidence-based practices (Perepletchikova, 2011). More importantly, as psychopathic traits are associated with distinctive biological, emotional, cognitive, and social dysfunctions, requiring a specific and tailored intervention (Hecht et al., 2018; Polaschek & Skeem, 2018; Ribeiro da Silva et al., 2020a), it is also noteworthy that none of these studies used an intervention program that was designed to reduce psychopathic traits.

The study by Ribeiro da Silva et al. (2020b) attempted to overcome some of these limitations by delivering the PSYCHO-PATHY.COMP program to detained youth. This program is the first individual intervention based on Compassion Focused Therapy (CFT) that was specifically designed to reduce psychopathic traits by promoting a compassionate motivation in these youth. It encompasses four sequential modules (see Table 1): (1) the basics of our mind; (2) our mind according to CFT; (3) compassionate Mind Training (CMT); and (4) Recovery, relapse prevention, and finalization (for a detailed description of the program, see Interventions section). Moreover, this study used a sample of male detained youth only, treatment description was detailed, and treatment integrity was ensured (Ribeiro da Silva et al., 2020a). In this controlled trial, the authors reported the preliminary findings about the efficacy of the PSYCHOPATHY.COMP program in reducing psychopathic traits among male detained youth.[2] A treatment group (n = 24) and a control group (n = 22) answered the Youth Psychopathic Traits Inventory-Short (YPIS) at baseline and posttreatment. Treatment participants attended the PSYCHOPATHY.COMP, while controls received TAU delivered at juvenile detention

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[1] For a more detailed information regarding the treatment of psychopathy/psychopathic traits in children, youth, and/or adults from community, clinical and forensic settings please see the meta-analytic study of Salekin (2002) and the systematic reviews of D'Silva et al. (2004); Wilkinson et al. (2015). Comprehensive reviews on this topic can also be considered (Frick et al., 2014; Harris & Rice, 2006; Hawes et al., 2014; Reidy et al., 2013; Ribeiro da Silva et al., 2020a; Salekin et al., 2010).

[2] The efficacy of the PSYCHOPATHY.COMP had been previously tested in a clinical case design, showing that the program was effective in reducing psychopathic traits and disruptive behavior in a juvenile detainee with CD, high levels of psychopathic traits, and a very high risk for criminal recidivism (Ribeiro da Silva et al., 2019a).

Table 1

Overview of the PSYCHOPATHY.COMP Program

Module	Session	Theme	Key messages of the session
1. The basics of our mind	1	Presentations	We have a lot of things in common with each other. Most of the things in our lives are not our choice.
	2	Our basic ingredients	We all have the same instinctive reactions to threats.
2. Our mind according to CFT	3	Old brain/new brain = tricky brain	Humans have a tricky mind
	4	Multiple versions	We are just one version of ourselves
	5	Responsibility and freedom	We are not prisoners of our evolutionary, genetic, and environmental past experiences.
	6	Emotion regulation systems	We all have three emotion regulation systems
	7	Emotion regulation systems (cont.)	A good way to achieve stability is to balance the functioning of our emotion regulation systems
	8	Outputs of the threat system	We are all sensitive to shame
	9	Coping strategies	What is the best strategy to deal with shame
	10	Motivations and recovery	Knowing our motivations help us to follow a path of recovery
3. Compassionate mind training	11	Compassion: What is and what is not	No matter what, we can always choose compassion
	12	Multiple selves	We all encompass a multiplicity of selves, differentiate and integrate that multiplicity is key
	13	Fears of compassion	We all have fears, blocks, and resistances of compassion that we should face and overcome
	14	Flows of compassion	All the flows of compassion are important, although they may encounter roadblocks.
	15	Self-compassion	Self-compassion is key and the only tool we have available 24/7
	16	Flows of compassion revised	Compassion always give us an outlet
	17	Safe place	We can go to our safe place and reach our compassionate self whenever we need it
	18	Compassionate letter	Compassion is powerful and can impact our lives.
4. Recovery, relapse prevention	19	Revisiting motivation and recovery: The role of compassion	We now have the tools to be responsible for our choices.
	20	What has changed? An overview	Life is always going to be bittersweet, learn to bear and face difficult moments compassionately is key

Note. CFT = Compassion Focused Therapy; Adapted from "Ribeiro da Silva, D., Rijo, D., Castilho, P. & Gilbert, P. (2019). The efficacy of a Compassion Focused Therapy-based intervention in reducing psychopathic traits and disruptive behavior: A clinical case study with a juvenile detainee. *Clinical Case Studies*, *18*, 323–343.

facilities. The treatment effects were tested both at a group level and at an individual level, showing that participants from the treatment group decreased their levels of psychopathic traits (both considering the total score of the YPIS and its factor scores), with medium to large effect sizes measured by the partial eta-squared coefficients and Cramer's *V*.

The option for an individual intervention based on a CFT approach to treat detained youth with psychopathic traits was based on several reasons. Individual interventions can offer an in-depth treatment alternative that can be easily tailored for the specific mental health intervention needs of detained youth, thus facilitating therapeutic engagement and the establishment of a strong therapeutic alliance, both critical issues in the treatment of this high-risk population (Salekin, 2002; Wilkinson et al., 2015). In turn, CFT (an evolution informed biopsychosocial approach to mental functioning) has received a growing empirical support in the treatment of several disorders, some of them considered difficult to treat (e.g., Gilbert, 2019; Kirby et al., 2017). Rather than focusing on cognitive processes, CFT is focused on helping people to shift into a compassionate motivation, that is, to be sensitive to the suffering of the self and/or others, allied with the wisdom, strength, and commitment to prevent and/or alleviate that suffering (Gilbert, 2020). Considering that detained youth (particularly those with psychopathic traits) seem to be function according to a motivation system

of competitiveness and aggression, the focus on promoting a compassionate motivation in these youth was considered a potential accurate strategy and a fundamental therapeutic goal within their rehabilitation (Gilbert, 2017; Kolts & Gilbert, 2018; Ribeiro da Silva et al., 2015).

According to CFT, humans have an innate set of basic motivations to survive, thrive and form affiliative/attachment bonds, which are regulated by the threat system (protecting individuals from threats through archaic and automatic responses—freeze, flight, fight), the drive system (allowing individuals to experience positive feelings that encourage, guide, and motivate them to seek out resources to survive and thrive), and the soothing system (allowing individuals to experience tranquility and safeness; Gilbert, 2019; Kumsta, 2019). In accordance with CFT, mental health problems usually emerge when there is an unbalance of basic motives and emotion regulation systems, particularly when the threat system commands individuals' functioning, easily triggering fight/flight responses (Gilbert, 2020). For CFT, central to the activation of the threat system is shame (i.e., unbearable, overwhelming, and persistent feelings of being inferior, inadequate, and worthless) and emotion regulation problems, both transdiagnostic features in internalizing and externalizing psychopathological symptoms and disorders (Elison et al., 2006; Gilbert, 2019; Paulo et al., 2019).

CFT conceptualizes antisocial behavior patterns and psychopathic traits as evolutionary rooted strategies to cope with harsh rearing scenarios (i.e., rearing environments marked by traumatic experiences—e.g., unpredictability, child abuse; and/or by the absence of affiliative signals—e.g., neglect, lack of warmth and safeness experiences), which interplay with other etiological factors, like genetic, epigenetic, and neural (Cowan et al., 2016; Del Giudice, 2016; Gilbert, 2017; Henry et al., 2018; Murray et al., 2018; Ribeiro da Silva et al., 2015; Waller et al., 2016). In those rearing environments, children and youth cannot develop strategies, mindsets, or physiological competences for turning to others and/or trusting them (Cowan et al., 2016; Ribeiro da Silva et al., 2019a). Rather, they learn and become orientated to survive in a world that is felt as threatening, where no one is trustworthy, and where one is either the predator or the prey (Del Giudice, 2016; Gilbert, 2017; Ribeiro da Silva et al., 2015). Consequently, detained youth tend to have: (a) an overdeveloped and oversensitive threat system; (b) a drive system that is self-focused on short-term goals and wants; (c) an underdeveloped soothing system; and (d) central emotional dysfunctions (Ribeiro da Silva et al., 2015). These emotional dysfunctions may comprise, among others, high levels of shame and emotion regulation problems, that is, individuals tend to suppress the experience of unpleasant emotions and/or to manipulate and attack others in potentially shameful/threatening situations (Garofalo et al., 2018; Kosson et al., 2016; Ribeiro da Silva et al., 2019c, 2019d).

The PSYCHOPATHY.COMP was adapted from CFT and specifically designed to reduce psychopathic traits in detained youth, restoring the balance of the motivational and emotional regulation systems through the promotion of a compassionate motivation (Ribeiro da Silva et al., 2017, 2019a). Building a compassionate motivation in these youth could function as both an inner safe heaven and a secure base, enabling them to make amends to their internal/external past experiences and to face new life experiences with compassion (Ribeiro da Silva et al., 2020a).

Although preliminary results about the efficacy of the PSYCHOPATHY.COMP were encouraging, there is still a need to test the efficacy of this program using more robust designs (Ribeiro da Silva et al., 2019a, 2020b). The present study aimed to overcome these limitations by testing the efficacy of the PSYCHOPATHY.COMP in reducing psychopathic traits among male detained youth using a controlled trial design that included a larger sample of participants and a follow-up assessment. Considering that this program was specifically designed to reduce psychopathic traits, as well as preliminary research findings (Ribeiro da Silva et al., 2019a, 2020b), it was expected that the PSYCHOPATHY.COMP would reduce psychopathic traits across time.

Method

This trial was designed in accordance with the Transparent Reporting of Evaluations with Nonrandomized Designs (TREND Statement; Des Jarlais et al., 2004) and was registered as a controlled trial at ClinicalTrials.gov (ID: NCT03971682).

Trial Design and Participants

This study was a controlled trial, carried out between March 2018 and January 2020. Participants were selected from male detained

youth aged between 14 and 18 years old from the six Portuguese juvenile detention facilities. Exclusion criteria included: (a) non-Portuguese speaking (to avoid communication issues); (b) remaining in the juvenile detention facility for less than 12 months since the beginning of the program (taking into account the PSYCHOPATHY.COMP length and the assessment period); (c) presence of cognitive disabilities (because PSYCHOPATHY. COMP is not suitable for cognitively-impaired youth); (d) presence of psychotic symptoms (the experiential exercises used in the program are contraindicated for psychotic patients); (e) presence of autism spectrum disorders (because PSYCHOPATHY.COMP was not designed considering the social impairments of these youth). Female detained youth were also excluded from this study, as they represent a small percentage of detained youth in Portugal, and any possible idiosyncrasies from this cohort would be understated (Rijo et al., 2016). As research has shown that the association between CD and psychopathic traits predicts a worse prognosis (Geerlings et al., 2020; Ribeiro da Silva et al., 2019b), inclusion criterion for this study was the presence of a CD as the main diagnosis (assessed with the Mini-International Neuropsychiatric Interview for Children and Adolescents [MINI-KID]; see Measures section).

Regarding sample size, a power analysis was conducted a priori (GPower v3.1 software; Faul et al., 2009), showing that a sample of 100 detained youth was necessary to detect medium effects with a significance level of .05 and a power of .90.

Interventions

The PSYCHOPATHY.COMP program (Ribeiro da Silva et al., 2017) is an individual CFT-based intervention for detained youth, which was specifically designed to reduce psychopathic traits through the development of a compassionate motivation (for a detailed description about the development of this program see Ribeiro da Silva et al., 2020b). This program has many similarities with other CFT programs (e.g., strategy of change, inclusion of—CMT—practices; Gilbert, 2010) but stands out by being highly experiential and tailored for the specific issues and life experiences of detained youth. Moreover, as detained youth with psychopathic traits tend to present poor treatment engagement (Hecht et al., 2018), the PSYCHOPATHY.COMP program was designed considering motivational interviewing strategies aligned with a CFT approach (Steindl et al., 2018).

The PSYCHOPATHY.COMP is a manualized program of 20 individual sessions (60-minutes sessions, one session per week). Sessions must be delivered by therapists skillful in CFT and in the program itself. The program's structure follows a progressive strategy of change, which occurs in four successive modules (see Table 1): (1) the basics of our mind; (2) our mind according to CFT; (3) CMT; and (4) recovery, relapse prevention, and finalization. As a common feature of all therapeutic sessions, therapists are focused on developing a secure therapeutic relationship, evaluating the motivational stage of the youth, and encouraging CMT.

Module 1 is aimed at offering insights about the evolutionary roots of humans' basic emotions, motives, and needs, including the instinctive and universal responses to social/physical threats (Gilbert, 2019). Assuming a non-pathologizing, non-judgmental, and de-shaming perspective, detained youth are encouraged to understand that even if we cannot change events, emotions, and thoughts, we can change the

way we relate with them and act on them. CMT is introduced in Module 1 as a crucial platform to begin the process of building participants' compassionate mind and awareness (Ribeiro da Silva et al., 2019a, 2020b).

Module 2 brings awareness to detained youth about the functioning of the human mind and body according to a CFT framework and continues the CMT (Gilbert, 2019; Ribeiro da Silva et al., 2017). Therapists compassionately allow youth to discover that although we are "just one version of ourselves" (i.e., we probably would be different if genetic factors or rearing experiences had been different), our evolutionary, genetic, and contextual inheritance does not lead to determinism, as we all can take conscious actions as we increase our awareness about our own functioning (Ribeiro da Silva et al., 2019a). To encourage such conscious actions, beyond the importance of CMT, youth are guided to understand the concepts of emotion regulation systems (i.e., threat, drive, and soothing systems and its body, emotional, cognitive, and behavioral outputs), shame, and safety strategies (Gilbert, 2019; Ribeiro da Silva et al., 2015).

Although CMT has started in Module 1 and continued throughout Module 2, Module 3 is explicitly focused on CMT (Ribeiro da Silva et al., 2017). Through experiential exercises (e.g., role-playing hypothetical, past, and/or future events), detained youth are gradually exposed to the triggering of the threat system (mostly anger and shame exposure), allowing them to understand its outputs (both in the mind and in the body), to differentiate and integrate their multiple selves (i.e., anxious, angry, sad . . .), and to search for compassionate strategies to bear and manage their own distress in healthy ways (Ribeiro da Silva et al., 2017, 2019a).

The last module (Module 4) is aimed at revisiting motivations for recovery and preventing relapse under the lens of compassion (Ribeiro da Silva et al., 2017). Detained youth are encouraged to genuinely understand that although suffering will always be part of our lives, this therapeutic journey offered them several compassionate emotion regulation strategies that are now available when one has to cope with suffering (Ribeiro da Silva et al., 2017, 2019a). When doing so, therapists should always emphasize youth's control and personal choices, as well as their responsibility toward change (Ribeiro da Silva et al., 2017, 2020b; Steindl et al., 2018).

All sessions present a default structure, starting with the therapist making a grounding exercise before the session onset, which is aimed to bring the compassionate self of the therapists into the sessions (Ribeiro da Silva et al., 2017). Sessions are then divided into three parts. Part 1 starts with a grounding and focusing exercise (e.g., Soothing Rhythm Breathing and engaged compassionate intention; Gilbert, 2010), aimed at helping youth to settle and focus before starting the session itself. This is followed by an overview of the last session and by a moment to explore any insights/events that occurred during the week. Part 2 starts with an experiential exercise, which is followed by the development of the session theme, where youth are guided to a deeper level of understanding. Lastly, Part 3 starts with a session summary and, afterward, youth are invited to do a CMT practice. At the end, a "Magic Card" is given to the participant, displaying a keyword, a quote, or an image that summarizes the session theme (Ribeiro da Silva et al., 2017, 2019a).

The treatment group attended the PSYCHOPATHY.COMP program for about 6 months (more than 1,100 individual therapeutic sessions were delivered during this controlled trial) and controls received the TAU delivered at juvenile detention facilities. The TAU includes around 20 individual weekly counseling sessions delivered by psychologists from the juvenile justice system (the treatment group did not attend these sessions and the control did not attend the PSYCHOPATHY.COMP during the research period).

Measures

Participants were assessed with a clinical interview and completed two self-report measures to assess psychopathic traits. Additionally, demographic, legal, and criminal data on participants were collected from juvenile justice record files, including their risk for criminal recidivism according to the Youth Level of Service/ Case Management Inventory (YLS/CMI; Hoge et al., 2002). The YLS/CMI was completed by a probation officer before young offender's detention. Based on the total score of the YLS/CMI, youth can be categorized into four levels of recidivism risk: low, moderate, high, or very high.

Semi-Structured Clinical Interview

In order to investigate mental health inclusion/exclusion criteria, participants from treatment and control groups were interviewed with the MINI-KID (Sheehan et al., 2010; Portuguese version by Rijo et al., 2016) at baseline. The MINI-KID is a structured clinical diagnostic interview that assesses DSM-5 (APA, 2013) disorders in children and adolescents in a way that is both comprehensive and concise. The MINI-KID is organized into diagnostic sections, each starting with two to four screening questions for each specific disorder. Additional symptom questions within each disorder section are asked only if the screen questions are positively answered. All questions are in a binary "yes/no" format. The MINI-KID takes into account not only Diagnostic and Statistical Manual of Mental Disorders (DSM) criteria A, but also the impairment and frequency of the symptoms, being considered a short and accurate measurement tool to diagnose mood disorders, anxiety disorders, substance-related disorders, tic disorders, disruptive disorders, attention-deficit hyperactivity disorder, psychotic disorders, eating disorders, and adjustment disorders. The interview also has a section that allows the screening of autism spectrum disorders and another section for ruling out medical, organic, and/or drug causes for disorders. Diagnostic criteria are summarized and documented within each disorder section and on a summary sheet, allowing the interviewer to decide which is the main diagnosis. The MINI-KID takes between 30 and 90 min to administer. Inter-rater reliability was found to be excellent for all mental health disorders assessed with the MINI-KID (Sheehan et al., 2010).

Outcome Measures—Psychopathic Traits

In order to assess the PSYCHOPATHY.COMP efficacy on psychopathic traits, participants completed both the YPIS (Van Baardewijk et al., 2010; Portuguese version by Pechorro et al., 2015) and the Proposed Specifiers for Conduct Disorders, (PSCD; Salekin & Hare, 2016; Portuguese version by Ribeiro da Silva et al., 2020c) at three time points: baseline, posttreatment, and 6-month follow-up.

The YPIS is an 18-item self-report version of the original Youth Psychopathic Traits Inventory (YPI; Andershed et al., 2002), which assesses psychopathic traits in youth via ratings within three different factors: GM (e.g., "It's easy for me to manipulate people"), CU (e.g., "I think that crying is a sign of weakness, even if no one sees

you"), and II (e.g., "I like to do exciting and dangerous things, even if it is forbidden or illegal"). Each factor is estimated by a set of six items; each item is rated on a 4-point scale (1 = "*Does not apply at all*" to 4 = "*Applies very well*"). Both the total YPIS and the YPIS factors can be scored by simply adding the item ratings; higher scores are indicators of increased levels of psychopathic traits. The YPIS has shown strong convergence with the original YPI and good psychometric properties (Van Baardewijk et al., 2010). In studies with Portuguese samples, the YPIS showed good psychometric properties and a three-factor structure that was invariant across community and forensic male youth (Pechorro et al., 2015, 2017). As expected, Portuguese community male youth had a lower mean score (M = 38.17; SD = 6.03) than Portuguese forensic male youth (M = 42.41; SD = 7.51; t = 9.239; p < .000) on the total score, as well as on the YPIS factors (Ribeiro da Silva et al., 2019b). In the present study the YPIS showed acceptable internal consistency based on α during the three assessment points. At baseline, the alphas for the YPIS total score and for the GM, CU, and II factors were, respectively: .78, .70, .72, and .66.

The PSCD is a 24-item questionnaire designed to assess psychopathic traits in youth via self-report ratings within four expected factors (Salekin, 2017; Salekin & Hare, 2016): GM (e.g., "I can turn on the charm in any situation"); CU (e.g., "I don't waste time thinking about how others feel"); DI (e.g., "I get a thrill out of doing risky things"); and CD (e.g., "I have engaged in physical aggression against animals or people"). Each factor is estimated by a set of six items; each item is rated on a 3-point scale (0 = "*not true*"; 1 = "*somewhat true*"; 2 = "*true*"). Both the total PSCD and the PSCD factors can be scored by simply adding the item ratings; higher scores are indicators of increased levels of psychopathic traits. Considering that most of the items of the Conduct Disorder (PSCD_CD) factor are not changeable over time, as they report to previous behaviors, in the analysis aimed to detect the intervention effects on psychopathic traits (see the Data Analysis section), the PCSD_CD factor was excluded and the PSCD total score was computed by adding the item ratings of the Grandiose-Manipulative (PSCD_GM), Callous-Unemotional (PSCD_CU), and Daring-Impulsive (PSCD_DI) factors only. In a study using both community and forensic Portuguese male youth, the PSCD has shown very good psychometric properties and a high convergence with the YPIS (Ribeiro da Silva et al., 2020c). As expected, Portuguese community male youth had a lower mean score (M = 12.93.17; SD = 5.16) than Portuguese forensic male youth (M = 17.85; SD = 5.56; t = −12.654; p < .000) on the total score of the PSCD, as well as on its factors (Ribeiro da Silva et al., 2020c). In the present study, the PSCD showed acceptable internal consistency based on α during the three assessment points. At baseline, the alphas for the PSCD total score and for the GM, CU, DI, and CD factors were, respectively: .84, .66, .67, .64, and .68.

Procedures

This study was approved by the Ethics Committee of the Faculty of Psychology and Educational Sciences of the University of Coimbra, by the Portuguese Data Protection Authority, and by the Portuguese Ministry of Justice.

As Portuguese juvenile detention facilities usually have no more than 150 detained youth (about 30 youth per juvenile detention

facility), facing six to 36 months of detention, around 10 youth enter and leave Portuguese juvenile detention facilities each month, which makes it difficult to randomly assign participants to conditions. In trying to minimize this barrier and to maximize time and human resources as well as the quality of the trial design (Hollin, 2008), the research team opted to assign the first 75 youth entering the juvenile detention facilities during the research period to the treatment group and the following 75 youth to the control group. The recruitment of 150 participants (50 more participants than required) allowed to overcome eligibility issues and potential dropout of participants from the study (it was expected an average recruitment rate of eight eligible youth/month).

A first meeting with the research team and the eligible participants (cf. see Trial Design and Participants section) was carried out after the first month of detention, as this is considered an adaptation period. At this meeting, researchers explained the goals of the study and presented a brief overview of the PSYCHOPATHY.COMP program to participants. It was also explained that their participation in the study would not impact their sentencing/school grades in any way and that no payment or extra credit would be offered. Confidentiality and anonymity of their responses were also guaranteed. Youth were then invited to participate voluntarily in the study and informed if they would be allocated to the treatment group or to the control group. Participants older than 18 years gave verbal and written consent for their own participation and participants younger than 18 years verbally assented to their own participation in addition to their parents/legal guardians' written consent. All youth who agreed to participate in the study were interviewed with the MINI-KID to assess the remaining inclusion/exclusion criteria and the presence of other psychiatric disorders. Eligible participants were then assigned to treatment or control groups as previously specified.

All participants were then assessed at baseline with the YPIS and the PSCD. Participants in the treatment group were assessed before the first session of the program (baseline assessment), right after its terminus (posttreatment assessment—about 6 months after the baseline assessment), and 6 months after treatment completion (6-month follow-up assessment). Participants in the control group were assessed with the same time interval using the same measures. Independent research assistants participated in data collection (i.e., assessing participants with the MINI-KID before the baseline assessment and assessing participants with self-report questionnaires at baseline, posttreatment, and 6-month follow-up). These researchers received intensive training on the assessment measures (a 21-hr workshop on the administration and rating of the MINI-KID and training on the administration and rating of self-report questionnaires) and had supervision sessions with a senior researcher during data collection (to clarify any doubt regarding the assessment per se or the ratings). Respondent-specific codes were used to link the data from one time-point to the next one.

Considering therapeutic engagement and treatment integrity assessment, as video-tapping and/or audio-tapping was not authorized by Portuguese Ministry of Justice due to ethical issues, researchers tried to overcome this shortcoming in numerous ways. Firstly, therapists were three psychologists who had a minimum 6 years of clinical experience as well as intensive training on CFT with a CFT expert (an initial face-to-face 35-hr workshop that took

place in 2015, followed by online sessions that took place between 2016 and 2017, in a total of 30 hr) and experience in delivering the PSYCHOPATHY.COMP program to young offenders (each therapist had previously delivered the program to two young offenders). Secondly, during this study, the therapists had weekly supervision sessions with CFT experts (in a total of 40 hr). Thirdly, therapists and youth rated every session on their subjective perception regarding the usefulness of the session (1 = "*nothing useful*" to 10 = "*extremely useful*") and the therapeutic relationship (1 = "*very bad*" to 10 = "*very good*"); therapists additionally rated every session on their subjective perception regarding how they follow the manualized protocol of the session (1 = "*completely different*" to 10 = "*very similar*") and how globally they rated the session (1 = "*very bad*" to 10 = "*very good*"). Fourthly, around 5% of the sessions (54 sessions; 18 from each therapists) were observed by an independent rater to assess treatment integrity; independent raters were three CFT experts who used a therapy assessment guide developed by the research team to evaluate the global quality of the session (considering the CFT approach and the protocol of the sessions), the therapeutic relationship, and the therapeutic skills. The global score of this assessment ranged from 1 ("*inappropriate*") to 10 ("*skillful*"). Lastly, the PSYCHOPATHY.COMP's structured and manualized design also contributed to assure treatment integrity.

Data Analysis

Preliminary analyses included comparisons between treatment and control groups on demographic, legal, criminal, and clinical variables. Independent-samples *t*-tests or chi-square tests were used for comparisons depending on the nature of the data. Groups were also compared on the outcome measures at baseline, using independent-samples *t*-tests. These preliminary analyses were carried out with the IBM SPSS Statistics v24.0 software.

Considering the longitudinal design of the research, intervention effects were tested following an intent to treat analysis using latent growth curve models (LGCM; Duncan & Duncan, 1995). Although repeated measures statistical methods (e.g., multivariate analysis of variance [MANOVA]) can handle multiple data points, there is a growing recognition that these approaches may not be accurate when assessing change over time (Curran et al., 2010; Duncan & Duncan, 2009). These traditional methods only analyze change in observed group means, not capturing individual differences in change. In turn, LGCM are considered a robust and reliable analysis technique that allow for modeling average change over time, individual differences in change, and predictors of change, such as treatment conditions (Duncan & Duncan, 1995; Muthén, 1997).

In LGCM, the intercept (i.e., initial status) and slope (i.e., change over time) were modeled as latent variables from data at baseline, posttreatment, and follow-up assessments. First, unconditional models (including all participants) testing a linear trend of change[3] in the dependent variables over time were estimated without predictors or control variables. After establishing the unconditional models, the association between condition and change over time was examined by including condition (dummy coding: *control group* = 0; *treatment group* = 1) as a predictor of the growth factors (i.e., intercept and slope). The path from condition to intercept reflects group differences at baseline and should be nonsignificant to ascertain that treatment and control groups are equivalent.

The path from condition to slope reflects group differences on the trajectory of change in the dependent variables over time. A negative slope indicates a decrease in psychopathic traits in treatment participants (see Supplemental Appendix A, which illustrates the LGCM for one outcome measure measured on the three timepoints with condition as predictor). Effect sizes for the rate of change observed in the dependent variables were then calculated using growth modeling analysis (GMA) *d* as suggested by Feingold (2019), which estimates the same effect size parameter as *Cohen's d*, with .2 indicating a small effect, .5 a medium effect, and .8 a large effect. GMA *d* is calculated using the equation $GMD\ d = \frac{b \times \text{duration}}{SD}$, which convert the unstandardized coefficient (*b*) for the effect of group on slope (i.e., the treatment effect) to a standardized effect size (GMA *d*), where: the numerator is the model-estimated raw score mean difference between the two groups at the end of the study and the denominator is the pooled within-group standard deviation of the outcome variable at baseline.

In all LGCM, Full Information Maximum Likelihood Estimation was used to handle missing data according to a proposal by Muthén and Muthén (2010). For each LGCM, chi-square, 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. Following the guidelines by Hair et al. (2005) and considering the sample size (<250), a CFI > .95 combined with either RMSEA < .08 or a SRMR < .08 were considered as indicators of acceptable/good fit. All LGCM were carried out using *Mplus* v8.3 (Muthén & Muthén, 2010).

To assess therapeutic engagement and treatment integrity, means and standard deviations of youth and therapists' ratings of the sessions were computed, as well as the means and standard deviation of the independent raters' assessments.

Results

Recruitment and Retention

A sample of 153 male detained youth was invited to participate in the study (see Figure 1). After assessing exclusion criteria (consulting the juvenile justice record file and/or interviewing participants with the MINI-KID), 34 (22.2%) participants were excluded from the study: 3 (2%) declined to participate and 31 (20.2%) met exclusion criteria, 17 (11.1%) would stay in the juvenile detention facility for less than 12 months, 6 (3.9%) were non-Portuguese speaking, 7 (4.6%) were suspected to have cognitive impairments and 1 (0.6%) was suspected to have an autism spectrum disorder. From this initial selection, 119 detained youth (77.8%) completed the baseline assessment and were allocated to the treatment group or to the control group as previously specified.

From the initial 58 treatment group participants, 56 (96.6%) completed the PSYCHOPATHY.COMP and the posttreatment assessment and 53 (91.4%) also completed the follow-up assessment; 5 (8.6%) youth dropped out of the study, most of them for being released earlier than expected. From the initial 61 control participants, 57 (93.4%) completed the posttreatment assessment and 50 (82%) also completed the follow-up assessment; 11 youth

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[3] It was not possible to test for nonlinear change as this requires at least four assessment points (Muthén, 1997).

Figure 1
Flowchart of Detained Youth Participation
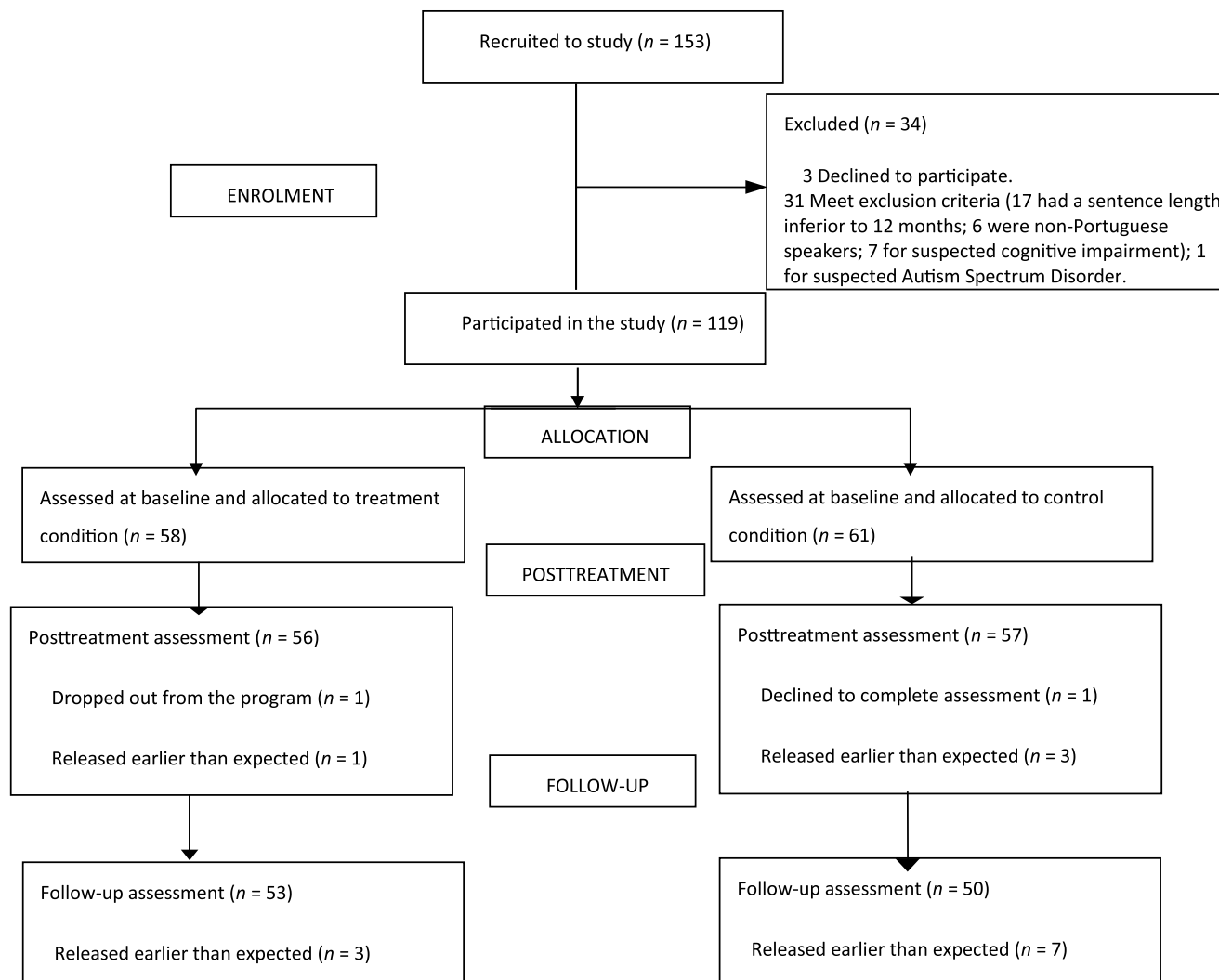
(18%) dropped out of the study, most of them for being released earlier than expected. Overall, the attrition rate was 13.4 % (5.4% for the treatment group and 18% for the control group).

Baseline Differences

Treatment and control groups were compared on demographic characteristics, as well as on legal, criminal, and clinical features at baseline. As presented in Table 2, no significant differences were found in any of these variables (all $p > .05$). It is worth to mention that most participants from both groups were from a low socioeconomic status (SES[4]), had previous contacts with child protection services and/or with the juvenile justice system, had committed several crimes against people, had a high risk for criminal recidivism, and presented multiple types of psychiatric comorbidities. Baseline differences between groups were also tested for the

outcome measures; no differences were found between groups at the onset of the study (all $p > .05$).

Intervention Effects on Psychopathic Traits

Firstly, a missing completely at random (MCAR) test was performed to test the randomness of missing values; no patterns were found in the missing data: MCAR (108) = 106, 206; $p = .531$.

As previously stated, unconditional models were initially performed for each outcome measure, achieving good fit indices (Hair et al., 2005). However, except for the PSCD_GM and the PSCD_CU, all models had a non-positive definite warning, indicating a negative residual variance. This could be due to the inclusion of

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[4] Examples of professions in the high SES groups are judges and or MDs; for the medium SES group are nurses or schoolteachers; for the low SES group are farmers or cleaning staff.

Table 2

Demographic, Legal, Criminal, and Clinical Sample Characteristics by Group

Variables	Treatment group ($n = 58$)	Control group ($n = 61$)	t/χ^2	p	Cramer's V/Cohen's d
Age	15.86 (1.02)	15.74 (1.12)	.63	.529	.11
Years of education	5.84 (1.06)	5.75 (1.36)	.405	.687	.07
SES					
Low	55 (94.8)	57 (93.4)			
Medium	3 (5.2)	2 (3.3)	2.16	.339	.14
High	0 (0)	2 (3.3)			
Previous contact with the child protection system					
No	3 (5.2)	3 (4.9)			
Foster care	28 (48.3)	25 (42.6)	.42	.810	.06
Other	27 (46.6)	32 (52.5)			
Previous contact with the juvenile justice system					
No	14 (24.1)	15 (24.6)			
Community-based programs	29 (50)	30 (49.2)			
Detention	3 (5.2)	2 (3.3)	.33	.954	.05
Other	12 (20.7)	14 (23)			
Detention length (in months)	19.52 (5.70)	17.52 (5.37)	1.87	.064	.36
Type of crimes					
Against people	47 (81)	56 (91.8)			
Against property	10 (17.2)	3 (4.9)	5.48	.140	.21
Drug trafficking	1 (1.7)	1 (1.6)			
Other	0 (0)	1 (1.6)			
Quantity of crimes					
Single crime	9 (15.5)	3 (4.9)	5.00	.082	.20
Several crimes	49 (41.4)	58 (36.1)			
Criminal recidivism risk—YLS/CMI_T					
Low	0 (0)	0 (0)	2.58	.276	.17
Moderate	7 (15.2)	8 (20.5)			
High	30 (65.2)	28 (71.8)			
Very high	9 (19.6)	3 (7.7)			
Number of diagnosis—MINI-KID	3.57 (1.20)	3.75 (1.48)	−.75	.456	.13
Type of comorbidities—MINI.KID					
Oppositional defiant disorder	8 (13.8)	9 (14.8)			
Alcohol use disorder	1 (1.7)	1 (1.6)			
Substance use disorder	6 (10.3)	6 (9.8)	2.17	.704	.14
Anxiety related disorders	2 (3.4)	0 (0)			
Multiples	41 (70.7)	45 (73.8)			
YPIS	45.02 (6.95)	44.54 (7.08)	.37	.712	.07
YPIS_GM	14.21 (3.22)	14.69 (3.36)	−.80	.427	.15
YPIS_CU	13.16 (2.65)	12.30 (3.53)	1.51	.134	.28
YPIS_II	17.66 (3.13)	17.56 (3.19)	.17	.866	.03
PSCD	25.33 (7.99)	26.97 (7.72)	−1.14	.257	.21
PSCD_GM	5.36 (2.45)	6.25 (2.91)	−1.79	.076	.33
PSCD_CU	3.59 (2.32)	3.39 (2.62)	.43	.672	.08
PSCD_DI	8.36 (2.63)	8.54 (2.39)	−.39	.698	.07
PSCD_CD	8.01 (2.90)	8.79 (2.60)	−1.53	.129	.28

Note. SES = Socioeconomic Status; YLS/CMI_T = Youth Level of Service/Case Management Inventory—Total Score; Number of diagnosis—MINI-KID = Number of diagnosis established with the MINI-KID (Mini-International Neuropsychiatric Interview for Children and Adolescents), including Conduct Disorder (CD); Type of comorbidities—MINI.KID = Type of comorbidities with CD established with the MINI.KID; YPIS = Youth Psychopathic Traits Inventory-Short (YPIS_T = Total Score; YPIS_GM = Grandiose-Manipulative; YPIS_CU = Callous-Unemotional; YPIS_II = Impulsive-Irresponsible); PSCD = Proposed Specifiers for Conduct Disorder; (PSCD_T = Total Score; PSCD_GM = Grandiose-Manipulative; PSCD_CU = Callous-Unemotional; PSCD_DI = Daring Impulsive; PSCD_CD = Conduct Disorder). Information for SES, previous contact with child and protection system, previous contact with the juvenile justice system, type of crimes, quantity of crimes, criminal recidivism risk, and type of comorbidities are presented as *n* (%); information for age, years of education, detention length, and number of diagnosis are presented as *M* (*SD*). Crimes against people include homicide, attempted homicide, physical aggression, armed robbery, and rape; Crimes against property include theft and destruction of property.

participants of both groups in the model, which was probably interfering with the slope trajectory. Afterward, conditional models with group (control vs. treatment) as a predictor of the growth factors (i.e., intercept and slope) were examined. The conditional models provided good fit indices (see Table 3).[5]

[5] See also Supplemental Appendix B, which presents two tables, one with the results of the model for the treatment group and another with the results of the model for the control group (i.e., mean and standard deviation for outcome measures at baseline, posttreatment, and 6-month follow-up; slope and slope variance for each outcome measure). Further information on unconditional and conditional models may be requested from the first author.

Table 3
Model Fit Indices for the Conditional Models With Condition as Predictor

Outcome measures	χ^2	$\chi^2 p$	RMSEA	90% CI for RMSEA	CFI	SRMR
YPIS_T	2.102	.147	.096	[.000, .284]	.993	.013
YPIS_GM	2.193	.334	.028	[.000, .186]	.999	.018
YPIS_CU	7.831	.050	.116	[.004, .219]	.953	.076
YPIS_II	.386	.535	.000	[.000, .206]	1.000	.007
PSCD_T	1.036	.595	.000	[.000, .150]	1.000	.019
PSCD_GM	.786	.675	.000	[.000, .138]	1.000	.016
PSCD_CU	.141	.932	.000	[.000, .052]	1.000	.007
PSCD_DI	3.436	.179	.078	[.000, .213]	.983	.029

Note. RMSEA = root mean square error of approximation; CFI = comparative fit index; CI = confidence interval; SRMR = standardized root mean square residual; YPIS = Youth Psychopathic Traits Inventory-Short (YPIS_T = Total Score; YPIS_GM = Grandiose-Manipulative; YPIS_CU = Callous-Unemotional; YPIS_II = Impulsive-Irresponsible); PSCD = Proposed Specifiers for Conduct Disorder; (PSCD_T = Total Score; PSCD_GM = Grandiose-Manipulative; PSCD_CU = Callous-Unemotional; PSCD_DI = Daring-Impulsive).

As presented in Table 4, condition did not predict variation in the intercept, indicating that the groups did not differ in self-reported psychopathic traits at baseline. In turn, condition was a significant predictor of change over time observed in almost all outcome measures, except for the PSCD_GM factor. As indicated by negative *B* values of the slope factor, treatment participants showed a greater decrease in psychopathic traits than control participants, which, in turn, increased or maintained their levels of psychopathic traits across time. Specifically, the treatment group showed a greater decrease (of almost four units; large effect size) in the total score of the YPIS. Treatment participants also showed a greater decrease (of almost one unit; medium effect sizes) in the Grandiose-Manipulative (YPIS_GM) and Callous-Unemotional (YPI_CU) factors, as well as a greater decrease (of 1.640 units; large effect size) in the Impulsive-Irresponsible (YPIS_II) factor. Considering the PSCD, treatment participants presented a greater decrease in the total score (of almost two units), as well as in the PSCD_CU (of .886 units) and in the PSCD_DI (of .669 units) factors, all with medium effect sizes.

Assessment of Therapeutic Engagement and Treatment Integrity

Considering therapeutic engagement and treatment integrity (values ranging between 1 and 10), the mean score of the usefulness of the sessions rated by youth was 8.84 (*SD* = 1.30), while the mean score of the usefulness of the sessions rated by therapists was 8.31 (*SD* = 1.03). The mean score of the therapeutic relationship rated by youth was 9.33 (*SD* = 1.09), whereas the mean score of the therapeutic relationship rated by therapists was 8.96 (*SD* = .83). The mean score of the therapist's subjective perception regarding how they followed the manualized protocol of sessions was 8.70 (*SD* = .90) and the mean score of how globally therapists rated the sessions was 8.69 (*SD* = .86). Finally, the independent raters' assessment of the sessions was 8.90 (*SD* = .78).

Discussion

The PSYCHOPATHY.COMP program is the first CFT-based program specifically designed to target psychopathic traits among detained youth. Although preliminary studies showed that this program was effective in reducing psychopathic traits in this at-risk population, the study's methodological weaknesses (e.g., small

sample size, lack of follow-up assessment) warranted caution when interpreting its results (Ribeiro da Silva et al., 2020b). This controlled trial tried to overcome these shortcomings by testing the efficacy of this program in reducing psychopathic traits in a larger sample of male detained youth and by testing if those effects were maintained 6 months after the PSYCHOPATHY.COMP completion. Therapeutic engagement and treatment integrity were also examined. To our knowledge, this is the first study using LGCM to test the efficacy of an intervention program in reducing psychopathic traits among detained youth, contributing to the research on this topic which at present is scarce (Hecht et al., 2018).

Data on recruitment and retention showed that most of the detained youth from the treatment group completed the intervention and the three assessment points, with loses being mainly due to external variables (i.e., youth being released early than expected). These data suggested that PSYCHOPATHY.COMP's length and methodology as well as the clinical experience, training, and supervision of therapists, may account for the favorable program retention and low attrition rates. The same tendency occurred in the control group, which could be at least partially explained by the investment on the training and supervision of the assessors.

At baseline, no differences were found between treatment and control groups in demographic, legal, criminal, and clinical variables, as well on psychopathic traits scores as measured by two self-report measures. The groups were therefore similar regarding all these variables, reducing possible bias associated with the lack of randomization and allowing for reliable conclusions on the predictor effect of condition on psychopathic traits over time (Hollin, 2008). It is noteworthy that this was a sample with several legal/criminal issues (i.e., most youth had previous contacts with child protection and/or juvenile justice system services and a high risk for criminal recidivism) and mental health problems (i.e., high comorbidity rates combining multiple psychopathological disorders). These findings are in accordance with the literature, suggesting that detained youth represent an at-risk population with several intervention needs that should be assessed and targeted during the detention length (Abram et al., 2015; Bonta & Andrews, 2016; Ribeiro da Silva et al., 2019b; Rijo et al., 2016).

Results from LGCM showed that condition was a significant predictor of change over time observed in almost all outcome measures, except for the GM factor as measured by the PSCD. Considering the total score of the YPIS, differences between treatment and control groups were found, that is, psychopathic

Table 4
Mean and Standard Deviation for Outcome Measures by Groups at Baseline, Posttreatment, and 6-Month Follow-up. Conditional Models With Condition as Predictor of the Initial Level (Intercept) and Rate of Change (Slope) in Outcome Measures

Outcome measures	Baseline Treatment group M (SD)	Baseline Control group M (SD)	Posttreatment Treatment group M (SD)	Posttreatment Control group M (SD)	6-Month follow-up Treatment group M (SD)	6-Month follow-up Control group M (SD)	Intercept[a] B	Intercept[a] p	Slope[b] B	Slope[b] p	GMA d and 90% CI for GMA d
YPIS_T	45.02 (6.95)	44.54 (7.08)	40.49 (8.77)	46.15 (6.78)	38.49 (9.28)	45.54 (7.39)	.336	.797	-3.832	.000	1.12 [1.69; .54]
YPIS_GM	14.21 (3.31)	14.69 (3.30)	13.42 (4.10)	15.38 (3.48)	12.60 (3.86)	15.06 (3.81)	-.593	.318	-.955	.002	.58 [1.06; .09]
YPIS_CU	13.16 (2.65)	12.30 (3.53)	11.29 (3.26)	12.74 (3.34)	10.99 (3.25)	12.45 (3.30)	.439	.425	-.979	.004	.63 [1.20; .07]
YPIS_II	17.66 (3.13)	17.56 (3.19)	15.81 (3.29)	18.07 (3.13)	14.88 (3.41)	18.06 (2.84)	.053	.927	-1.640	.000	1.04 [1.50; .57]
PSCD_T	17.31 (5.86)	18.18 (5.88)	15.61 (6.70)	19.25 (5.39)	14.56 (6.06)	19.38 (6.77)	-1.125	.275	-1.910	.001	.65 [1.18; .13]
PSCD_GM	5.36 (2.45)	6.25 (2.91)	4.97 (2.75)	6.28 (2.71)	4.98 (2.49)	6.48 (2.88)	-.915	.056	-.311	.196	.23 [.69; .23]
PSCD_CU	3.59 (2.32)	3.39 (2.62)	2.87 (2.33)	3.68 (2.34)	2.33 (2.57)	3.92 (2.94)	.146	.733	-.886	.002	.72 [1.30; .13]
PSCD_DI	8.36 (2.63)	8.54 (2.39)	7.80 (2.82)	9.23 (2.30)	7.31 (2.31)	8.98 (2.47)	-.358	.424	-.669	.008	.53 [1.05; .01]

Note. YPIS = Youth Psychopathic Traits Inventory-Short (YPIS_T = Total Score; YPIS_GM = Grandiose-Manipulative; YPIS_CU = Callous-Unemotional; YPIS_II = Impulsive-Irresponsible; PSCD = Proposed Specifiers for Conduct Disorder; (PSCD_T = Total Score; PSCD_GM = Grandiose-Manipulative; PSCD_CU = Callous-Unemotional; PSCD_DI = Daring-Impulsive); GMA *d* = growth modeling analysis.
[a] The intercept reflects group differences between treatment and control groups at baseline. [b] The slope reflects group differences between treatment and control groups on the trajectory of change in the dependent variables over time. Considering the dummy coding used (*control group* = 0; *treatment group* = 1), the negative slope indicates a decrease in psychopathic traits in treatment participants.

traits decreased over time in the treatment group but not in the control group, with a large effect size. The same effect (with a medium effect size) was observable in the total score of the PSCD. These findings corroborate the preliminary findings using the PSYCHOPATHY.COMP, suggesting that this program may be an accurate therapeutic intervention to reduce psychopathic traits among male detained youth (Ribeiro da Silva et al., 2020a). Moreover, these data also indicated that TAU alone is not capable of changing psychopathic traits. On the contrary, it may contribute to the maintenance or increase of psychopathic traits. Taken together, these findings support the idea that the absence of tailored interventions targeting psychopathic traits may account for the worsening of psychopathic traits, increasing the odds of these youth to display disruptive and antisocial behavior after release (Edens et al., 2007; Geerlings et al., 2020; Gretton et al., 2004; Ribeiro da Silva et al., 2019b, 2020a).

Regarding GM traits as measured by the YPIS, treatment participants presented a greater decrease over time when compared with the controls (medium effect size). These findings were not corroborated when assessing GM traits with the PSCD. This may be related with baseline differences on GM traits as measured by the PSCD, which may have affected the rate of change over time between groups. As GM traits are considered difficult to treat and an important barrier in the efficacy of intervention efforts (as they are linked to manipulation, deceitfulness, dishonesty, and lying; Harris & Rice, 2006; Salekin, 2017), it is essential that therapeutic efforts consider and accurately target this set of traits (Ribeiro da Silva et al., 2019a, 2020b; Salekin, 2017).

Results also pointed out a greater decrease of CU traits over time in the treatment group, when compared with the control group (medium effect sizes, measured by both the YPIS and the PSCD). These findings indicate that the strategy of change of the PSYCHOPATHY.COMP program was effective in reducing CU traits, which go against a substantial amount of research suggesting that CU traits may be particularly resistant to treatment efforts (Butler et al., 2011; Wilkinson et al., 2015). If these findings prove to be consistent in future studies, this may indicate that specific and tailored interventions, such as the PSYCHOPATHY.COMP program, can be effective in decreasing this set of traits (Ribeiro da Silva et al., 2020b).

Considering II traits as measured by the YPIS, differences between treatment and control groups were also found, that is, with a large effect size, II traits decreased over time in the treatment group but not in the control group. The same tendency (with medium effect size) was observable in the PSCD_DI factor. Nonetheless, these findings show that the PSYCHOPATHY.COMP was able to reduce II/DI traits, whereas the TAU contributed to maintain or deteriorate this set of traits. Considering that II/DI traits are often associated with aggressive and risk-taking behaviors, as well as with criminal recidivism rates, it is key to try to reduce this set of traits during the detention length (Geerlings et al., 2020; Ribeiro da Silva et al., 2020b).

Overall, while treatment participants decreased their levels of psychopathic traits over time, controls maintained or increased their levels of psychopathic traits over time. These findings suggest that psychopathic traits may not be effectively addressed by the current practices delivered at Portuguese juvenile detention facilities. These results were especially relevant considering II/DI traits and the combination of all psychopathic traits, which are regarded in the

literature as particularly relevant for the display of disruptive and antisocial behaviors, and consequently, of high criminal recidivism rates (Edens et al., 2007; Geerlings et al., 2020; Gretton et al., 2004; Leistico et al., 2008). Considering that GM and CU traits are often associated with significant emotional and relational deficits (e.g., lack of remorse/guilt and empathy; shallow/deficient affect; glibness/superficial charm; grandiosity; lying; conning; manipulation), this set of traits usually has a significant clinical impact in the interpersonal relationships of individuals and, consequently, in their future adjustment in the society (Salekin, 2017; Wilkinson et al., 2015). Thus, the changeability of GM and CU traits during the detention length is of utmost importance to strengthen the rehabilitation odds of detained youth (Ribeiro da Silva et al., 2020b; Salekin, 2017; Salekin et al., 2018).

In the present study, the therapeutic engagement assessment and the integrity of PSYCHOPATHY.COMP' delivery were warranted in several ways, namely through the training and supervision of the therapists who run the program, through assessing both youth and therapist's perception about each session, and through the assessment of a percentage of delivered sessions by independent raters. Results indicated that both youth and therapist's perception was very positive, as well as the independent raters' assessments regarding the treatment integrity. These data coupled with the residual attrition rate of this study, indicate that the PSYCHOPATHY.COMP may help to solve the therapeutic engagement issues in detained youth with psychopathic traits frequently reported in the literature (Hecht et al., 2018; Polaschek & Skeem, 2018; Wilkinson et al., 2015).

Overall, findings of the present study offer evidence of the PSYCHOPATHY.COMP's efficacy in reducing psychopathic traits among detained youth, shielding the tendency of these youth to maintain or to get worse their levels of psychopathic traits across time (Caldwell, 2011; Edens et al., 2007; Geerlings et al., 2020; Gretton et al., 2004). Results also offer support for the PSYCHOPATHY.COMP as a useful therapeutic tool to solve therapeutic engagement issues in detained youth with psychopathic traits (Hecht et al., 2018, Polaschek & Skeem, 2018; Wilkinson et al., 2015). Allied with recent research conceptualizing psychopathic traits as an adaptive response that masks central emotional dysfunctions (Garofalo et al., 2018; Kosson et al., 2016; Ribeiro da Silva et al., 2015, 2019c, 2019d), the strategy of change of the PSYCHOPATHY.COMP program seems therefore attuned to the intervention needs of this at-risk population. Thus, building a compassionate motivation in detained youth appears to be both a fundamental therapeutic goal and an accurate therapeutic strategy, which may have offered these youth a safe and warmth therapeutic environment that allowed them to: (a) process their own unpleasant memories and emotions with compassion; (b) build the courage, strength, and wisdom, to become more self-aware, in control, and responsible for their emotional states and behavioral responses; and (c) find and test compassionate alternative strategies to tolerate and cope in healthy ways with their own suffering and/or the suffering of others (Ribeiro da Silva et al., 2019a, 2020a, 2020b).

This study presented several strengths in comparison to the few experimental or quasi-experimental studies on the changeability of psychopathic traits in detained youth and was innovative in several ways (Butler et al., 2011; Caldwell, 2011; Caldwell et al., 2006; Manders et al., 2013). Firstly, this study used a controlled trial design with male detained youth with CD, which is of the utmost importance, considering that the combination of a CD diagnosis with high levels of psychopathic traits is associated with a severe pattern of antisocial behavior (Geerlings et al., 2020; Gretton et al., 2004; Leistico et al., 2008; Ribeiro da Silva et al., 2019a). Secondly, the treatment description was clearly detailed and treatment integrity was controlled, both essential requirements for the dissemination of evidence-based practices (Perepletchikova, 2011). Thirdly, this study assessed the changeability of psychopathic traits (considering the overall scores as well as each set of traits separately) after an intervention with two validated measures of psychopathic traits. This study also tested the efficacy of an intervention program in reducing psychopathic traits among detained youth using LGCM, which is considered a reliable approach to assess individual change in longitudinal data and to examine if treatment condition might predict changes over time (Duncan & Duncan, 2009; Muthén, 1997). Finally, this study assessed the changeability of psychopathic traits after an individual CFT-based intervention that was specifically designed to target psychopathic traits in detained youth.

Despite the strengths of this study, some limitations should be acknowledged, most importantly: the lack of randomization and the absence of criminal recidivism assessment, as there is a large risk for these youth to reoffend and to face prison sentences in the future (Edens et al., 2007; Geerlings et al., 2020; Gretton et al., 2004). Future studies, with a randomized controlled design, should track the progress of detained youth after release (e.g., recidivism rates, school/social functioning) to clarify if improvements observed during the detention period are maintained after release. The use of self-report measures to assess the changeability of psychopathic traits is another important limitation of this work, which may have impacted results as self-report assessment represent the subjective perception of individuals and may be biased by social desirability issues (Chan, 2009). Thus, the assessment of psychopathic traits using structured interview procedures should be considered in future clinical trials (e.g., PCL-YV; Psychopathy Checklist-Youth Version). Another limitation has to do with the number of individual sessions delivered to participants in the control group. Despite the researchers' efforts, it was not possible to monitor and record these sessions for most participants. Further research should also include the assessment of other relevant variables associated with psychopathic traits (e.g., aggression, emotion regulation) and variables that do not rely exclusively on self-report measures (e.g., psychophysiological/neural correlates of psychopathic traits). It is also relevant to mention that additional research is needed to examine whether the impact of the PSYCHOPATHY.COMP could be generalizable to detained youth from other countries outside of Portugal. Finally, it is important to note that this is a costly intervention that requires intensive training of therapists as well as a great number of hours spent in individual therapeutic sessions. However, this is a difficult to treat population in which individual interventions seem to present better treatment responsiveness than group ones (Salekin, 2002; Wilkinson et al., 2015).

The encouraging research findings of the present study, coupled with the results of previous research using the PSYCHOPATHY.COMP (Ribeiro da Silva et al., 2019a, 2020b), suggest that this program may fit the intervention needs of this at-risk population. These outcomes offer evidence of the program's potential to reduce psychopathic traits and to promote therapeutic engagement in detained youth. Although additional research is needed before

the PSYCHOPATHY.COMP can be considered an evidence-based psychotherapy (David & Montgomery, 2011), these findings may have implications for the study and treatment of detained youth with psychopathic traits, as well as for the rehabilitation policies of juvenile justice systems.

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